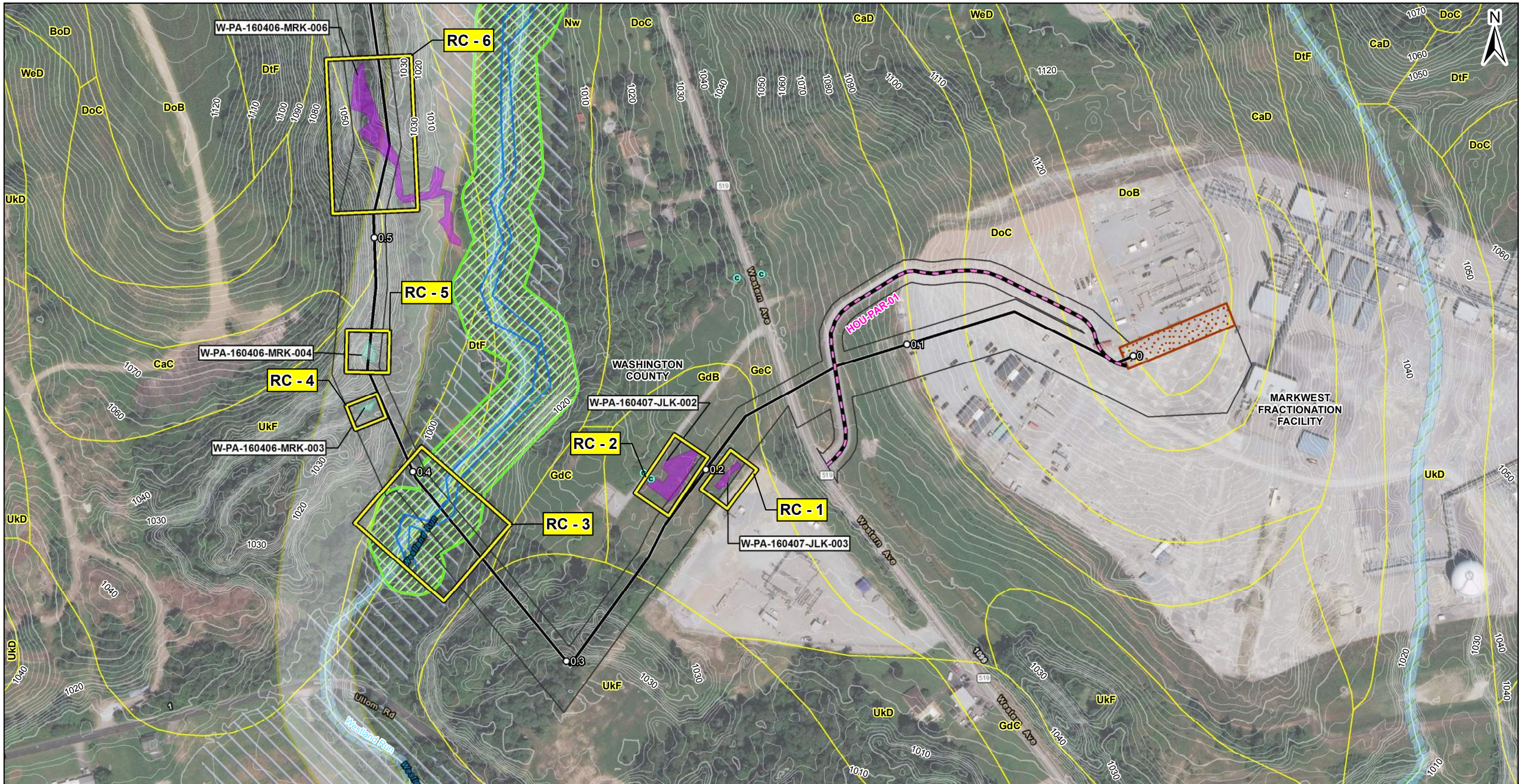
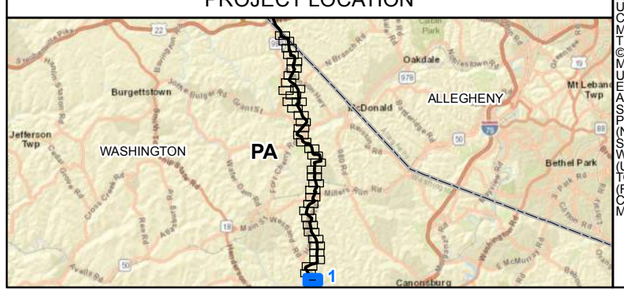
Attachment S2-3

Plan View Map



PROJECT LOCATION



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COORDINATE SYSTEM: NAD 1983 UTM ZONE 17NTRANSVERSE MERCATOR

1 inch = 200 feet

0 100 200 400 Feet

LEGEND

- VALVE
- BRIDGE
- CULVERT LOCATION
- MILEPOST

PUBLIC WATER SUPPLY

- AGRICULTURAL USE
- COMMERCIAL USE
- INDUSTRIAL USE
- MINERAL USE
- OIL AND GAS
- SEWAGE TREATMENT

- PROPOSED HOUSTON TO JUNCTION PIPELINE
- PERMANENT ACCESS ROAD
- TEMPORARY ACCESS ROAD
- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- NHD FLOWLINE

SURVEYED WATERBODY

- EPHEMERAL
- INTERMITTENT
- PERENNIAL

DELINEATED WETLAND

- PEM
- PFO
- PSS
- PUB
- NWI WETLAND
- NHD WATERBODY
- RESOURCE CROSSING
- 50-FOOT FLOODWAY
- FEMA 100-YEAR FLOODPLAIN
- SOIL TYPE BOUNDARY
- LIMIT OF DISTURBANCE

- METER PAD FOOTPRINT
- METER SITE
- MUNICIPAL BOUNDARY
- COUNTY BOUNDARY
- STATE BOUNDARY

CULTURAL RESOURCES

- ISOLATED FINDS
- MODERN RESOURCE
- ARCHAEOLOGICAL SITE
- ABOVE GROUND RESOURCE
- PHMC SITE 1-MILE BUFFER

FALCON

SHELL PIPELINE COMPANY LP
HOUSTON, TX 77079

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

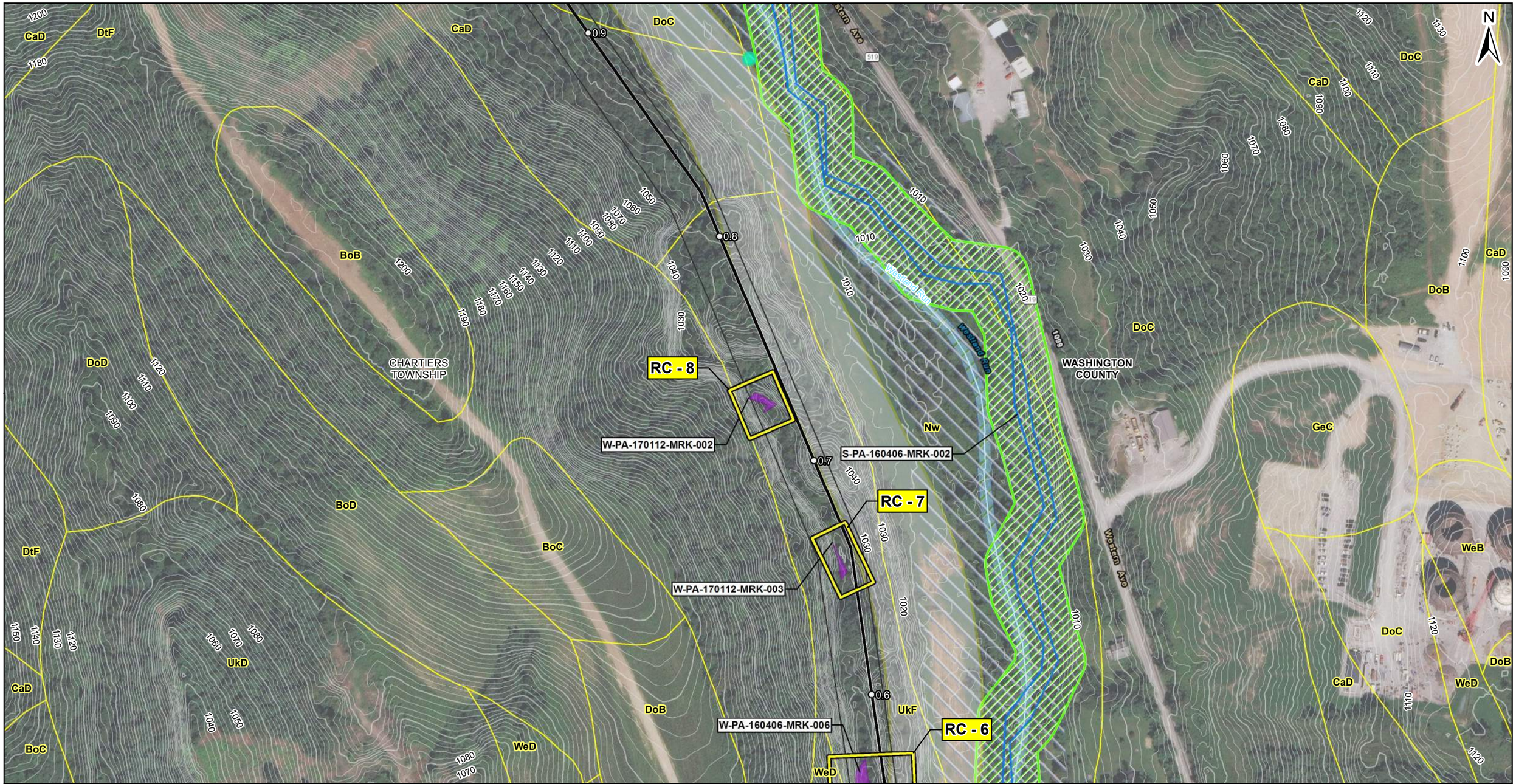
FIGURE 2

PLAN VIEW MAP

PITTSBURGH DISTRICT
SHEET 1 OF 39
WASHINGTON COUNTY, PENNSYLVANIA

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE SYSTEM

DRAWN BY: PMH DATE: 9/12/2017
APPROVED: NLS PROJECT #:60536988



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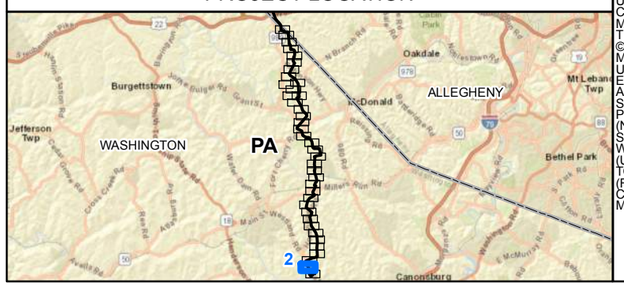

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FALCON

SHELL PIPELINE COMPANY LP
HOUSTON, TX 77079

AECOM

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PITTSBURGH, PA 15220
412-503-4700

FIGURE 2

PLAN VIEW MAP
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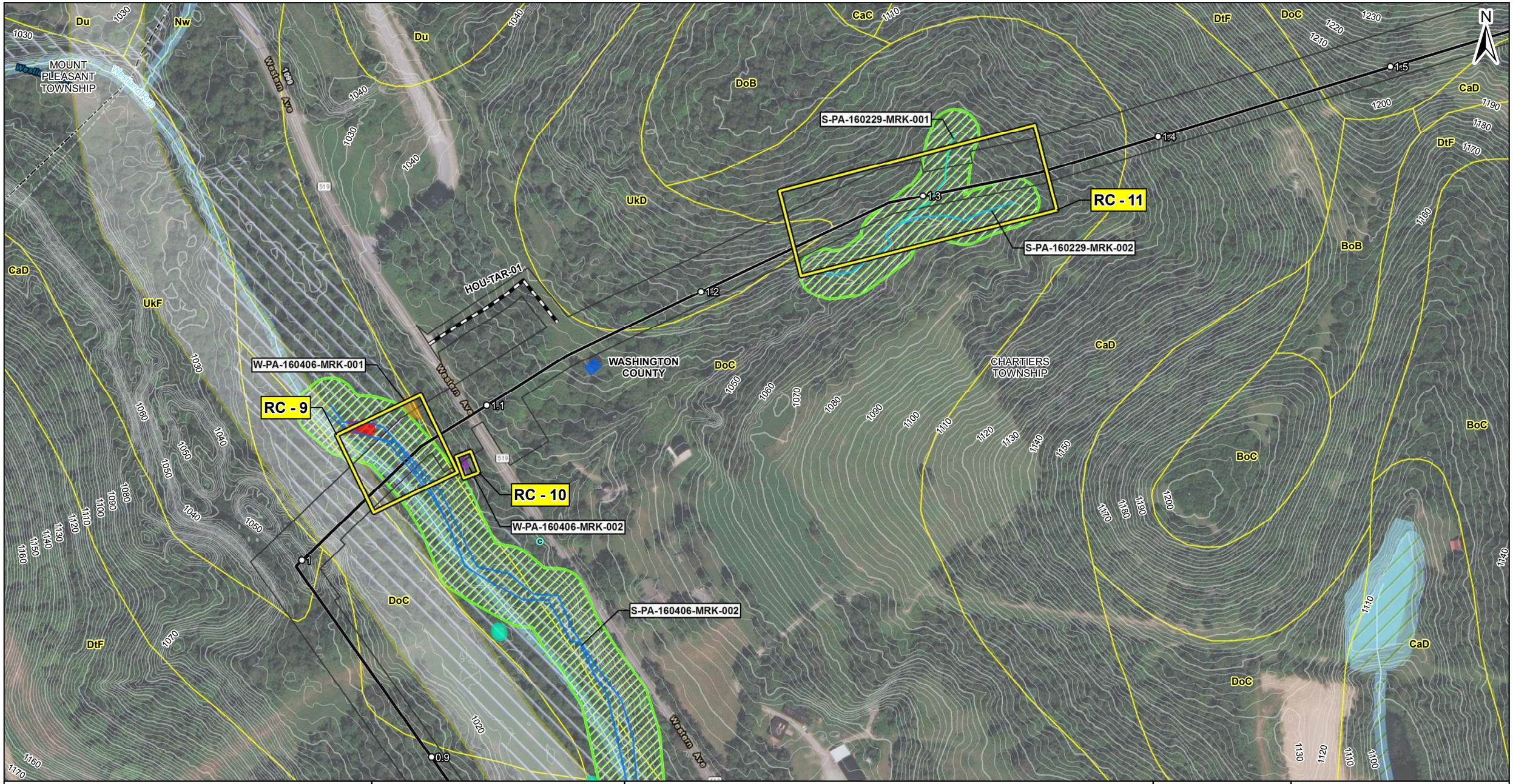
SHEET 2 OF 39
WASHINGTON COUNTY, PENNSYLVANIA

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE SYSTEM

DRAWN BY: PMH DATE: 9/12/2017
APPROVED: NLS PROJECT #:60536988



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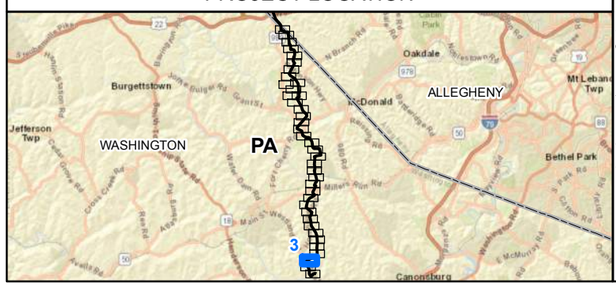

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FALCON

SHELL PIPELINE COMPANY LP
HOUSTON, TX 77079

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

FIGURE 2

PLAN VIEW MAP

PITTSBURGH DISTRICT
SHEET 3 OF 39
WASHINGTON COUNTY, PENNSYLVANIA

SHELL PIPELINE COMPANY LP FALCON ETHANE PIPELINE SYSTEM

DRAWN BY: PMH DATE: 9/12/2017
APPROVED: NLS PROJECT #:60536988

S-PA-160229-MRK-003

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1.8

1.7

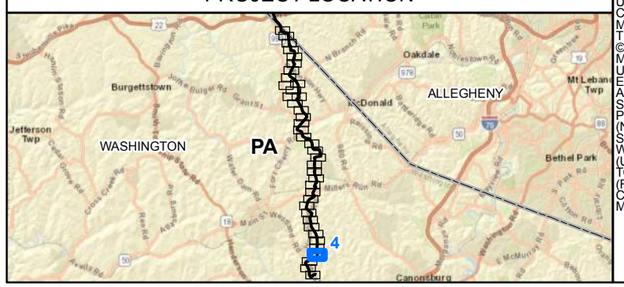
1.6

1.5

WASHINGTON COUNTY

GeD
Du
DoC
DtF
WeD
CaB
DtD
UkD
CaC
CaD
DoB
GeB
WeB

PROJECT LOCATION



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HOUSTON, TX 77079

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FIGURE 2

PLAN VIEW MAP

PITTSBURGH DISTRICT
SHEET 4 OF 39
WASHINGTON COUNTY, PENNSYLVANIA

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE SYSTEM

DRAWN BY: PMH DATE: 9/12/2017
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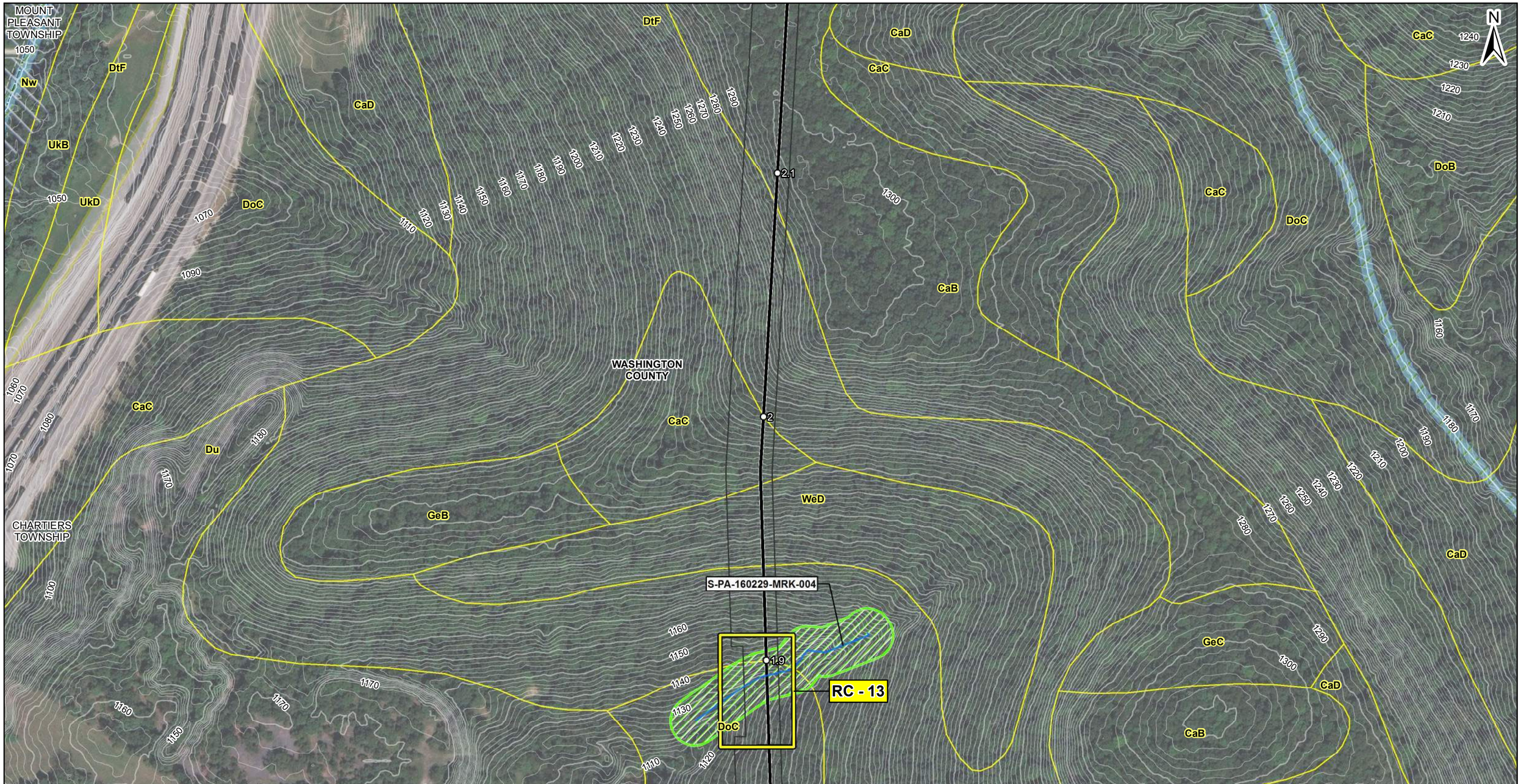

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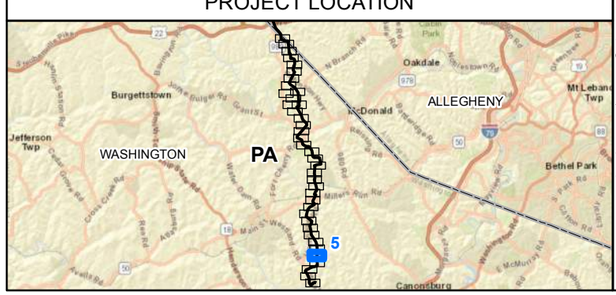

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LEGEND

- VALVE
- BRIDGE
- CULVERT LOCATION
- MILEPOST

PUBLIC WATER SUPPLY

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CULTURAL RESOURCES

- ISOLATED FINDS
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- ABOVE GROUND RESOURCE
- PHMC SITE 1-MILE BUFFER

FALCON

SHELL PIPELINE COMPANY LP
HOUSTON, TX 77079

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

FIGURE 2

PLAN VIEW MAP
PITTSBURGH DISTRICT
SHEET 5 OF 39
WASHINGTON COUNTY, PENNSYLVANIA

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE SYSTEM

DRAWN BY: PMH DATE: 9/12/2017
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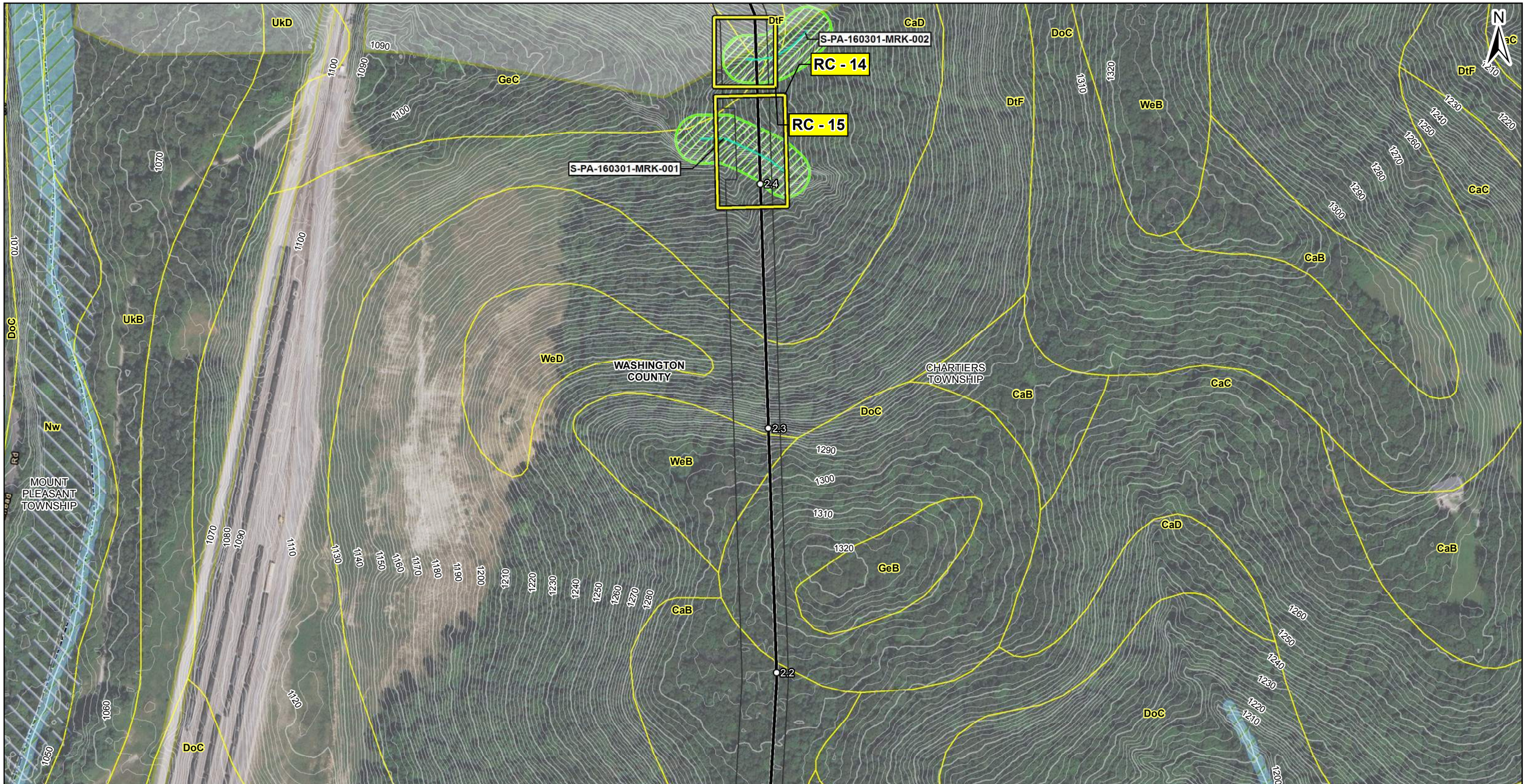

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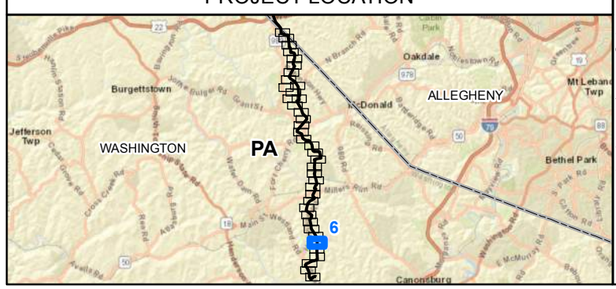

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FALCON

SHELL PIPELINE COMPANY LP
HOUSTON, TX 77079

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

FIGURE 2

PLAN VIEW MAP

PITTSBURGH DISTRICT
SHEET 6 OF 39
WASHINGTON COUNTY, PENNSYLVANIA

SHELL PIPELINE COMPANY LP FALCON ETHANE PIPELINE SYSTEM

DRAWN BY: PMH DATE: 9/12/2017
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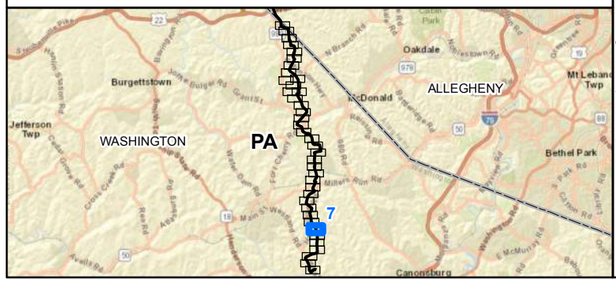

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SUITE 400
PITTSBURGH, PA 15220
412-503-4700

FIGURE 2

PLAN VIEW MAP

PITTSBURGH DISTRICT
SHEET 7 OF 39
WASHINGTON COUNTY, PENNSYLVANIA

SHELL PIPELINE COMPANY LP FALCON ETHANE PIPELINE SYSTEM

DRAWN BY: PMH DATE: 9/12/2017
APPROVED: NLS PROJECT #:60536988

S-PA-160301-MRK-004

S-PA-160301-MRK-004

S-PA-151026-MRK-002

RC - 17

HOU-TAR-02

S-PA-160301-MRK-003

Woodland Dr

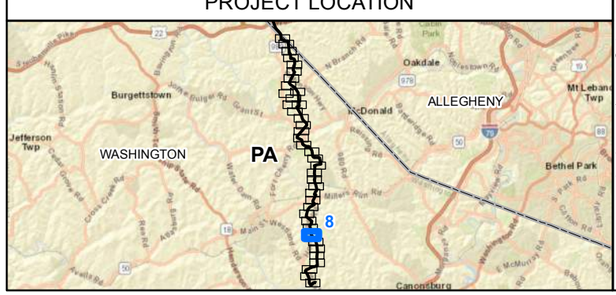
Hornhead Rd

MOUNT PLEASANT TOWNSHIP

WASHINGTON COUNTY

CHARTIERS TOWNSHIP

PROJECT LOCATION



REFERENCE: AERIAL LAYER - SOURCES: ESRI, HERE, DELORME, USGS, INTERMAP, INCREMENT P, NRCAN, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), ESRI KOREA, ESRI (THAILAND), MAPMYINDIA, NGCC, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY. ESRI, HERE, DELORME, MAPMYINDIA, © OPENSTREETMAP CONTRIBUTORS, ESRI, HERE, DELORME, MAPMYINDIA, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY. SOURCE: ESRI, DIGITALGLOBE, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRID, IGN, AND THE GIS USER COMMUNITY. PUBLIC WATER SUPPLY, PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (PADEP), 2017. NATIONAL HYDROGRAPHY DATASET (NHD) FLOWLINE AND WATERBODY, UNITED STATES GEOLOGICAL SURVEY (USGS), 2017. NATIONAL WETLAND INVENTORY (NWI) WETLANDS, UNITED STATES FISH AND WILDLIFE SERVICE (USFWS), 2017. FLOODWAYS ARE AN ASSUMED 50' WIDE FROM TOPS OF BANKS. FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) 100 YEAR FLOODPLAIN, 2013.
COORDINATE SYSTEM: NAD 1983 UTM ZONE 17NTRANSVERSE MERCATOR

1 inch = 200 feet

0 100 200 400 Feet

LEGEND

- VALVE
- BRIDGE
- CULVERT LOCATION
- MILEPOST

PUBLIC WATER SUPPLY

- AGRICULTURAL USE
- COMMERCIAL USE
- INDUSTRIAL USE
- MINERAL USE
- OIL AND GAS
- SEWAGE TREATMENT

- PROPOSED HOUSTON TO JUNCTION PIPELINE
- PERMANENT ACCESS ROAD
- TEMPORARY ACCESS ROAD
- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- NHD FLOWLINE

SURVEYED WATERBODY

- EPHEMERAL
- INTERMITTENT
- PERENNIAL

DELINEATED WETLAND

- PEM
- PFO
- PSS
- PUB
- NWI WETLAND
- NHD WATERBODY
- RESOURCE CROSSING
- 50-FOOT FLOODWAY
- FEMA 100-YEAR FLOODPLAIN
- SOIL TYPE BOUNDARY
- LIMIT OF DISTURBANCE

- METER PAD FOOTPRINT
- METER SITE
- MUNICIPAL BOUNDARY
- COUNTY BOUNDARY
- STATE BOUNDARY

CULTURAL RESOURCES

- ISOLATED FINDS
- MODERN RESOURCE
- ARCHAEOLOGICAL SITE
- ABOVE GROUND RESOURCE
- PHMC SITE 1-MILE BUFFER

FALCON

SHELL PIPELINE COMPANY LP
HOUSTON, TX 77079

AECOM

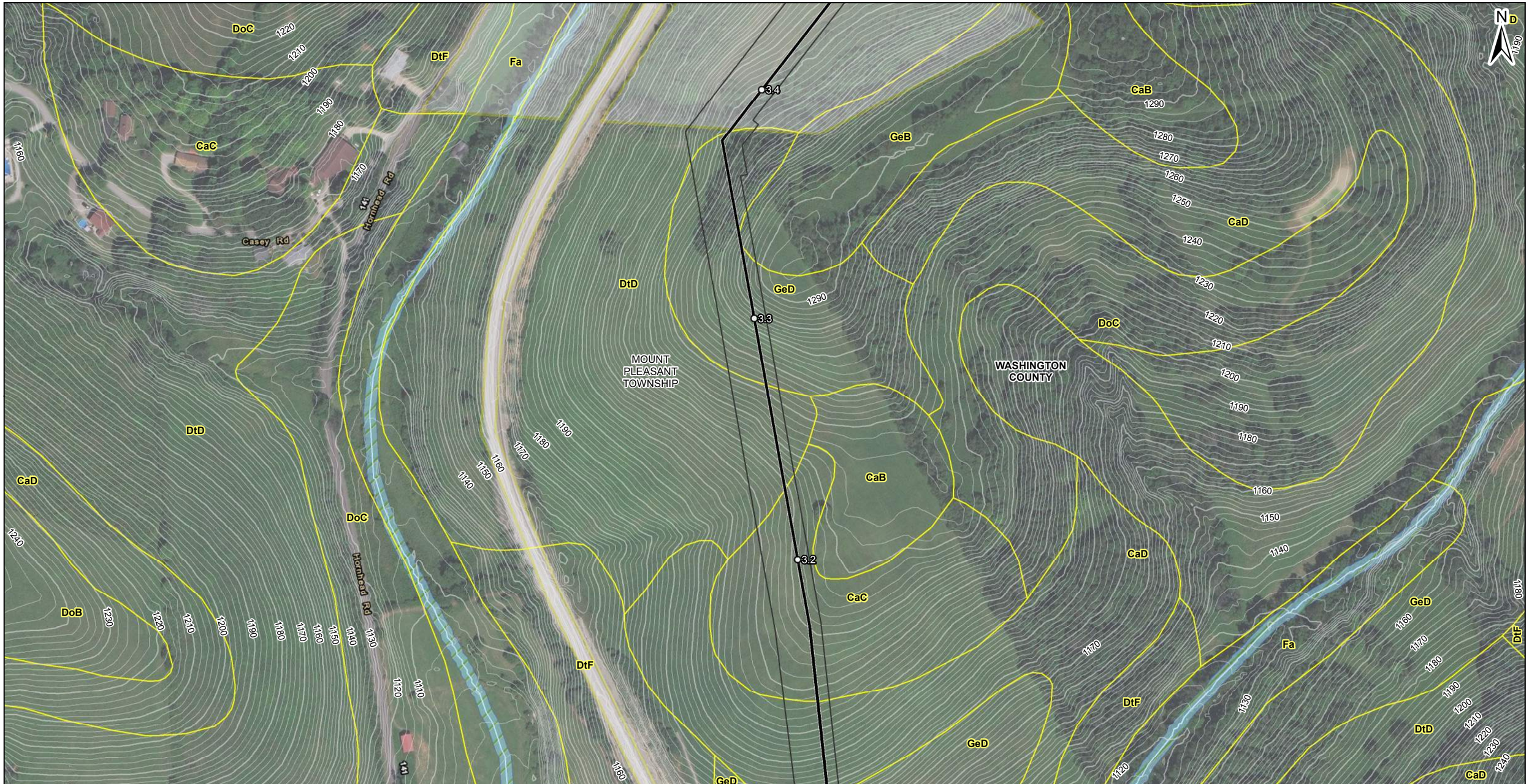
FOSTER PLAZA 6
681 ANDERSEN DRIVE
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

FIGURE 2

PLAN VIEW MAP
PITTSBURGH DISTRICT
SHEET 8 OF 39
WASHINGTON COUNTY, PENNSYLVANIA

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE SYSTEM

DRAWN BY: PMH DATE: 9/12/2017
APPROVED: NLS PROJECT #:60536988



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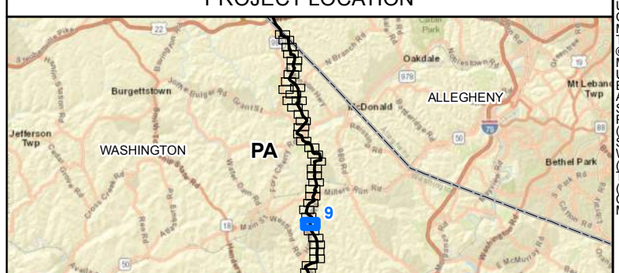

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LEGEND

- VALVE
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FALCON

SHELL PIPELINE COMPANY LP
HOUSTON, TX 77079

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

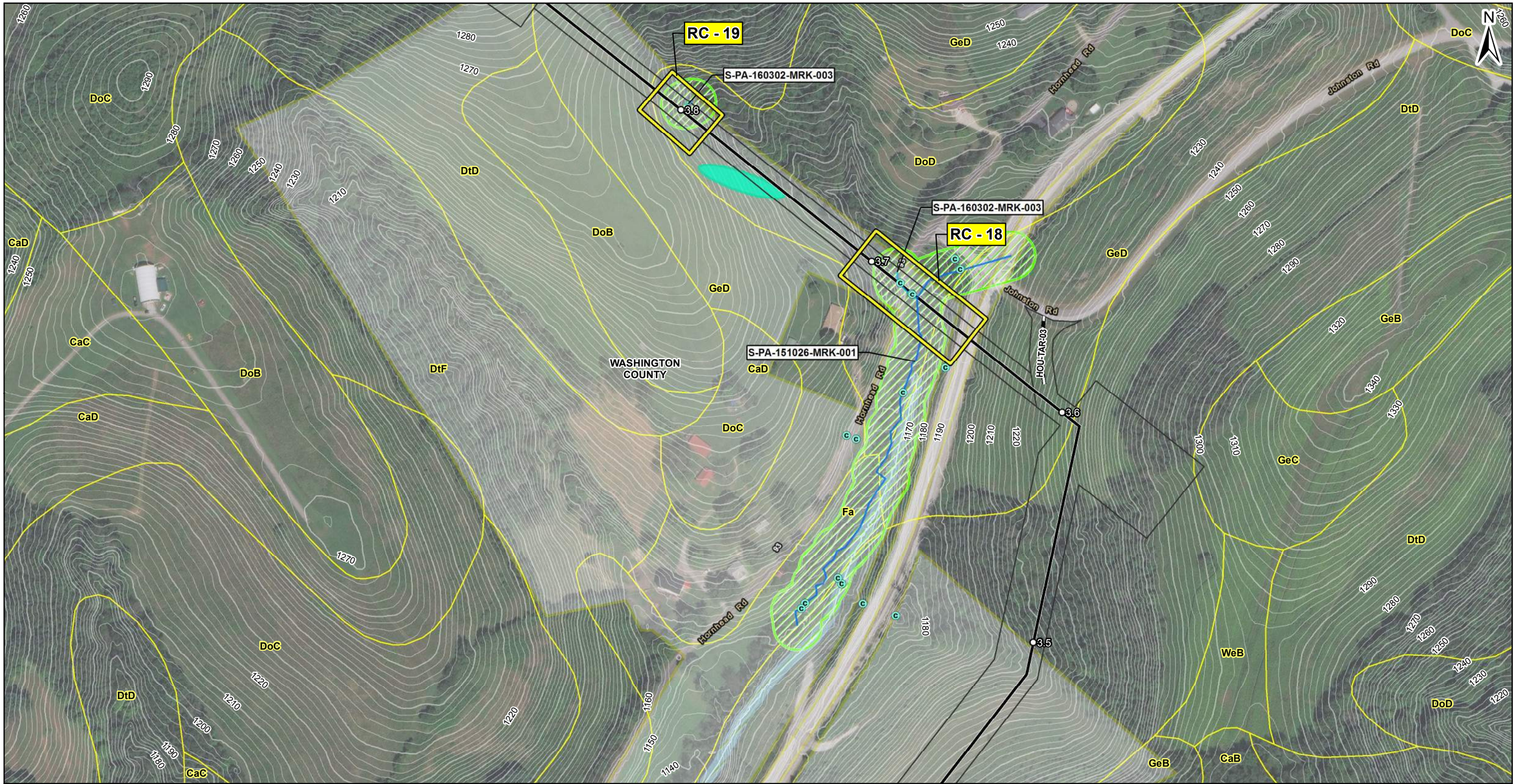
FIGURE 2

PLAN VIEW MAP

PITTSBURGH DISTRICT
SHEET 9 OF 39
WASHINGTON COUNTY, PENNSYLVANIA

SHELL PIPELINE COMPANY LP FALCON ETHANE PIPELINE SYSTEM

DRAWN BY: PMH DATE: 9/12/2017
APPROVED: NLS PROJECT #:60536988



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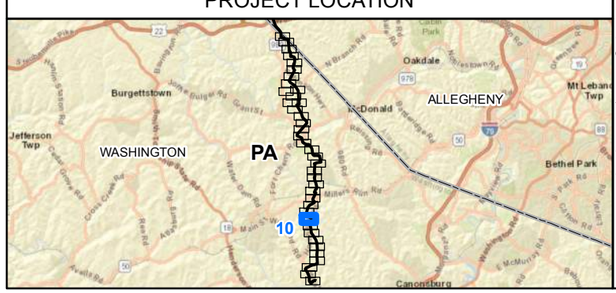

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- ISOLATED FINDS
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- ARCHAEOLOGICAL SITE
- ABOVE GROUND RESOURCE
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FALCON

SHELL PIPELINE COMPANY LP
HOUSTON, TX 77079

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

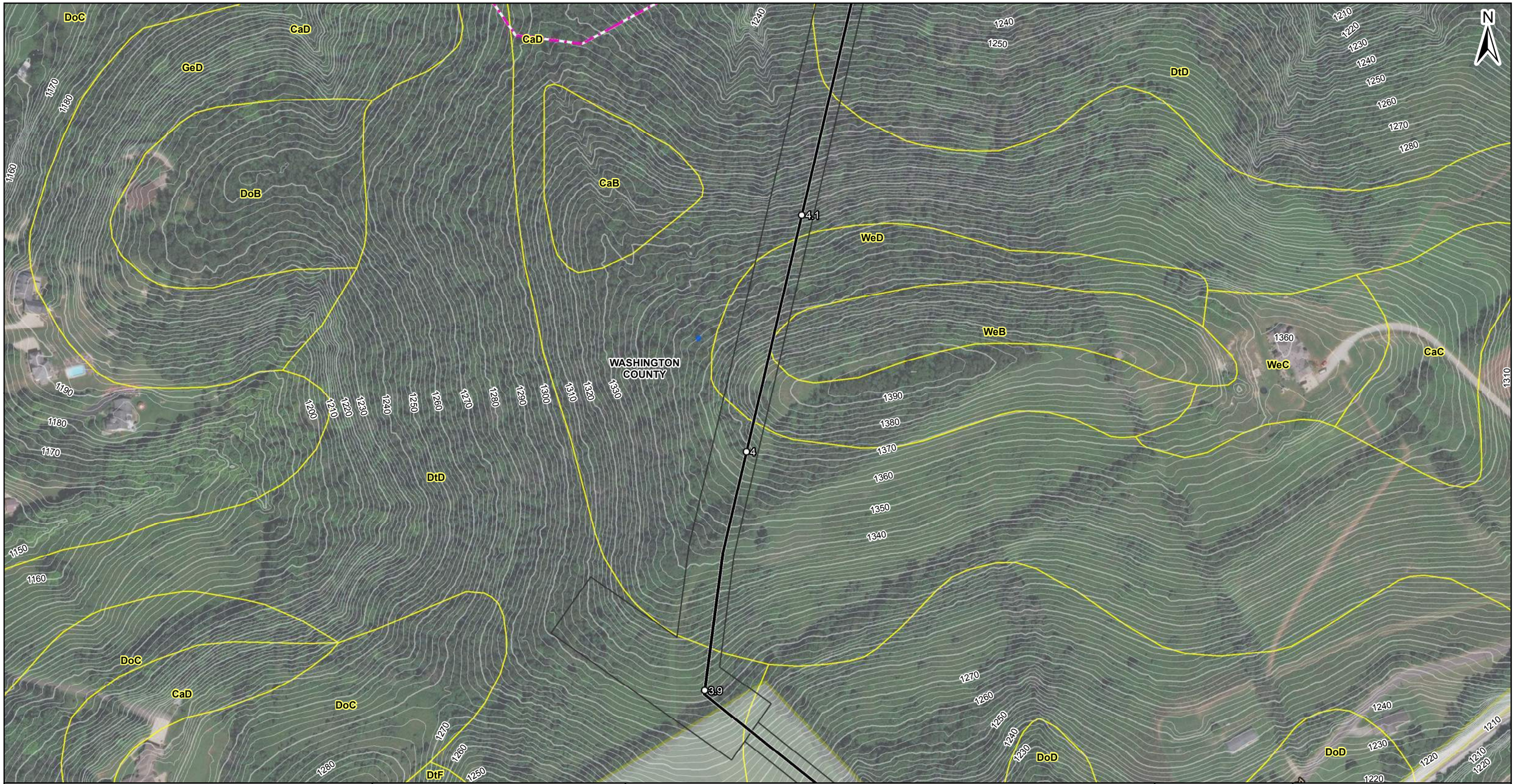
FIGURE 2

PLAN VIEW MAP

PITTSBURGH DISTRICT
SHEET 10 OF 39
WASHINGTON COUNTY, PENNSYLVANIA

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE SYSTEM

DRAWN BY: PMH DATE: 9/12/2017
APPROVED: NLS PROJECT #:60536988



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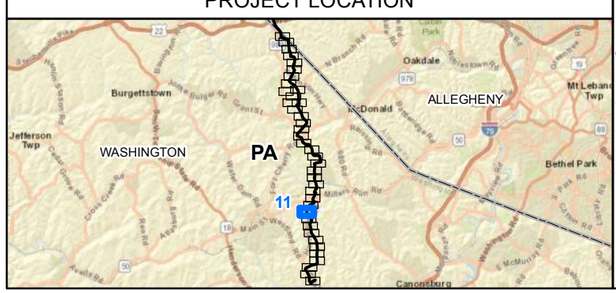

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FALCON

SHELL PIPELINE COMPANY LP
HOUSTON, TX 77079

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

FIGURE 2

PLAN VIEW MAP
PITTSBURGH DISTRICT
SHEET 11 OF 39
WASHINGTON COUNTY, PENNSYLVANIA

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE SYSTEM

DRAWN BY: PMH DATE: 9/12/2017
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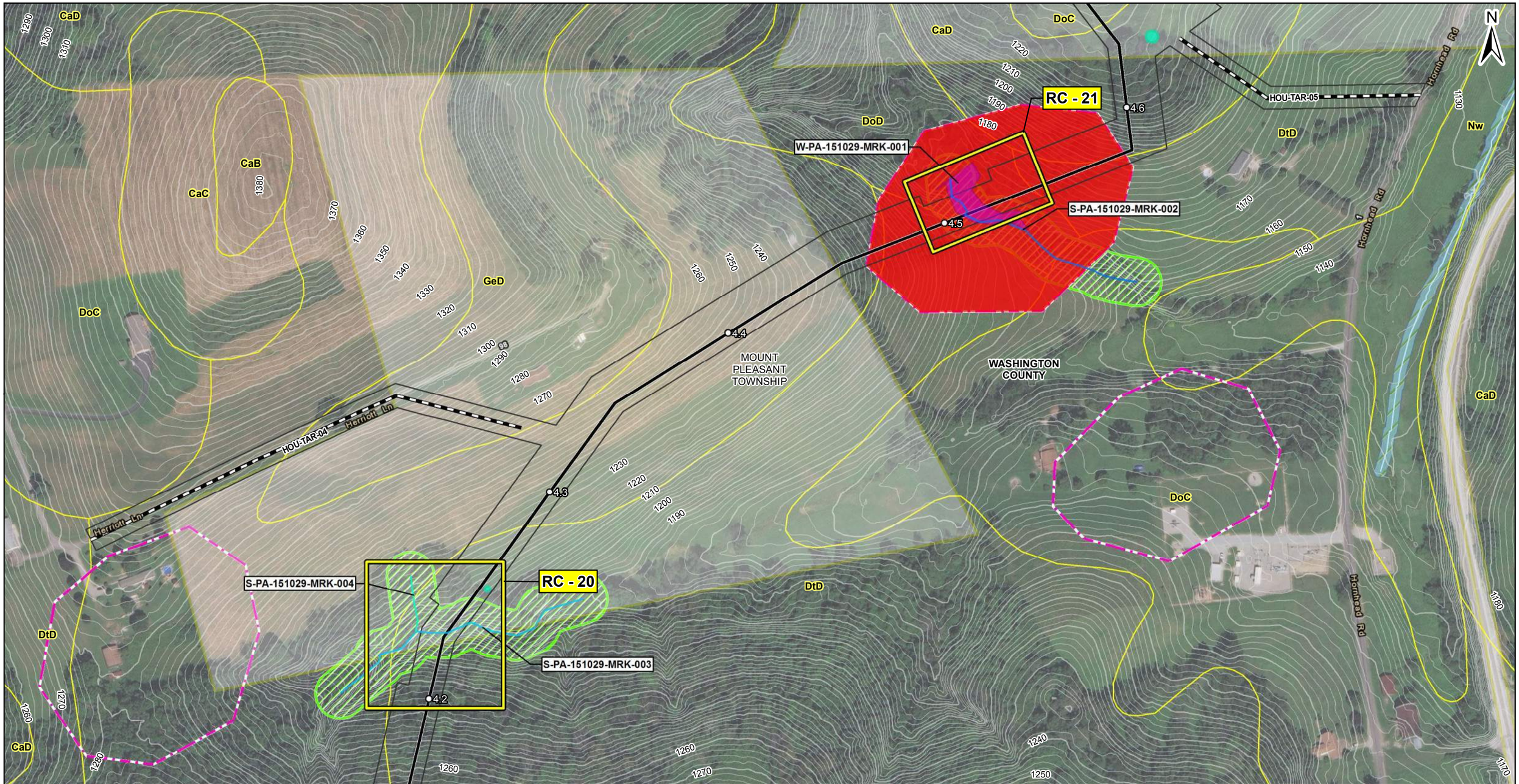

PROJECT LOCATION

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0 100 200 400 Feet

LEGEND

- VALVE
- BRIDGE
- CULVERT LOCATION
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PUBLIC WATER SUPPLY

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- SOIL TYPE BOUNDARY
- LIMIT OF DISTURBANCE

- METER PAD FOOTPRINT
- METER SITE
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- COUNTY BOUNDARY
- STATE BOUNDARY

CULTURAL RESOURCES

- ISOLATED FINDS
- MODERN RESOURCE
- ARCHAEOLOGICAL SITE
- ABOVE GROUND RESOURCE
- PHMC SITE 1-MILE BUFFER

FALCON

SHELL PIPELINE COMPANY LP
HOUSTON, TX 77079

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

FIGURE 2

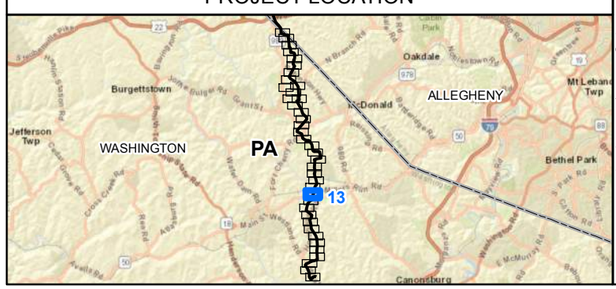
PLAN VIEW MAP

PITTSBURGH DISTRICT
SHEET 12 OF 39
WASHINGTON COUNTY, PENNSYLVANIA

SHELL PIPELINE COMPANY LP FALCON ETHANE PIPELINE SYSTEM

DRAWN BY: PMH DATE: 9/12/2017
APPROVED: NLS PROJECT #:60536988

PROJECT LOCATION



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LEGEND

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- MILEPOST

PUBLIC WATER SUPPLY

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- LIMIT OF DISTURBANCE

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FALCON

SHELL PIPELINE COMPANY LP
HOUSTON, TX 77079

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

FIGURE 2

PLAN VIEW MAP
PITTSBURGH DISTRICT
SHEET 13 OF 39
WASHINGTON COUNTY, PENNSYLVANIA

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE SYSTEM

DRAWN BY: PMH DATE: 9/12/2017
APPROVED: NLS PROJECT #:60536988

N

WASHINGTON COUNTY

MOUNT PLEASANT TOWNSHIP

S-PA-151029-MRK-001

S-PA-160301-MRK-005

HOU-TAR-06

RC - 22

W-PA-151210-MRK-001

S-PA-161205-CBA-002

5.3

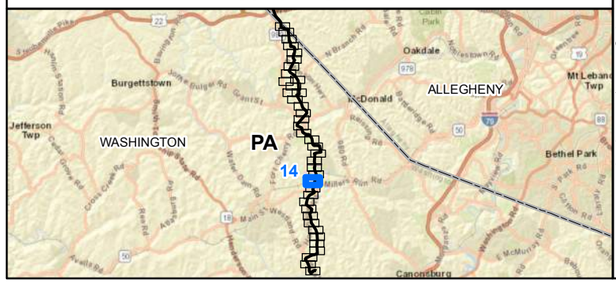
5.2

5.1

5

DoD DtD GeB GeC DoC CaD CaB WeC Fa WeB WeD CaC DtF DoB

PROJECT LOCATION



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HOUSTON, TX 77079

AECOM

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412-503-4700

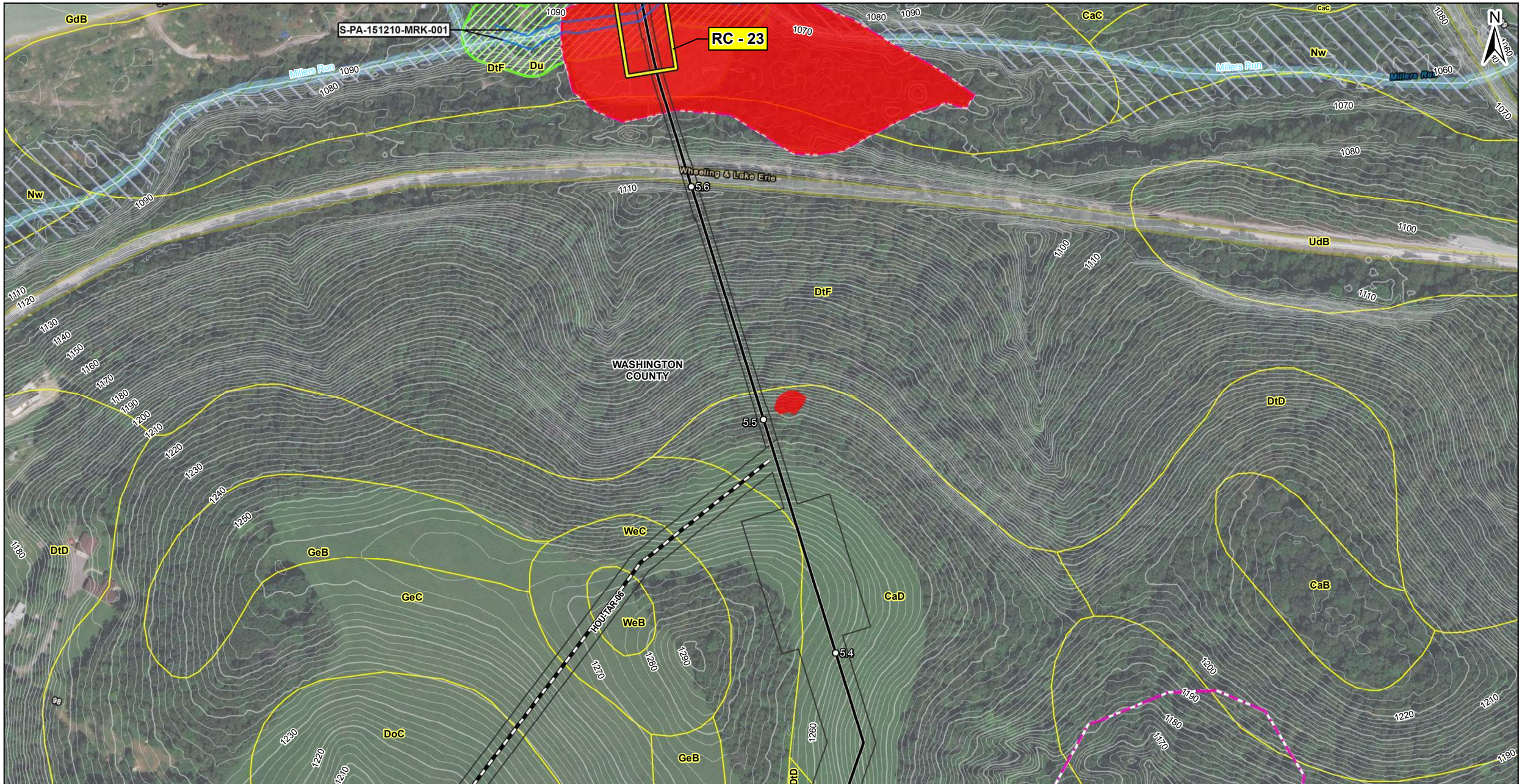
FIGURE 2

PLAN VIEW MAP

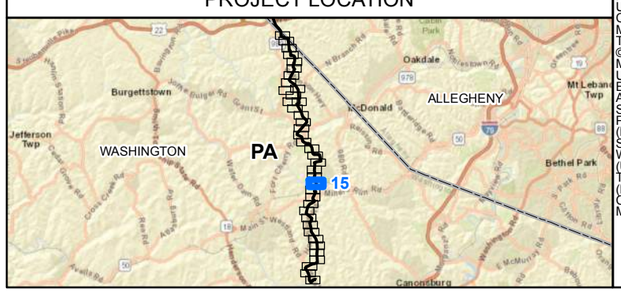
PITTSBURGH DISTRICT
SHEET 14 OF 39
WASHINGTON COUNTY, PENNSYLVANIA

SHELL PIPELINE COMPANY LP FALCON ETHANE PIPELINE SYSTEM

DRAWN BY: PMH DATE: 9/12/2017
APPROVED: NLS PROJECT #:60536988



PROJECT LOCATION



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COORDINATE SYSTEM: NAD 1983 UTM ZONE 17NTRANSVERSE MERCATOR

1 inch = 200 feet

0 100 200 400 Feet

LEGEND

- VALVE
- BRIDGE
- CULVERT LOCATION
- MILEPOST

PUBLIC WATER SUPPLY

- AGRICULTURAL USE
- COMMERCIAL USE
- INDUSTRIAL USE
- MINERAL USE
- OIL AND GAS
- SEWAGE TREATMENT

- PROPOSED HOUSTON TO JUNCTION PIPELINE
- PERMANENT ACCESS ROAD
- TEMPORARY ACCESS ROAD
- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- NHD FLOWLINE

SURVEYED WATERBODY

- EPHEMERAL
- INTERMITTENT
- PERENNIAL

DELINEATED WETLAND

- PEM
- PFO
- PSS
- PUB
- NWI WETLAND
- NHD WATERBODY
- RESOURCE CROSSING
- 50-FOOT FLOODWAY
- FEMA 100-YEAR FLOODPLAIN
- SOIL TYPE BOUNDARY
- LIMIT OF DISTURBANCE

- METER PAD FOOTPRINT
- METER SITE
- MUNICIPAL BOUNDARY
- COUNTY BOUNDARY
- STATE BOUNDARY

CULTURAL RESOURCES

- ISOLATED FINDS
- MODERN RESOURCE
- ARCHAEOLOGICAL SITE
- ABOVE GROUND RESOURCE
- PHMC SITE 1-MILE BUFFER

FALCON

SHELL PIPELINE COMPANY LP
HOUSTON, TX 77079

AECOM

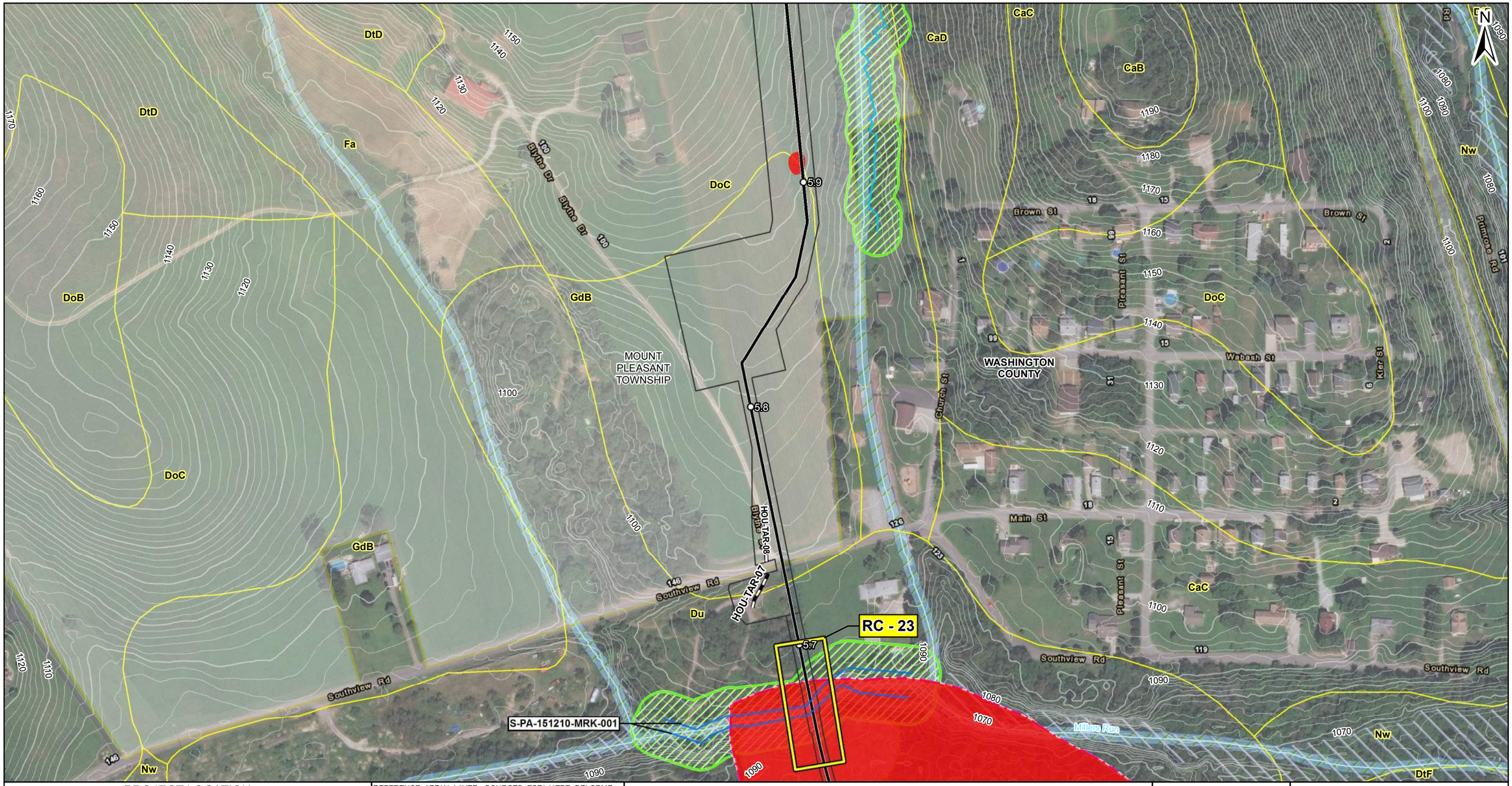
FOSTER PLAZA 6
681 ANDERSEN DRIVE
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

FIGURE 2

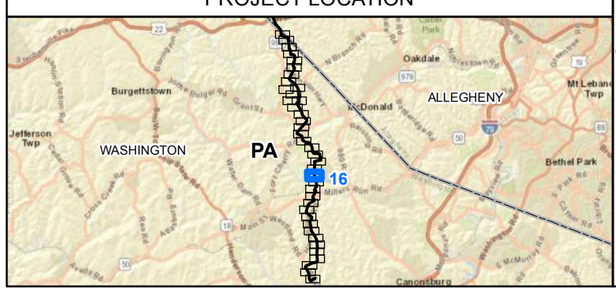
PLAN VIEW MAP
PITTSBURGH DISTRICT
SHEET 15 OF 39
WASHINGTON COUNTY, PENNSYLVANIA

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE SYSTEM

DRAWN BY: PMH DATE: 9/12/2017
APPROVED: NLS PROJECT #:60536988



PROJECT LOCATION



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LEGEND

- VALVE
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CULTURAL RESOURCES

- ISOLATED FINDS
- MODERN RESOURCE
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- PHMC SITE 1-MILE BUFFER

FALCON

SHELL PIPELINE COMPANY LP
HOUSTON, TX 77079

AECOM

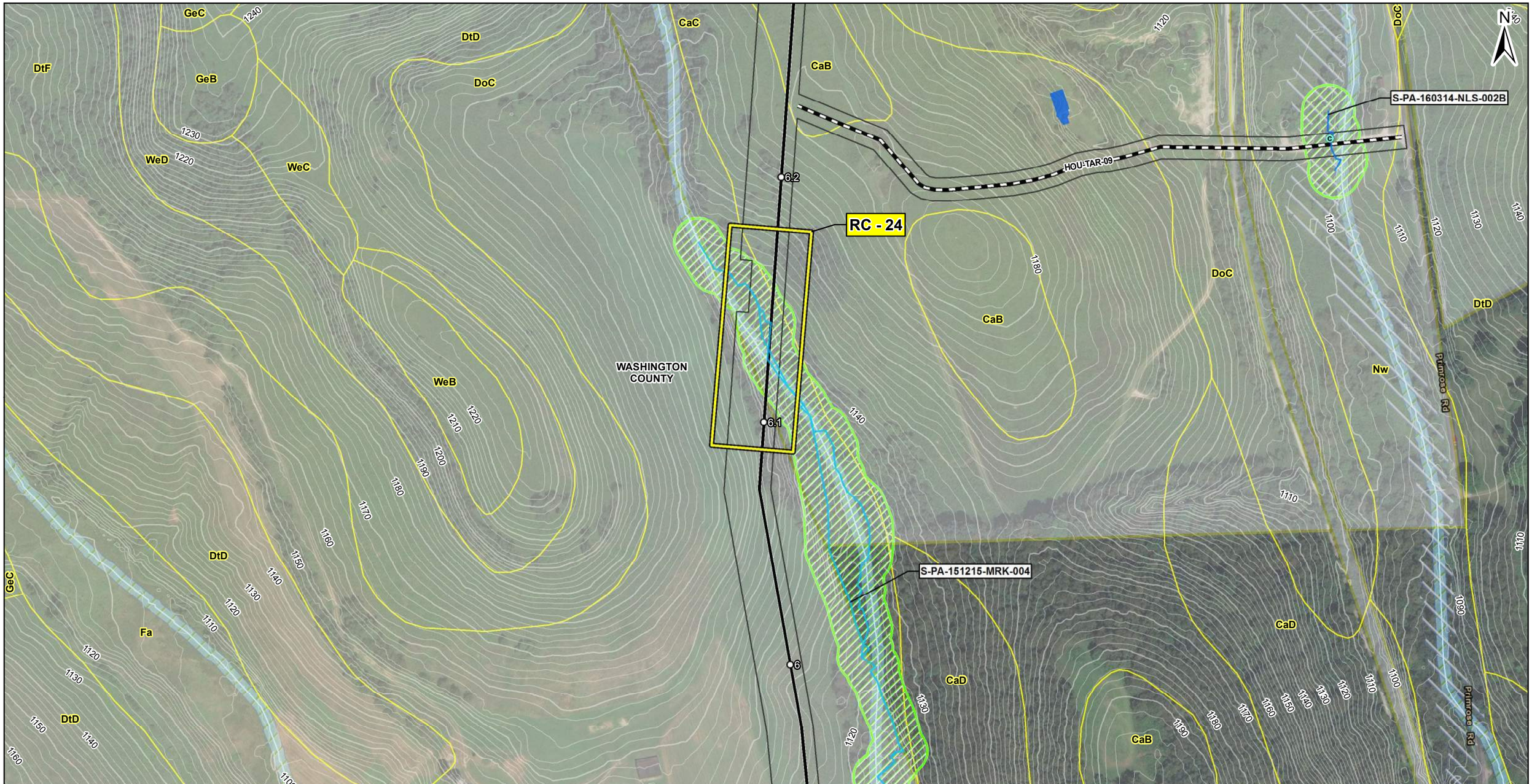
FOSTER PLAZA 6
681 ANDERSEN DRIVE
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

FIGURE 2

PLAN VIEW MAP
PITTSBURGH DISTRICT
SHEET 16 OF 39
WASHINGTON COUNTY, PENNSYLVANIA

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE SYSTEM

DRAWN BY: PMH DATE: 9/12/2017
APPROVED: NLS PROJECT #:60536988



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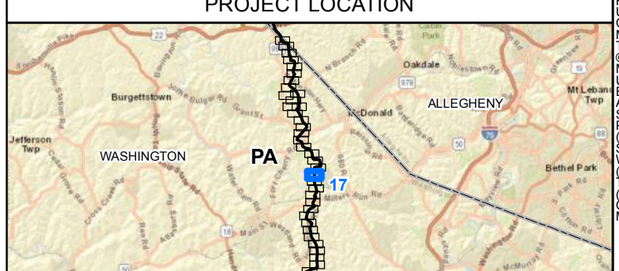

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FALCON

SHELL PIPELINE COMPANY LP
HOUSTON, TX 77079

AECOM

FOSTER PLAZA 6
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PITTSBURGH, PA 15220
412-503-4700

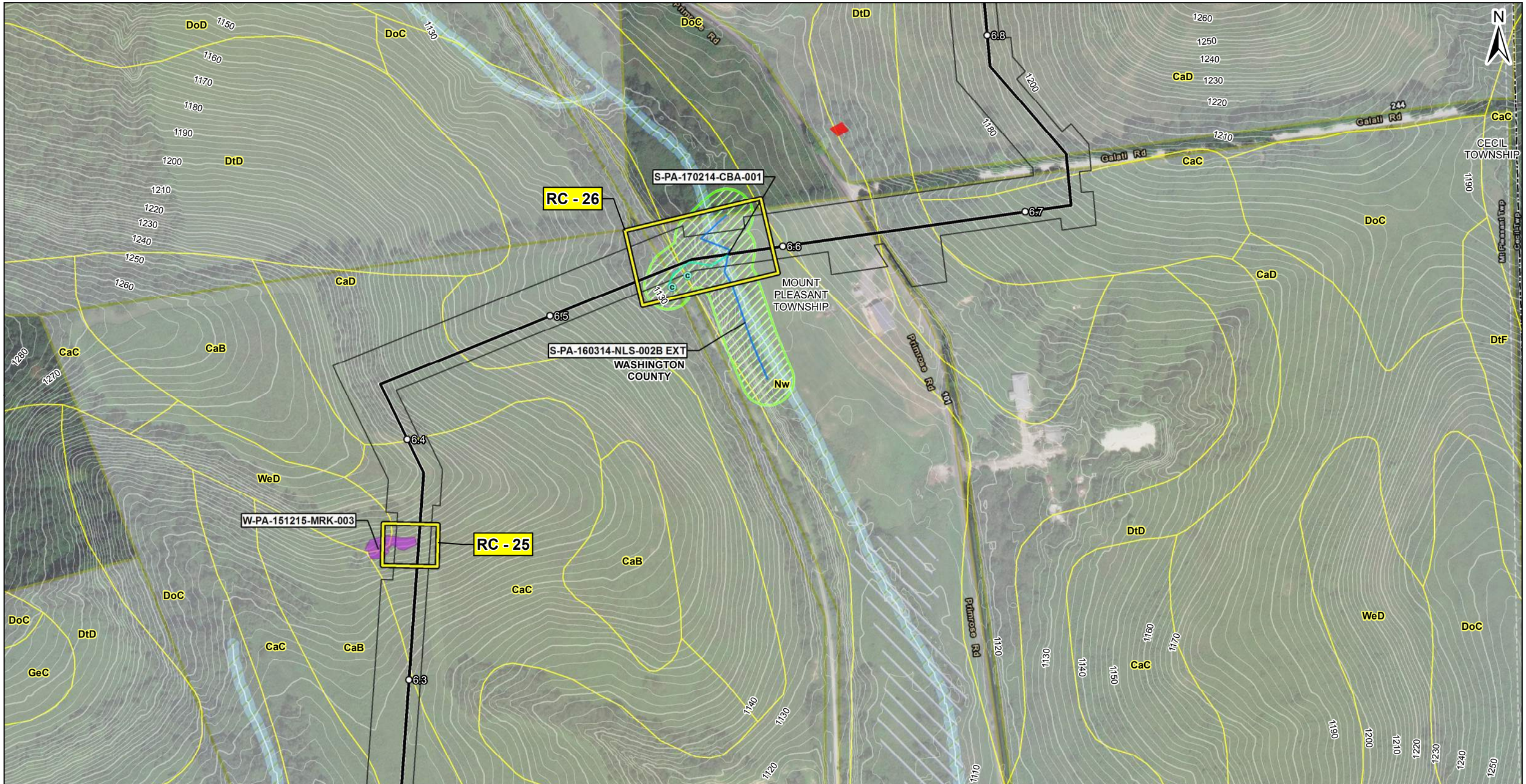
FIGURE 2

PLAN VIEW MAP

PITTSBURGH DISTRICT
SHEET 17 OF 39
WASHINGTON COUNTY, PENNSYLVANIA

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE SYSTEM

DRAWN BY: PMH DATE: 9/12/2017
APPROVED: NLS PROJECT #:60536988



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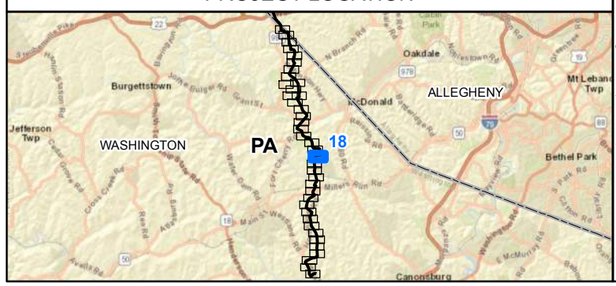

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HOUSTON, TX 77079

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

FIGURE 2

PLAN VIEW MAP

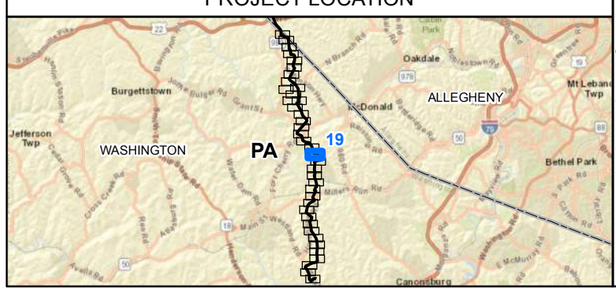
PITTSBURGH DISTRICT
SHEET 18 OF 39
WASHINGTON COUNTY, PENNSYLVANIA

SHELL PIPELINE COMPANY LP FALCON ETHANE PIPELINE SYSTEM

DRAWN BY: PMH DATE: 9/12/2017
APPROVED: NLS PROJECT #:60536988

RC - 30
RC - 29
RC - 28
RC - 27
S-PA-160404-CBA-001
S-PA-170214-CBA-002
W-PA-170413-RCL-005
S-PA-151208-MRK-003
W-PA-170413-RCL-001
W-PA-170214-CBA-003
HOU-TAR-10
HOU-PAR-02
Primrose Rd
Crawford Ln
MOUNT PLEASANT TOWNSHIP
WASHINGTON COUNTY
7.4
7.3
7.2
7.1
7
6.9
WeD
W
Fa
DoC
CaB
DtD
DoD
DoB
CaD
CaC
DtF
Nw

PROJECT LOCATION



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LEGEND

- VALVE
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- AGRICULTURAL USE
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FALCON

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HOUSTON, TX 77079

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

FIGURE 2

PLAN VIEW MAP
PITTSBURGH DISTRICT
SHEET 19 OF 39
WASHINGTON COUNTY, PENNSYLVANIA

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE SYSTEM

DRAWN BY: PMH DATE: 9/12/2017
APPROVED: NLS PROJECT #:60536988

RC - 31

W-PA-170215-CBA-002

Fort Cherry Golf Course

WASHINGTON COUNTY

Primrose Rd

13 Primrose Rd

7.7 7.6 7.5 7.4

DoD DoC WeD CaB CaD W DtD DoB Fa

PROJECT LOCATION

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LEGEND

- VALVE
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- MILEPOST

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FALCON

SHELL PIPELINE COMPANY LP
HOUSTON, TX 77079

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

FIGURE 2

PLAN VIEW MAP

PITTSBURGH DISTRICT
SHEET 20 OF 39
WASHINGTON COUNTY, PENNSYLVANIA

SHELL PIPELINE COMPANY LP FALCON ETHANE PIPELINE SYSTEM

DRAWN BY: PMH DATE: 9/12/2017
APPROVED: NLS PROJECT #:60536988

RC - 34

RC - 33

RC - 32

W-PA-151208-MRK-006

S-PA-151109-MRK-003

S-PA-170215-CBA-004

S-PA-170214-CBA-005

S-PA-170214-CBA-006

W-PA-170214-CBA-005

HOU-TAR-11

MOUNT PLEASANT TOWNSHIP

WASHINGTON COUNTY

Fort Cherry Rd

Primrose Rd

Gilbert Ln

Jacobs Rd

Fort Cherry Golf Cou

8.2

8.1

8

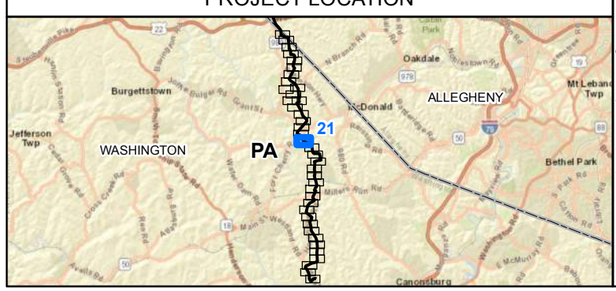
7.9

7.8

7.7

CaD DoD DtF DtD DoC WeC WeB WeD UdB CaB Fa Nw W

PROJECT LOCATION



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- PFO
- PSS
- PUB
- NWI WETLAND
- NHD WATERBODY
- RESOURCE CROSSING
- 50-FOOT FLOODWAY
- FEMA 100-YEAR FLOODPLAIN
- SOIL TYPE BOUNDARY
- LIMIT OF DISTURBANCE

- METER PAD FOOTPRINT
- METER SITE
- MUNICIPAL BOUNDARY
- COUNTY BOUNDARY
- STATE BOUNDARY

CULTURAL RESOURCES

- ISOLATED FINDS
- MODERN RESOURCE
- ARCHAEOLOGICAL SITE
- ABOVE GROUND RESOURCE
- PHMC SITE 1-MILE BUFFER

FALCON

SHELL PIPELINE COMPANY LP
HOUSTON, TX 77079

AECOM

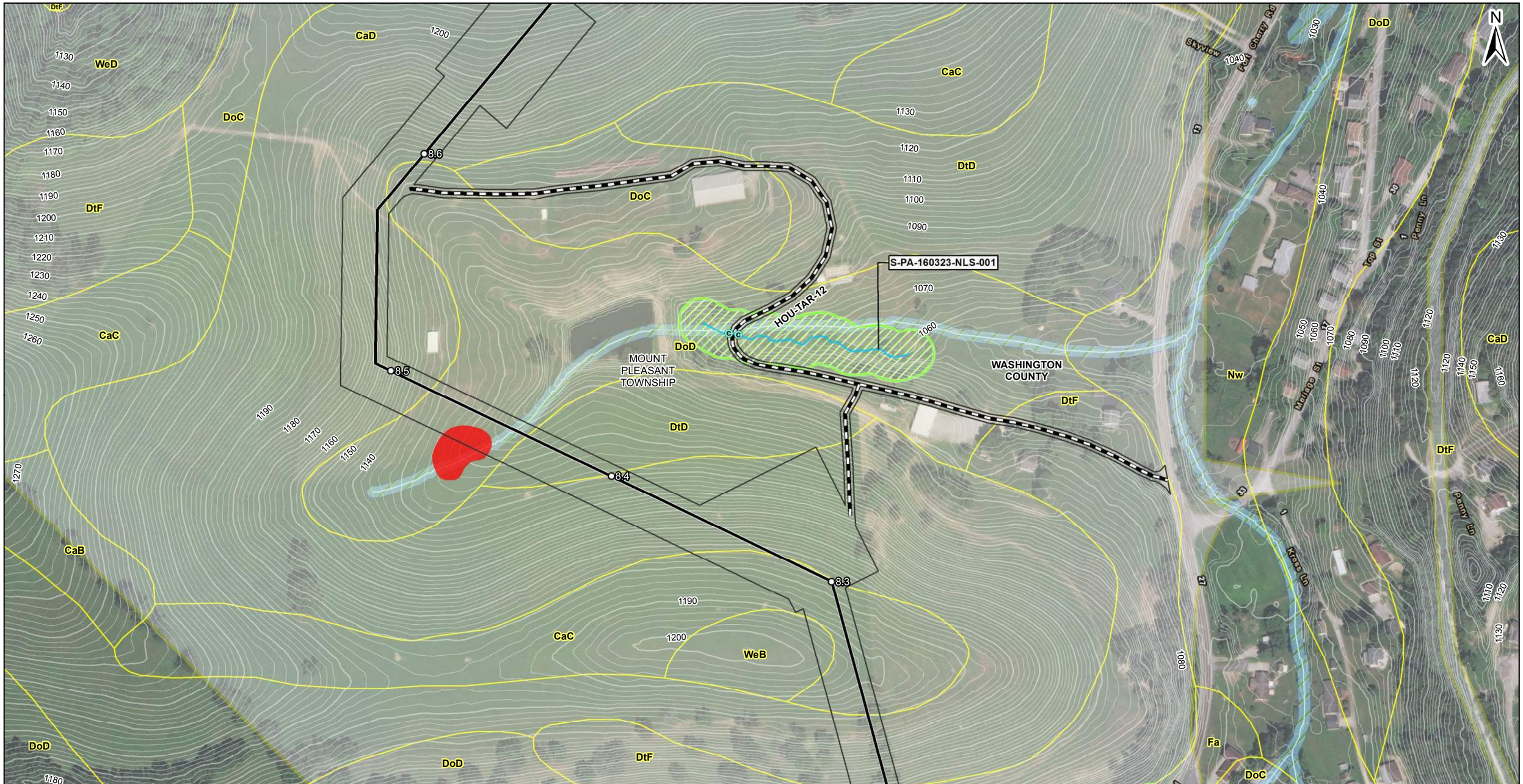
FOSTER PLAZA 6
681 ANDERSEN DRIVE
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

FIGURE 2

PLAN VIEW MAP
PITTSBURGH DISTRICT
SHEET 21 OF 39
WASHINGTON COUNTY, PENNSYLVANIA

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE SYSTEM

DRAWN BY: PMH DATE: 9/12/2017
APPROVED: NLS PROJECT #:60536988



PROJECT LOCATION

REFERENCE: AERIAL LAYER - SOURCES: ESRI, HERE, DELORME, USGS, INTERMAP, INCREMENT P, NRCAN, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), ESRI KOREA, ESRI (THAILAND), MAPMYINDIA, NGCC, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY, ESRI, HERE, DELORME, MAPMYINDIA, © OPENSTREETMAP CONTRIBUTORS, ESRI, HERE, DELORME, MAPMYINDIA, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY. SOURCE: ESRI, DIGITALGLOBE, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRID, IGN, AND THE GIS USER COMMUNITY. PUBLIC WATER SUPPLY, PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (PADEP), 2017. NATIONAL HYDROGRAPHY DATASET (NHD) FLOWLINE AND WATERBODY, UNITED STATES GEOLOGICAL SURVEY (USGS), 2017. NATIONAL WETLAND INVENTORY (NWI) WETLANDS, UNITED STATES FISH AND WILDLIFE SERVICE (USFWS), 2017. FLOODWAYS ARE AN ASSUMED 50' WIDE FROM TOPS OF BANKS. FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) 100 YEAR FLOODPLAIN, 2013.
COORDINATE SYSTEM: NAD 1983 UTM ZONE 17NTRANSVERSE MERCATOR

1 inch = 200 feet

0 100 200 400 Feet

LEGEND

- VALVE
- BRIDGE
- CULVERT LOCATION
- MILEPOST

PUBLIC WATER SUPPLY

- AGRICULTURAL USE
- COMMERCIAL USE
- INDUSTRIAL USE
- MINERAL USE
- OIL AND GAS
- SEWAGE TREATMENT

- PROPOSED HOUSTON TO JUNCTION PIPELINE
- PERMANENT ACCESS ROAD
- TEMPORARY ACCESS ROAD
- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- NHD FLOWLINE

SURVEYED WATERBODY

- EPHEMERAL
- INTERMITTENT
- PERENNIAL

DELINEATED WETLAND

- PEM
- PFO
- PSS
- PUB
- NWI WETLAND
- NHD WATERBODY
- RESOURCE CROSSING
- 50-FOOT FLOODWAY
- FEMA 100-YEAR FLOODPLAIN
- SOIL TYPE BOUNDARY
- LIMIT OF DISTURBANCE

- METER PAD FOOTPRINT
- METER SITE
- MUNICIPAL BOUNDARY
- COUNTY BOUNDARY
- STATE BOUNDARY

CULTURAL RESOURCES

- ISOLATED FINDS
- MODERN RESOURCE
- ARCHAEOLOGICAL SITE
- ABOVE GROUND RESOURCE
- PHMC SITE 1-MILE BUFFER

FALCON

SHELL PIPELINE COMPANY LP
HOUSTON, TX 77079

AECOM

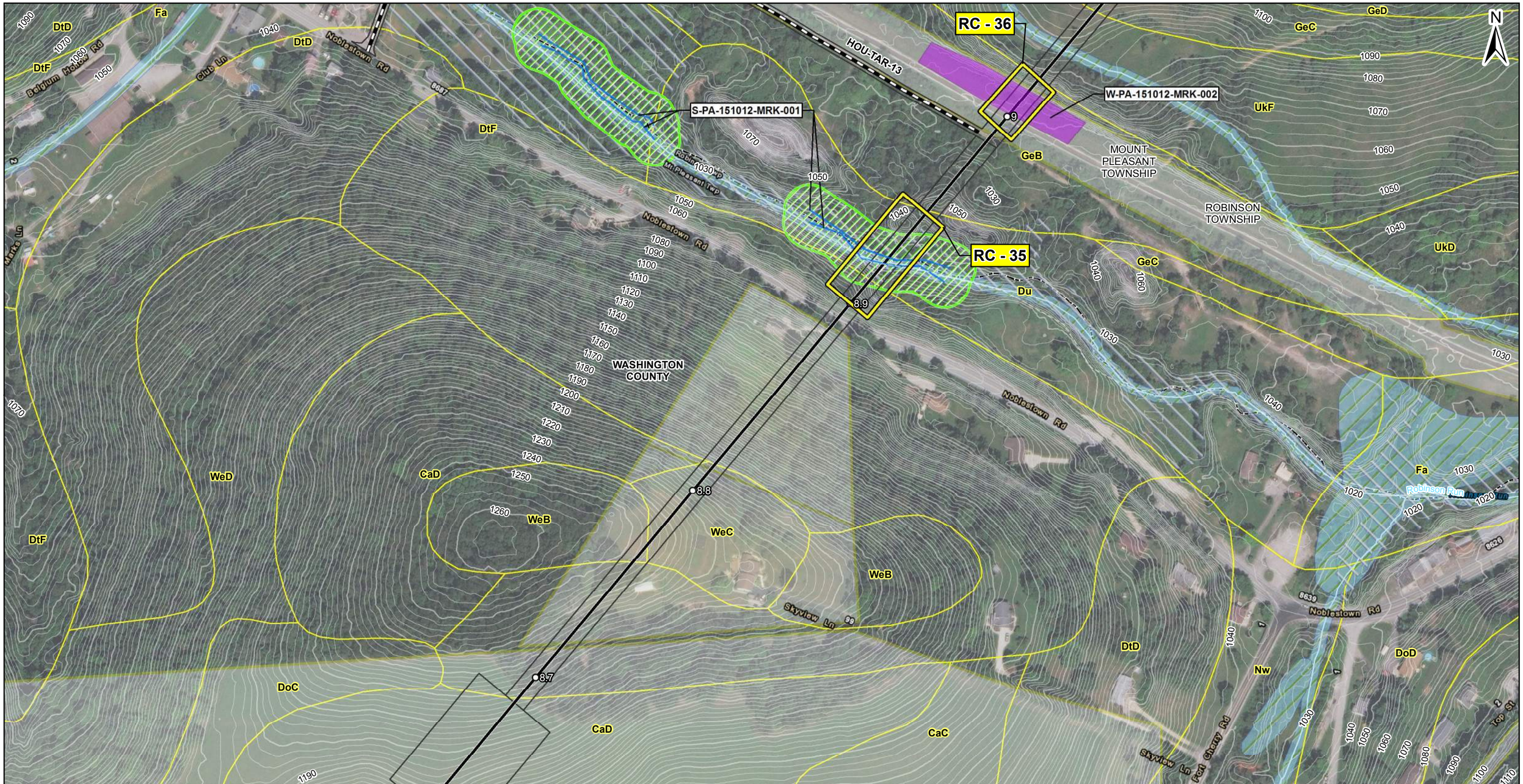
FOSTER PLAZA 6
681 ANDERSEN DRIVE
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

FIGURE 2

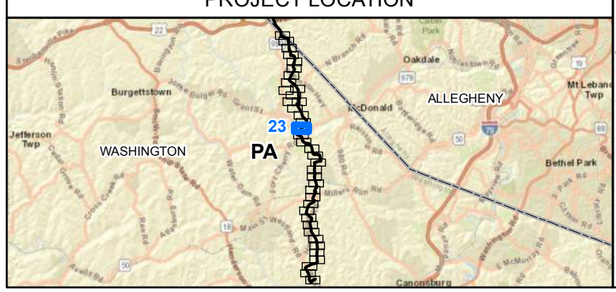
PLAN VIEW MAP
PITTSBURGH DISTRICT
SHEET 22 OF 39
WASHINGTON COUNTY, PENNSYLVANIA

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE SYSTEM

DRAWN BY: PMH DATE: 9/12/2017
APPROVED: NLS PROJECT #:60536988



PROJECT LOCATION



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COORDINATE SYSTEM: NAD 1983 UTM ZONE 17NTRANSVERSE MERCATOR

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LEGEND

- VALVE
- BRIDGE
- CULVERT LOCATION
- MILEPOST

PUBLIC WATER SUPPLY

- AGRICULTURAL USE
- COMMERCIAL USE
- INDUSTRIAL USE
- MINERAL USE
- OIL AND GAS
- SEWAGE TREATMENT

- PROPOSED HOUSTON TO JUNCTION PIPELINE
- PERMANENT ACCESS ROAD
- TEMPORARY ACCESS ROAD
- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- NHD FLOWLINE

SURVEYED WATERBODY

- EPHEMERAL
- INTERMITTENT
- PERENNIAL

DELINEATED WETLAND

- PEM
- PFO
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- RESOURCE CROSSING
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- SOIL TYPE BOUNDARY
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- METER PAD FOOTPRINT
- METER SITE
- MUNICIPAL BOUNDARY
- COUNTY BOUNDARY
- STATE BOUNDARY

CULTURAL RESOURCES

- ISOLATED FINDS
- MODERN RESOURCE
- ARCHAEOLOGICAL SITE
- ABOVE GROUND RESOURCE
- PHMC SITE 1-MILE BUFFER

FALCON

SHELL PIPELINE COMPANY LP
HOUSTON, TX 77079

AECOM

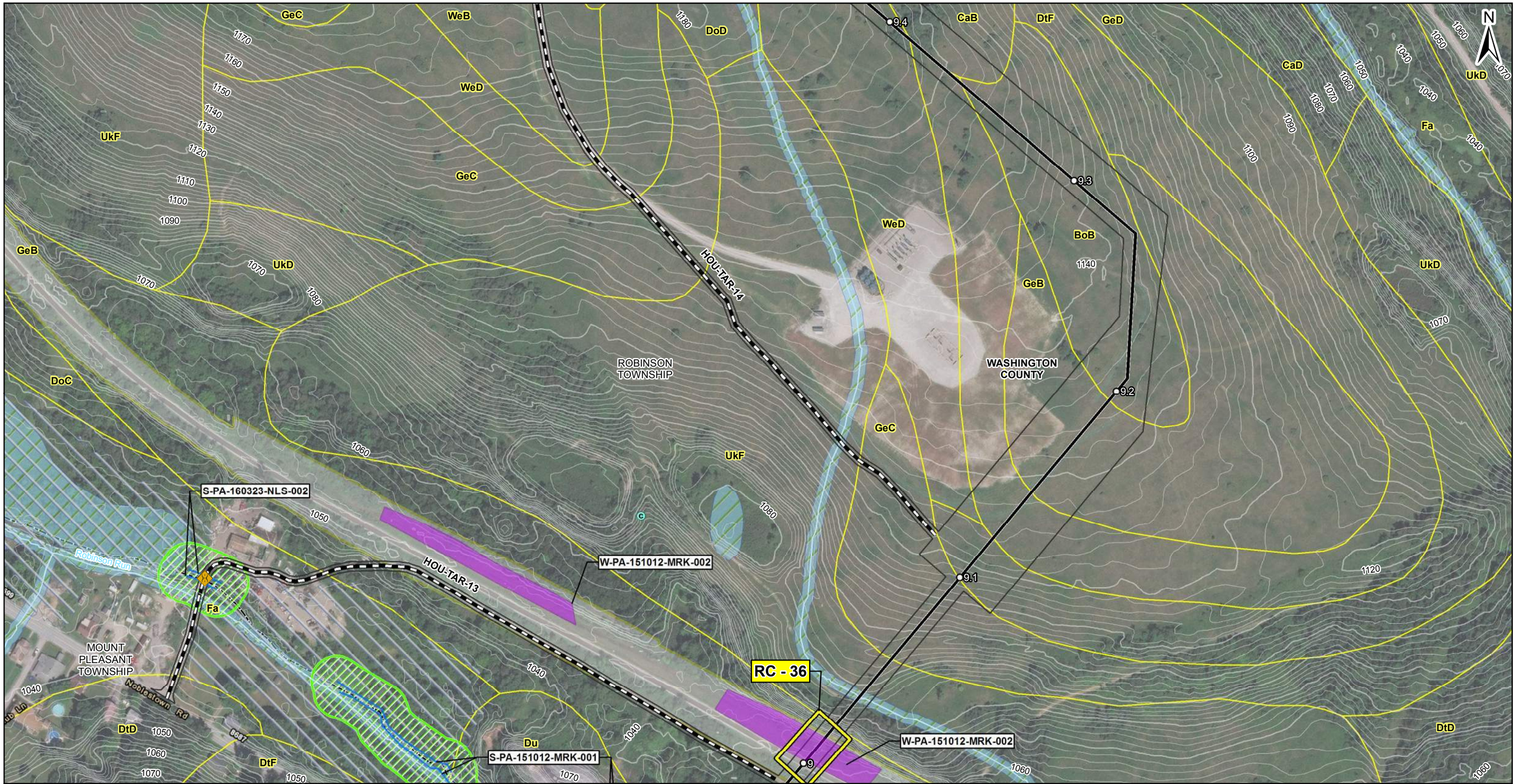
FOSTER PLAZA 6
681 ANDERSEN DRIVE
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

FIGURE 2

PLAN VIEW MAP
PITTSBURGH DISTRICT
SHEET 23 OF 39
WASHINGTON COUNTY, PENNSYLVANIA

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE SYSTEM

DRAWN BY: PMH DATE: 9/12/2017
APPROVED: NLS PROJECT #:60536988



PROJECT LOCATION

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COORDINATE SYSTEM: NAD 1983 UTM ZONE 17NTRANSVERSE MERCATOR

1 inch = 200 feet

0 100 200 400 Feet

LEGEND

- VALVE
- BRIDGE
- CULVERT LOCATION
- MILEPOST

PUBLIC WATER SUPPLY

- AGRICULTURAL USE
- COMMERCIAL USE
- INDUSTRIAL USE
- MINERAL USE
- OIL AND GAS
- SEWAGE TREATMENT

- PROPOSED HOUSTON TO JUNCTION PIPELINE
- PERMANENT ACCESS ROAD
- TEMPORARY ACCESS ROAD
- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- NHD FLOWLINE

SURVEYED WATERBODY

- EPHEMERAL
- INTERMITTENT
- PERENNIAL

DELINEATED WETLAND

- PEM
- PFO
- PSS
- PUB
- NWI WETLAND
- NHD WATERBODY
- RESOURCE CROSSING
- 50-FOOT FLOODWAY
- FEMA 100-YEAR FLOODPLAIN
- SOIL TYPE BOUNDARY
- LIMIT OF DISTURBANCE

- METER PAD FOOTPRINT
- METER SITE
- MUNICIPAL BOUNDARY
- COUNTY BOUNDARY
- STATE BOUNDARY

CULTURAL RESOURCES

- ISOLATED FINDS
- MODERN RESOURCE
- ARCHAEOLOGICAL SITE
- ABOVE GROUND RESOURCE
- PHMC SITE 1-MILE BUFFER

FALCON

SHELL PIPELINE COMPANY LP
HOUSTON, TX 77079

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

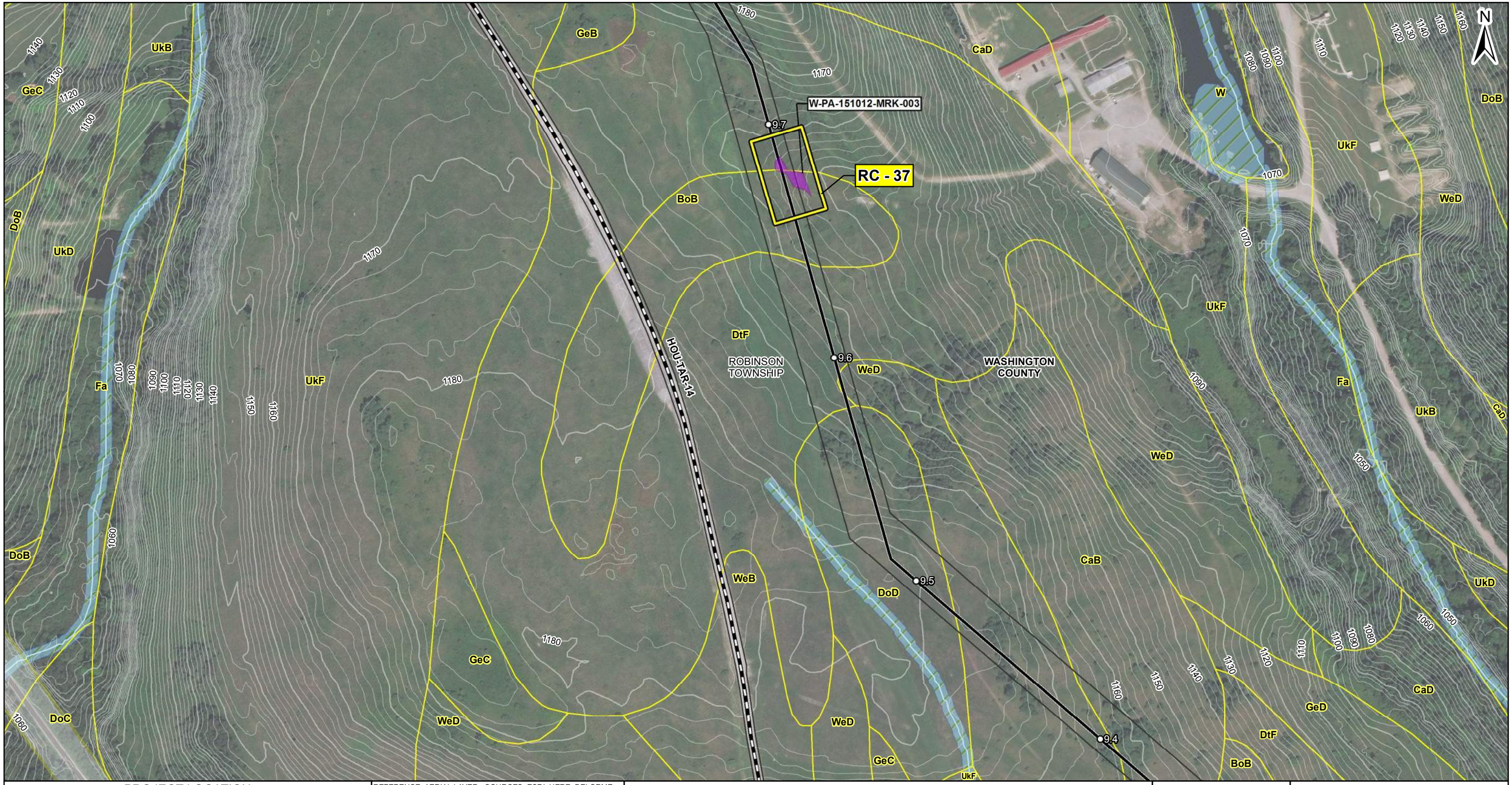
FIGURE 2

PLAN VIEW MAP

PITTSBURGH DISTRICT
SHEET 24 OF 39
WASHINGTON COUNTY, PENNSYLVANIA

SHELL PIPELINE COMPANY LP FALCON ETHANE PIPELINE SYSTEM

DRAWN BY: PMH DATE: 9/12/2017
APPROVED: NLS PROJECT #:60536988



PROJECT LOCATION

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COORDINATE SYSTEM: NAD 1983 UTM ZONE 17NTRANSVERSE MERCATOR

1 inch = 200 feet

0 100 200 400 Feet

LEGEND

- VALVE
- BRIDGE
- CULVERT LOCATION
- MILEPOST

PUBLIC WATER SUPPLY

- AGRICULTURAL USE
- COMMERCIAL USE
- INDUSTRIAL USE
- MINERAL USE
- OIL AND GAS
- SEWAGE TREATMENT

- PROPOSED HOUSTON TO JUNCTION PIPELINE
- PERMANENT ACCESS ROAD
- TEMPORARY ACCESS ROAD
- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- NHD FLOWLINE

SURVEYED WATERBODY

- EPHEMERAL
- INTERMITTENT
- PERENNIAL

DELINEATED WETLAND

- PEM
- PFO
- PSS
- PUB
- NWI WETLAND
- NHD WATERBODY
- RESOURCE CROSSING
- 50-FOOT FLOODWAY
- FEMA 100-YEAR FLOODPLAIN
- SOIL TYPE BOUNDARY
- LIMIT OF DISTURBANCE

- METER PAD FOOTPRINT
- METER SITE
- MUNICIPAL BOUNDARY
- COUNTY BOUNDARY
- STATE BOUNDARY

CULTURAL RESOURCES

- ISOLATED FINDS
- MODERN RESOURCE
- ARCHAEOLOGICAL SITE
- ABOVE GROUND RESOURCE
- PHMC SITE 1-MILE BUFFER

FALCON

SHELL PIPELINE COMPANY LP
HOUSTON, TX 77079

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

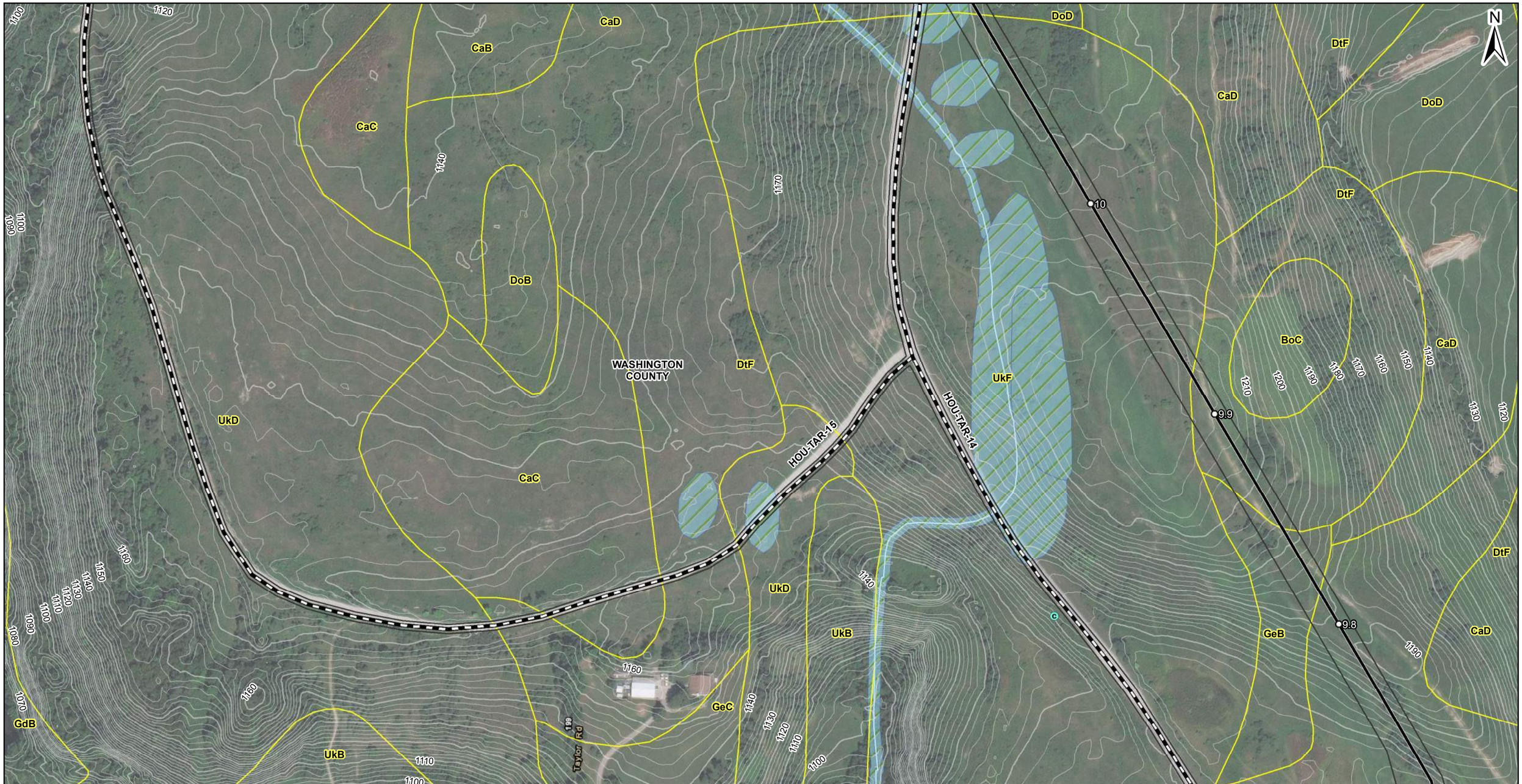
FIGURE 2

PLAN VIEW MAP

PITTSBURGH DISTRICT
SHEET 25 OF 39
WASHINGTON COUNTY, PENNSYLVANIA

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE SYSTEM

DRAWN BY: PMH DATE: 9/12/2017
APPROVED: NLS PROJECT #:60536988



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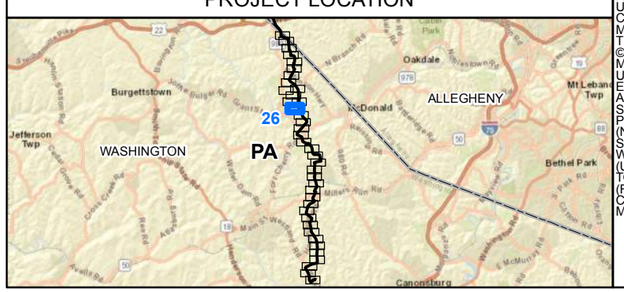

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COORDINATE SYSTEM: NAD 1983 UTM ZONE 17NTRANSVERSE MERCATOR

1 inch = 200 feet

0 100 200 400 Feet

LEGEND

- VALVE
- BRIDGE
- CULVERT LOCATION
- MILEPOST

PUBLIC WATER SUPPLY

- AGRICULTURAL USE
- COMMERCIAL USE
- INDUSTRIAL USE
- MINERAL USE
- OIL AND GAS
- SEWAGE TREATMENT

- PROPOSED HOUSTON TO JUNCTION PIPELINE
- PERMANENT ACCESS ROAD
- TEMPORARY ACCESS ROAD
- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- NHD FLOWLINE

SURVEYED WATERBODY

- EPHEMERAL
- INTERMITTENT
- PERENNIAL

DELINEATED WETLAND

- PEM
- PFO
- PSS
- PUB
- NWI WETLAND
- NHD WATERBODY
- RESOURCE CROSSING
- 50-FOOT FLOODWAY
- FEMA 100-YEAR FLOODPLAIN
- SOIL TYPE BOUNDARY
- LIMIT OF DISTURBANCE

- METER PAD FOOTPRINT
- METER SITE
- MUNICIPAL BOUNDARY
- COUNTY BOUNDARY
- STATE BOUNDARY

CULTURAL RESOURCES

- ISOLATED FINDS
- MODERN RESOURCE
- ARCHAEOLOGICAL SITE
- ABOVE GROUND RESOURCE
- PHMC SITE 1-MILE BUFFER

FALCON

SHELL PIPELINE COMPANY LP
HOUSTON, TX 77079

AECOM

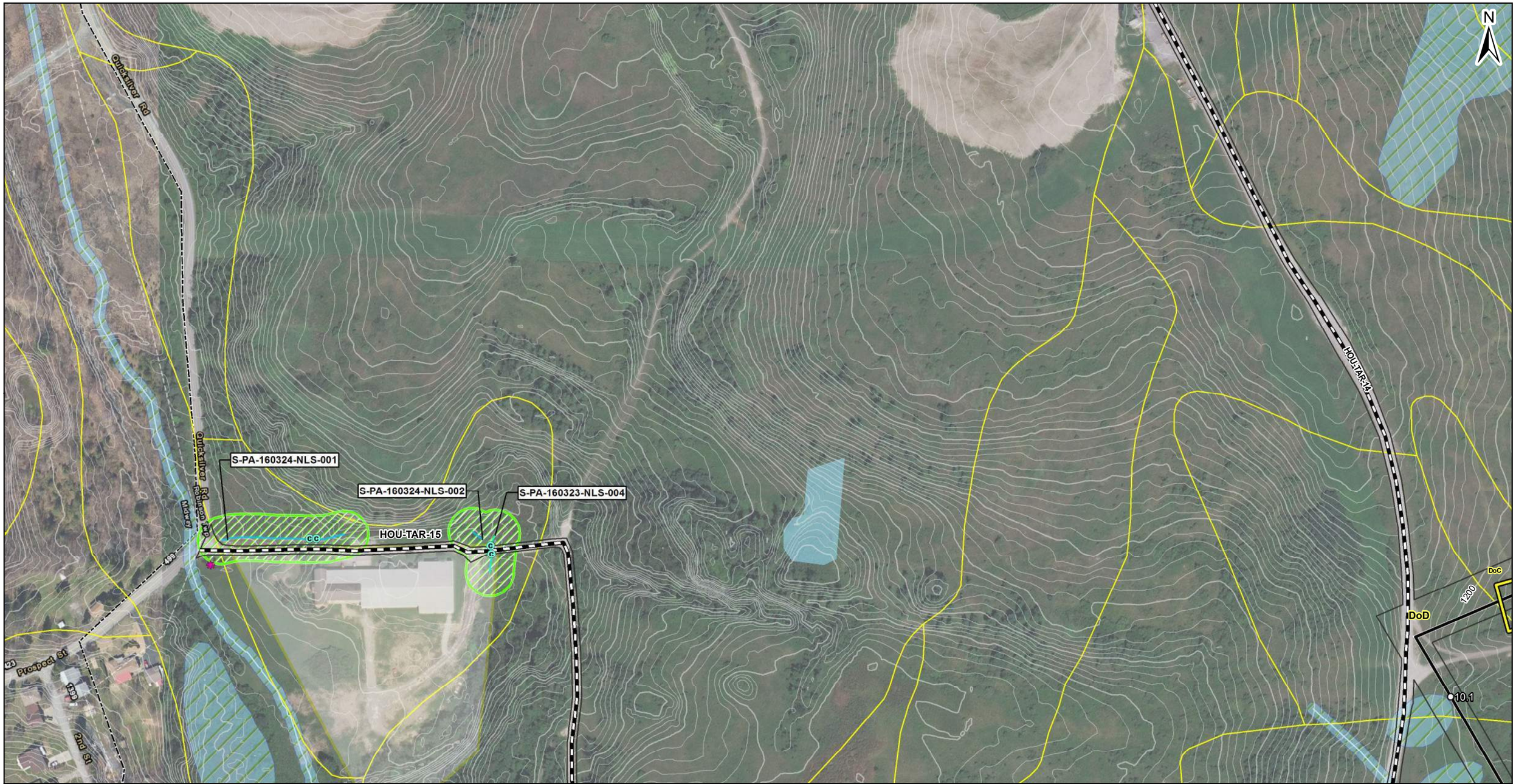
FOSTER PLAZA 6
681 ANDERSEN DRIVE
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

FIGURE 2

PLAN VIEW MAP
PITTSBURGH DISTRICT
SHEET 26 OF 39
WASHINGTON COUNTY, PENNSYLVANIA

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE SYSTEM

DRAWN BY: PMH DATE: 9/12/2017
APPROVED: NLS PROJECT #:60536988



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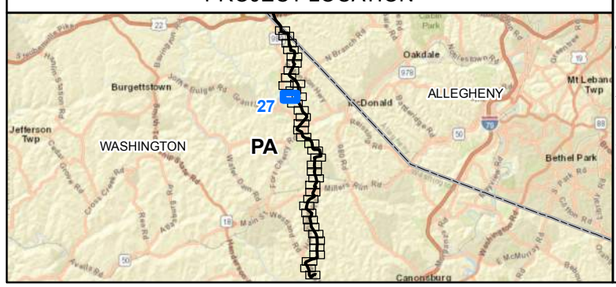

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COORDINATE SYSTEM: NAD 1983 UTM ZONE 17NTRANSVERSE MERCATOR

1 inch = 200 feet

0 100 200 400 Feet

LEGEND

- VALVE
- BRIDGE
- CULVERT LOCATION
- MILEPOST

PUBLIC WATER SUPPLY

- AGRICULTURAL USE
- COMMERCIAL USE
- INDUSTRIAL USE
- MINERAL USE
- OIL AND GAS
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- PROPOSED HOUSTON TO JUNCTION PIPELINE
- PERMANENT ACCESS ROAD
- TEMPORARY ACCESS ROAD
- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- NHD FLOWLINE

SURVEYED WATERBODY

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DELINEATED WETLAND

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CULTURAL RESOURCES

- ISOLATED FINDS
- MODERN RESOURCE
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- PHMC SITE 1-MILE BUFFER

FALCON

SHELL PIPELINE COMPANY LP
HOUSTON, TX 77079

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

FIGURE 2

PLAN VIEW MAP

PITTSBURGH DISTRICT
SHEET 27 OF 39
WASHINGTON COUNTY, PENNSYLVANIA

SHELL PIPELINE COMPANY LP FALCON ETHANE PIPELINE SYSTEM

DRAWN BY: PMH DATE: 9/12/2017
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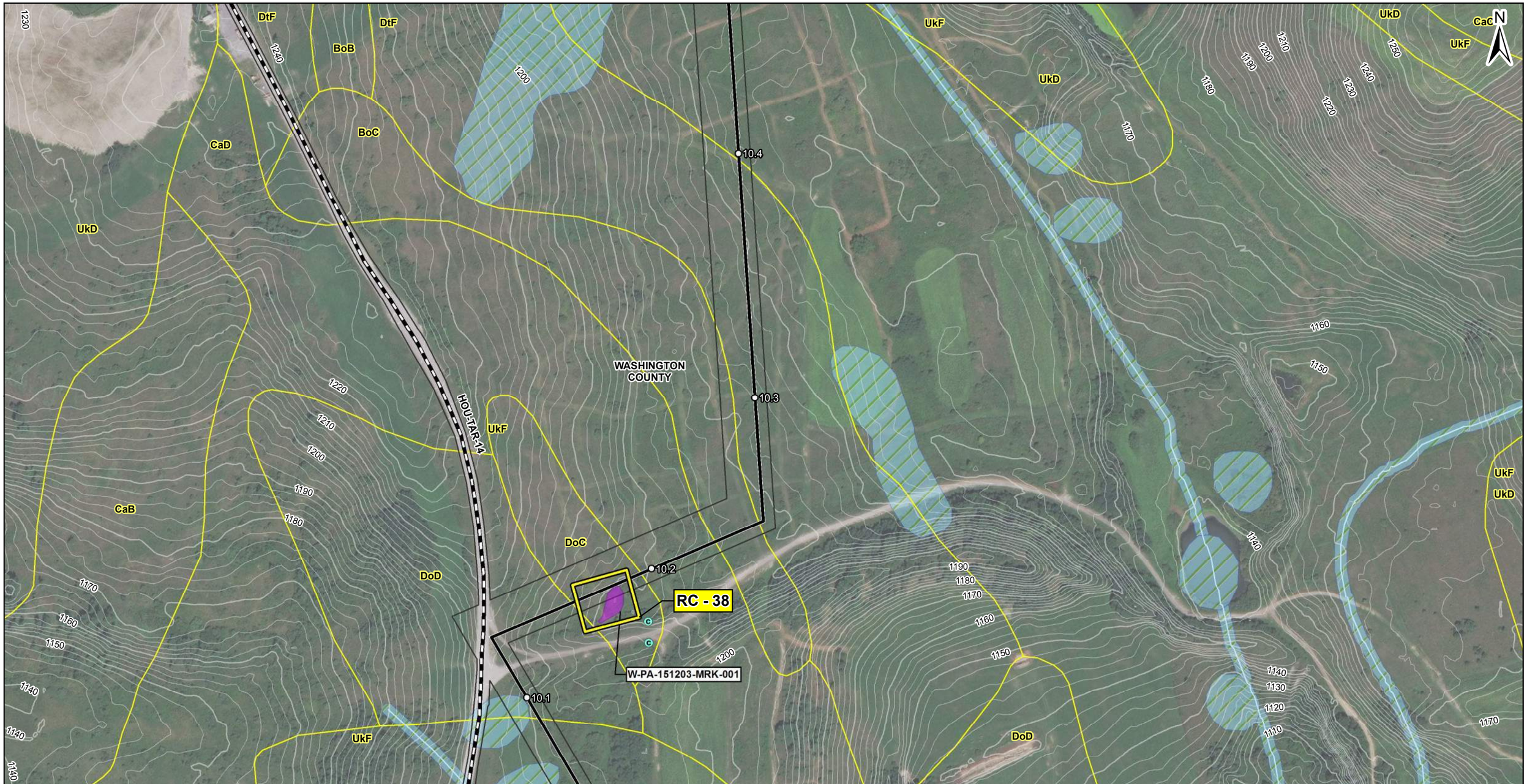

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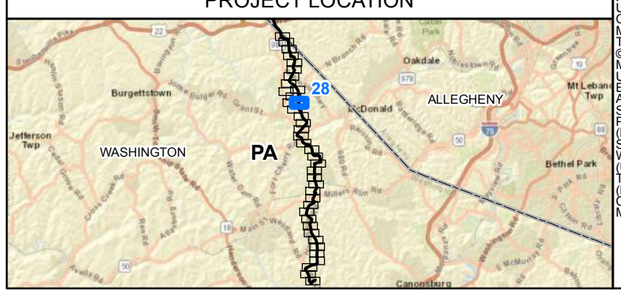

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- STATE BOUNDARY

CULTURAL RESOURCES

- ISOLATED FINDS
- MODERN RESOURCE
- ARCHAEOLOGICAL SITE
- ABOVE GROUND RESOURCE
- PHMC SITE 1-MILE BUFFER

FALCON

SHELL PIPELINE COMPANY LP
HOUSTON, TX 77079

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

FIGURE 2

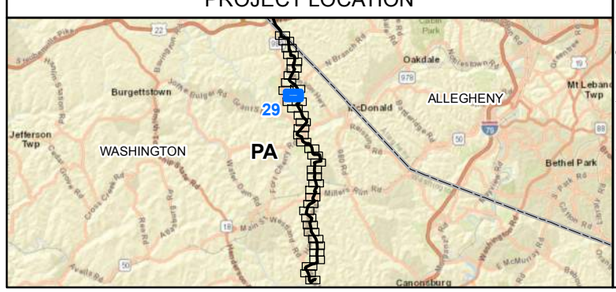
PLAN VIEW MAP

PITTSBURGH DISTRICT
SHEET 28 OF 39
WASHINGTON COUNTY, PENNSYLVANIA

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE SYSTEM

DRAWN BY: PMH DATE: 9/12/2017
APPROVED: NLS PROJECT #:60536988

PROJECT LOCATION



REFERENCE: AERIAL LAYER - SOURCES: ESRI, HERE, DELORME, USGS, INTERMAP, INCREMENT P, NRCAN, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), ESRI KOREA, ESRI (THAILAND), MAPMYINDIA, NGCC, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY, ESRI, HERE, DELORME, MAPMYINDIA, © OPENSTREETMAP CONTRIBUTORS, ESRI, HERE, DELORME, MAPMYINDIA, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY, SOURCE: ESRI, DIGITALGLOBE, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRID, IGN, AND THE GIS USER COMMUNITY. PUBLIC WATER SUPPLY, PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (PADEP), 2017. NATIONAL HYDROGRAPHY DATASET (NHD) FLOWLINE AND WATERBODY, UNITED STATES GEOLOGICAL SURVEY (USGS), 2017. NATIONAL WETLAND INVENTORY (NWI) WETLANDS, UNITED STATES FISH AND WILDLIFE SERVICE (USFWS), 2017. FLOODWAYS ARE AN ASSUMED 50' WIDE FROM TOPS OF BANKS. FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) 100 YEAR FLOODPLAIN, 2013.
COORDINATE SYSTEM: NAD 1983 UTM ZONE 17NTRANSVERSE MERCATOR

1 inch = 200 feet

0 100 200 400 Feet

LEGEND

- VALVE
- BRIDGE
- CULVERT LOCATION
- MILEPOST

PUBLIC WATER SUPPLY

- AGRICULTURAL USE
- COMMERCIAL USE
- INDUSTRIAL USE
- MINERAL USE
- OIL AND GAS
- SEWAGE TREATMENT

- PROPOSED HOUSTON TO JUNCTION PIPELINE
- PERMANENT ACCESS ROAD
- TEMPORARY ACCESS ROAD
- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- NHD FLOWLINE

SURVEYED WATERBODY

- EPHEMERAL
- INTERMITTENT
- PERENNIAL

DELINEATED WETLAND

- PEM
- PFO
- PSS
- PUB
- NWI WETLAND
- NHD WATERBODY
- RESOURCE CROSSING
- 50-FOOT FLOODWAY
- FEMA 100-YEAR FLOODPLAIN
- SOIL TYPE BOUNDARY
- LIMIT OF DISTURBANCE

- METER PAD FOOTPRINT
- METER SITE
- MUNICIPAL BOUNDARY
- COUNTY BOUNDARY
- STATE BOUNDARY

CULTURAL RESOURCES

- ISOLATED FINDS
- MODERN RESOURCE
- ARCHAEOLOGICAL SITE
- ABOVE GROUND RESOURCE
- PHMC SITE 1-MILE BUFFER

FALCON

SHELL PIPELINE COMPANY LP
HOUSTON, TX 77079

AECOM

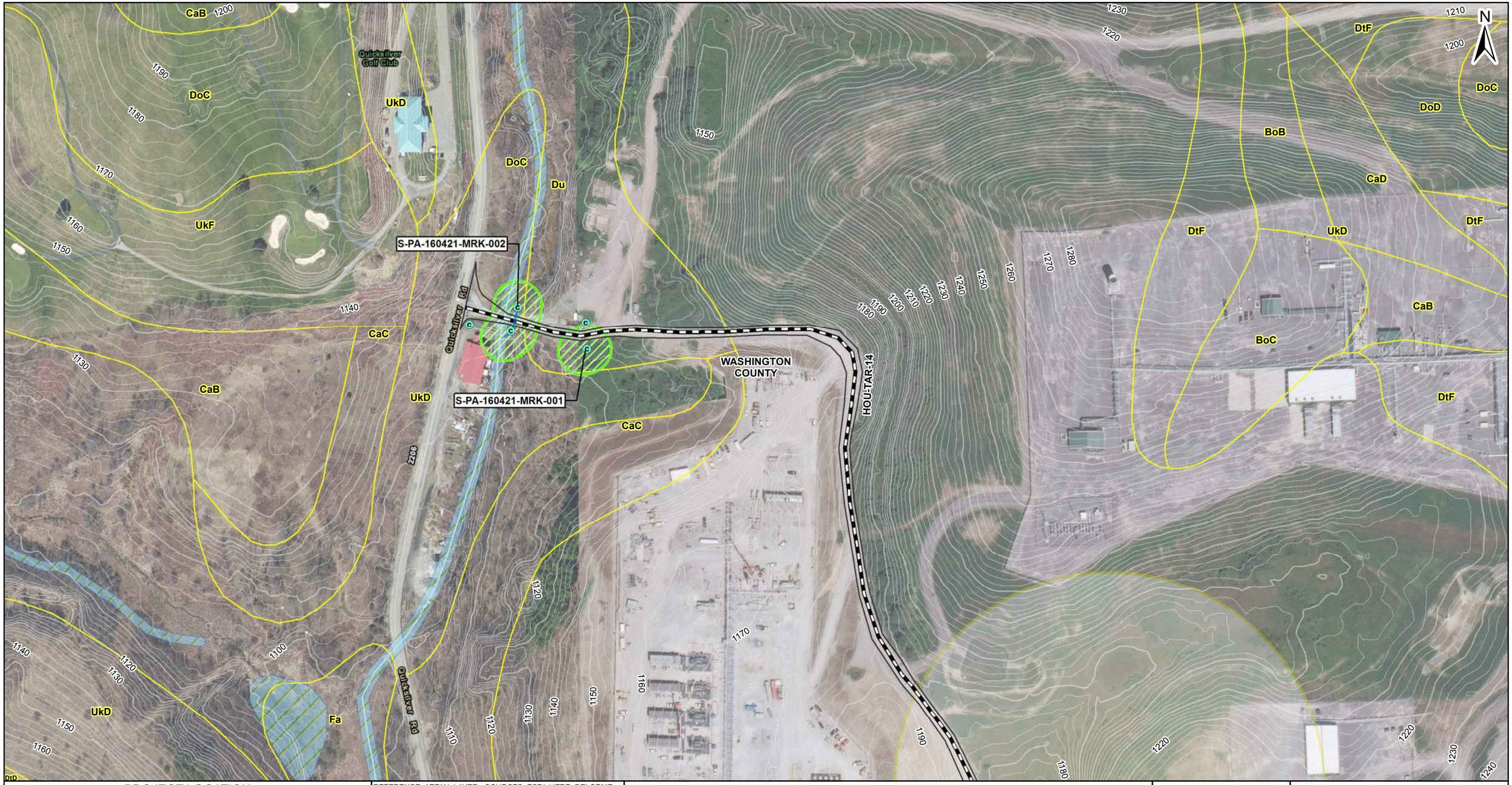
FOSTER PLAZA 6
681 ANDERSEN DRIVE
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

FIGURE 2

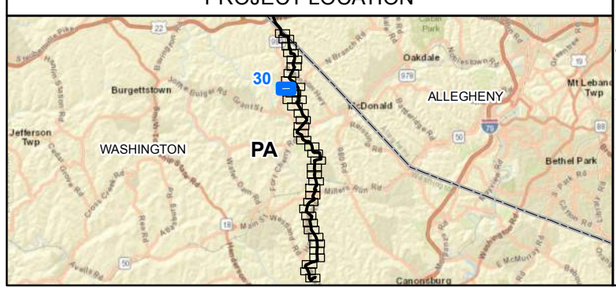
PLAN VIEW MAP
PITTSBURGH DISTRICT
SHEET 29 OF 39
WASHINGTON COUNTY, PENNSYLVANIA

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE SYSTEM

DRAWN BY: PMH DATE: 9/12/2017
APPROVED: NLS PROJECT #:60536988



PROJECT LOCATION



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LEGEND

- VALVE
- BRIDGE
- CULVERT LOCATION
- MILEPOST

PUBLIC WATER SUPPLY

- AGRICULTURAL USE
- COMMERCIAL USE
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- MINERAL USE
- OIL AND GAS
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- PROPOSED HOUSTON TO JUNCTION PIPELINE
- PERMANENT ACCESS ROAD
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- INDEX CONTOUR
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- NHD FLOWLINE

SURVEYED WATERBODY

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- INTERMITTENT
- PERENNIAL

DELINEATED WETLAND

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- PSS
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- NHD WATERBODY
- RESOURCE CROSSING
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- FEMA 100-YEAR FLOODPLAIN
- SOIL TYPE BOUNDARY
- LIMIT OF DISTURBANCE

- METER PAD FOOTPRINT
- METER SITE
- MUNICIPAL BOUNDARY
- COUNTY BOUNDARY
- STATE BOUNDARY

CULTURAL RESOURCES

- ISOLATED FINDS
- MODERN RESOURCE
- ARCHAEOLOGICAL SITE
- ABOVE GROUND RESOURCE
- PHMC SITE 1-MILE BUFFER

FALCON

SHELL PIPELINE COMPANY LP
HOUSTON, TX 77079

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

FIGURE 2

PLAN VIEW MAP

PITTSBURGH DISTRICT
SHEET 30 OF 39
WASHINGTON COUNTY, PENNSYLVANIA

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE SYSTEM

DRAWN BY: PMH DATE: 9/12/2017
APPROVED: NLS PROJECT #:60536988

RC - 40

ROBINSON TOWNSHIP

WASHINGTON COUNTY

W

11

10.9

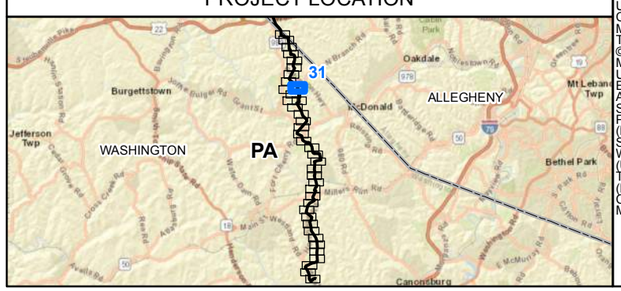
10.8

10.7

CaD DoC GeB UkF UkD DtF DoD BoB CaB BoC UkB GdB

N

PROJECT LOCATION



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1 inch = 200 feet

0 100 200 400 Feet

LEGEND

- VALVE
- BRIDGE
- CULVERT LOCATION
- MILEPOST

PUBLIC WATER SUPPLY

- AGRICULTURAL USE
- COMMERCIAL USE
- INDUSTRIAL USE
- MINERAL USE
- OIL AND GAS
- SEWAGE TREATMENT

- PROPOSED HOUSTON TO JUNCTION PIPELINE
- PERMANENT ACCESS ROAD
- TEMPORARY ACCESS ROAD
- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- NHD FLOWLINE

SURVEYED WATERBODY

- EPHEMERAL
- INTERMITTENT
- PERENNIAL

DELINEATED WETLAND

- PEM
- PFO
- PSS
- PUB
- NWI WETLAND
- NHD WATERBODY
- RESOURCE CROSSING
- 50-FOOT FLOODWAY
- FEMA 100-YEAR FLOODPLAIN
- SOIL TYPE BOUNDARY
- LIMIT OF DISTURBANCE

- METER PAD FOOTPRINT
- METER SITE
- MUNICIPAL BOUNDARY
- COUNTY BOUNDARY
- STATE BOUNDARY

CULTURAL RESOURCES

- ISOLATED FINDS
- MODERN RESOURCE
- ARCHAEOLOGICAL SITE
- ABOVE GROUND RESOURCE
- PHMC SITE 1-MILE BUFFER

FALCON

SHELL PIPELINE COMPANY LP
HOUSTON, TX 77079

AECOM

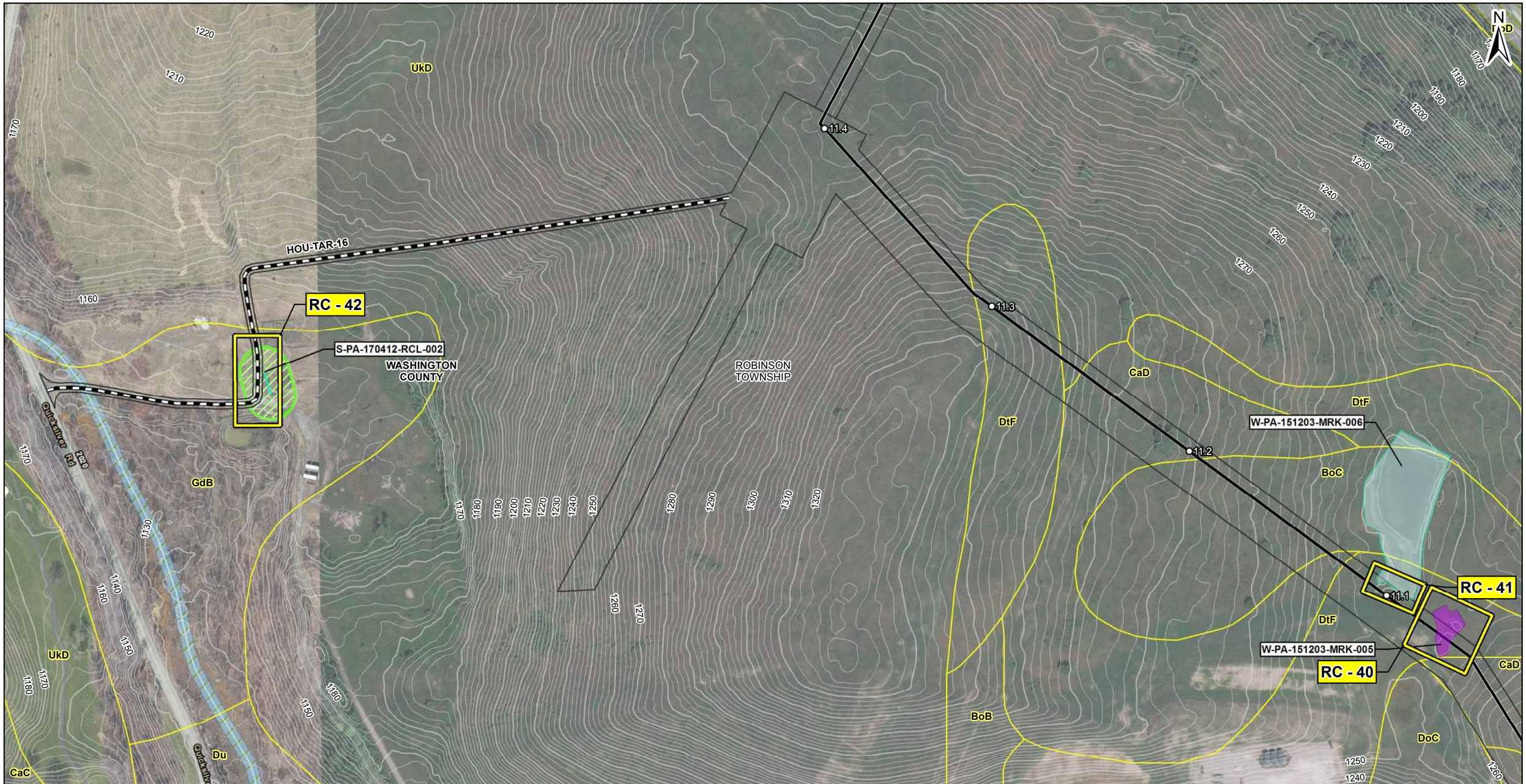
FOSTER PLAZA 6
681 ANDERSEN DRIVE
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

FIGURE 2

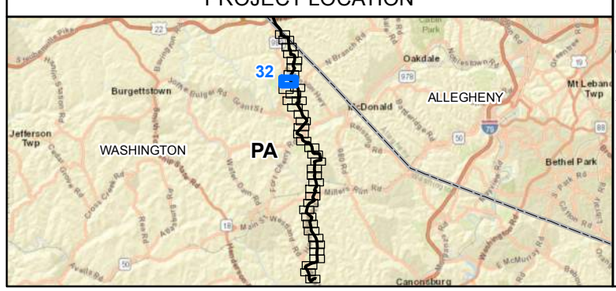
PLAN VIEW MAP
PITTSBURGH DISTRICT
SHEET 31 OF 39
WASHINGTON COUNTY, PENNSYLVANIA

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE SYSTEM

DRAWN BY: PMH DATE: 9/12/2017
APPROVED: NLS PROJECT #:60536988



PROJECT LOCATION



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COORDINATE SYSTEM: NAD 1983 UTM ZONE 17NTRANSVERSE MERCATOR

1 inch = 200 feet

0 100 200 400 Feet

LEGEND

- VALVE
- BRIDGE
- CULVERT LOCATION
- MILEPOST

PUBLIC WATER SUPPLY

- AGRICULTURAL USE
- COMMERCIAL USE
- INDUSTRIAL USE
- MINERAL USE
- OIL AND GAS
- SEWAGE TREATMENT

- PROPOSED HOUSTON TO JUNCTION PIPELINE
- PERMANENT ACCESS ROAD
- TEMPORARY ACCESS ROAD
- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- NHD FLOWLINE

SURVEYED WATERBODY

- EPHEMERAL
- INTERMITTENT
- PERENNIAL

DELINEATED WETLAND

- PEM
- PFO
- PSS
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- NWI WETLAND
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- RESOURCE CROSSING
- 50-FOOT FLOODWAY
- FEMA 100-YEAR FLOODPLAIN
- SOIL TYPE BOUNDARY
- LIMIT OF DISTURBANCE

- METER PAD FOOTPRINT
- METER SITE
- MUNICIPAL BOUNDARY
- COUNTY BOUNDARY
- STATE BOUNDARY

CULTURAL RESOURCES

- ISOLATED FINDS
- MODERN RESOURCE
- ARCHAEOLOGICAL SITE
- ABOVE GROUND RESOURCE
- PHMC SITE 1-MILE BUFFER

FALCON

SHELL PIPELINE COMPANY LP
HOUSTON, TX 77079

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

FIGURE 2

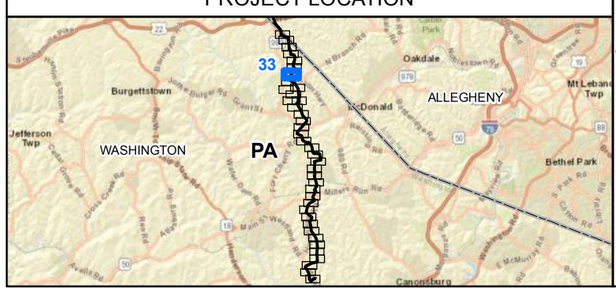
PLAN VIEW MAP

PITTSBURGH DISTRICT
SHEET 32 OF 39
WASHINGTON COUNTY, PENNSYLVANIA

SHELL PIPELINE COMPANY LP FALCON ETHANE PIPELINE SYSTEM

DRAWN BY: PMH DATE: 9/12/2017
APPROVED: NLS PROJECT #:60536988

PROJECT LOCATION



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COORDINATE SYSTEM: NAD 1983 UTM ZONE 17NTRANSVERSE MERCATOR

1 inch = 200 feet

0 100 200 400 Feet

LEGEND

- VALVE
- BRIDGE
- CULVERT LOCATION
- MILEPOST

PUBLIC WATER SUPPLY

- AGRICULTURAL USE
- COMMERCIAL USE
- INDUSTRIAL USE
- MINERAL USE
- OIL AND GAS
- SEWAGE TREATMENT

- PROPOSED HOUSTON TO JUNCTION PIPELINE
- PERMANENT ACCESS ROAD
- TEMPORARY ACCESS ROAD
- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- NHD FLOWLINE

SURVEYED WATERBODY

- EPHEMERAL
- INTERMITTENT
- PERENNIAL

DELINEATED WETLAND

- PEM
- PFO
- PSS
- PUB
- NWI WETLAND
- NHD WATERBODY
- RESOURCE CROSSING
- 50-FOOT FLOODWAY
- FEMA 100-YEAR FLOODPLAIN
- SOIL TYPE BOUNDARY
- LIMIT OF DISTURBANCE

- METER PAD FOOTPRINT
- METER SITE
- MUNICIPAL BOUNDARY
- COUNTY BOUNDARY
- STATE BOUNDARY

CULTURAL RESOURCES

- ISOLATED FINDS
- MODERN RESOURCE
- ARCHAEOLOGICAL SITE
- ABOVE GROUND RESOURCE
- PHMC SITE 1-MILE BUFFER

FALCON

SHELL PIPELINE COMPANY LP
HOUSTON, TX 77079

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

FIGURE 2

PLAN VIEW MAP

PITTSBURGH DISTRICT
SHEET 33 OF 39
WASHINGTON COUNTY, PENNSYLVANIA

SHELL PIPELINE COMPANY LP FALCON ETHANE PIPELINE SYSTEM

DRAWN BY: PMH DATE: 9/12/2017
APPROVED: NLS PROJECT #:60536988

S-PA-170105-MRK-001

RC - 43

12.1

12

11.9

11.8

Donaldson Rd

WASHINGTON COUNTY

CaB DtF CaC UkF DoD UkD DoC DtF DoB WeB CaD CaC BoC BoB UkB

N

PROJECT LOCATION

REFERENCE: AERIAL LAYER - SOURCES: ESRI, HERE, DELORME, USGS, INTERMAP, INCREMENT P, NRCAN, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), ESRI KOREA, ESRI (THAILAND), MAPMYINDIA, NGCC, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY, ESRI, HERE, DELORME, MAPMYINDIA, © OPENSTREETMAP CONTRIBUTORS, ESRI, HERE, DELORME, MAPMYINDIA, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY. SOURCE: ESRI, DIGITALGLOBE, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRID, IGN, AND THE GIS USER COMMUNITY. PUBLIC WATER SUPPLY, PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (PADEP), 2017. NATIONAL HYDROGRAPHY DATASET (NHD) FLOWLINE AND WATERBODY, UNITED STATES GEOLOGICAL SURVEY (USGS), 2017. NATIONAL WETLAND INVENTORY (NWI) WETLANDS, UNITED STATES FISH AND WILDLIFE SERVICE (USFWS), 2017. FLOODWAYS ARE AN ASSUMED 50' WIDE FROM TOPS OF BANKS. FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) 100 YEAR FLOODPLAIN, 2013.
COORDINATE SYSTEM: NAD 1983 UTM ZONE 17NTRANSVERSE MERCATOR

1 inch = 200 feet

0 100 200 400 Feet

LEGEND

- VALVE
- BRIDGE
- CULVERT LOCATION
- MILEPOST

PUBLIC WATER SUPPLY

- AGRICULTURAL USE
- COMMERCIAL USE
- INDUSTRIAL USE
- MINERAL USE
- OIL AND GAS
- SEWAGE TREATMENT

- PROPOSED HOUSTON TO JUNCTION PIPELINE
- PERMANENT ACCESS ROAD
- TEMPORARY ACCESS ROAD
- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- NHD FLOWLINE

SURVEYED WATERBODY

- EPHEMERAL
- INTERMITTENT
- PERENNIAL

DELINEATED WETLAND

- PEM
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- RESOURCE CROSSING
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- SOIL TYPE BOUNDARY
- LIMIT OF DISTURBANCE

- METER PAD FOOTPRINT
- METER SITE
- MUNICIPAL BOUNDARY
- COUNTY BOUNDARY
- STATE BOUNDARY

CULTURAL RESOURCES

- ISOLATED FINDS
- MODERN RESOURCE
- ARCHAEOLOGICAL SITE
- ABOVE GROUND RESOURCE
- PHMC SITE 1-MILE BUFFER

FALCON

SHELL PIPELINE COMPANY LP
HOUSTON, TX 77079

AECOM

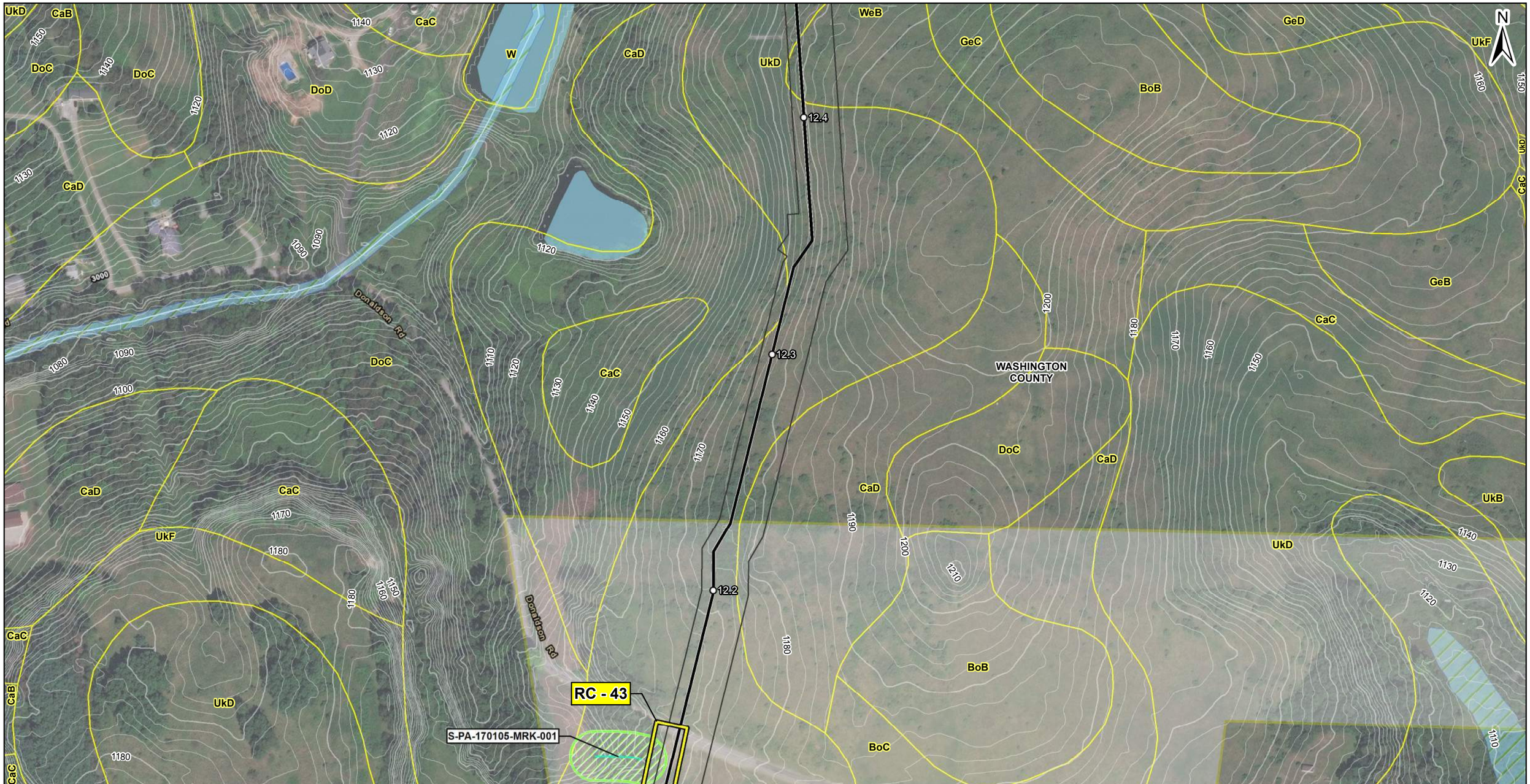
FOSTER PLAZA 6
681 ANDERSEN DRIVE
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

FIGURE 2

PLAN VIEW MAP
PITTSBURGH DISTRICT
SHEET 34 OF 39
WASHINGTON COUNTY, PENNSYLVANIA

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE SYSTEM

DRAWN BY: PMH DATE: 9/12/2017
APPROVED: NLS PROJECT #:60536988



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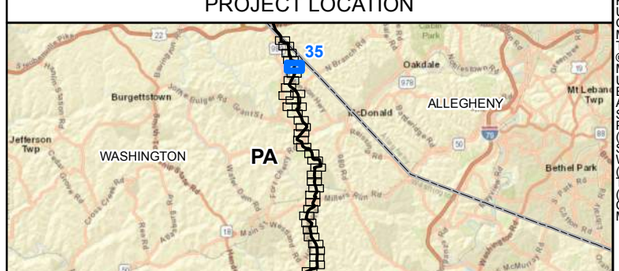

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LEGEND

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- PHMC SITE 1-MILE BUFFER

FALCON

SHELL PIPELINE COMPANY LP
HOUSTON, TX 77079

AECOM

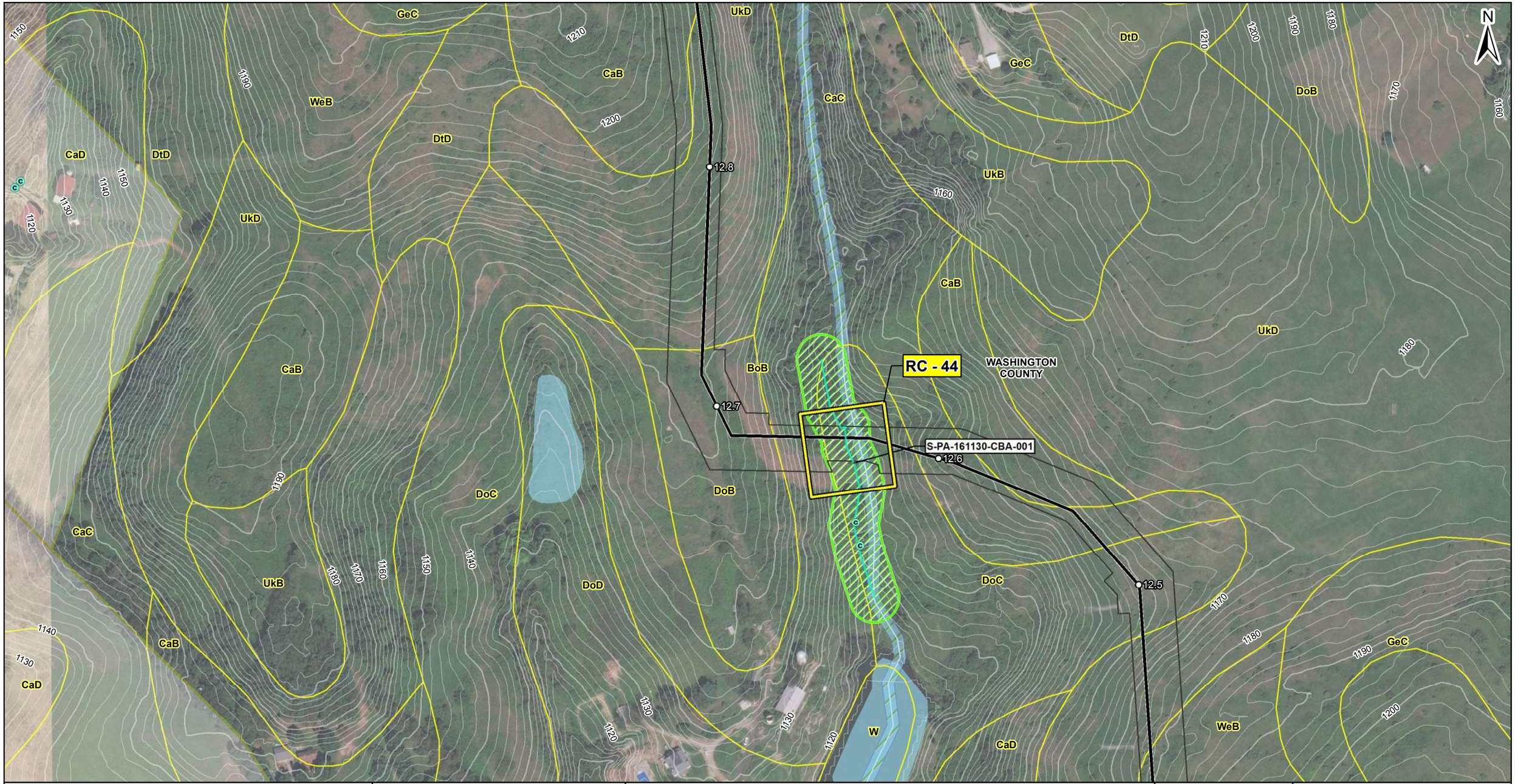
FOSTER PLAZA 6
681 ANDERSEN DRIVE
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

FIGURE 2

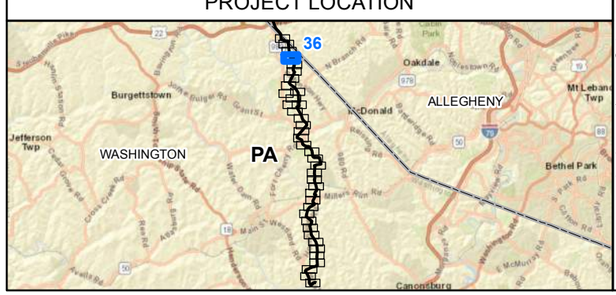
PLAN VIEW MAP
PITTSBURGH DISTRICT
SHEET 35 OF 39
WASHINGTON COUNTY, PENNSYLVANIA

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE SYSTEM

DRAWN BY: PMH DATE: 9/12/2017
APPROVED: NLS PROJECT #:60536988



PROJECT LOCATION



REFERENCE: AERIAL LAYER - SOURCES: ESRI, HERE, DELORME, USGS, INTERMAP, INCREMENT P, NRCAN, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), ESRI KOREA, ESRI (THAILAND), MAPMYINDIA, NGCC, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY, ESRI, HERE, DELORME, MAPMYINDIA, © OPENSTREETMAP CONTRIBUTORS, ESRI, HERE, DELORME, MAPMYINDIA, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY. SOURCE: ESRI, DIGITALGLOBE, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRID, IGN, AND THE GIS USER COMMUNITY. PUBLIC WATER SUPPLY. PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (PADEP). 2017. NATIONAL HYDROGRAPHY DATASET (NHD) FLOWLINE AND WATERBODY. UNITED STATES GEOLOGICAL SURVEY (USGS). 2017. NATIONAL WETLAND INVENTORY (NWI) WETLANDS. UNITED STATES FISH AND WILDLIFE SERVICE (USFWS). 2017. FLOODWAYS ARE AN ASSUMED 50' WIDE FROM TOPS OF BANKS. FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) 100 YEAR FLOODPLAIN. 2013.
COORDINATE SYSTEM: NAD 1983 UTM ZONE 17NTRANSVERSE MERCATOR

1 inch = 200 feet

0 100 200 400 Feet

LEGEND

- VALVE
- BRIDGE
- CULVERT LOCATION
- MILEPOST

PUBLIC WATER SUPPLY

- AGRICULTURAL USE
- COMMERCIAL USE
- INDUSTRIAL USE
- MINERAL USE
- OIL AND GAS
- SEWAGE TREATMENT

- PROPOSED HOUSTON TO JUNCTION PIPELINE
- PERMANENT ACCESS ROAD
- TEMPORARY ACCESS ROAD
- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- NHD FLOWLINE

SURVEYED WATERBODY

- EPHEMERAL
- INTERMITTENT
- PERENNIAL

DELINEATED WETLAND

- PEM
- PFO
- PSS
- PUB
- NWI WETLAND
- NHD WATERBODY
- RESOURCE CROSSING
- 50-FOOT FLOODWAY
- FEMA 100-YEAR FLOODPLAIN
- SOIL TYPE BOUNDARY
- LIMIT OF DISTURBANCE

- METER PAD FOOTPRINT
- METER SITE
- MUNICIPAL BOUNDARY
- COUNTY BOUNDARY
- STATE BOUNDARY

CULTURAL RESOURCES

- ISOLATED FINDS
- MODERN RESOURCE
- ARCHAEOLOGICAL SITE
- ABOVE GROUND RESOURCE
- PHMC SITE 1-MILE BUFFER

FALCON

SHELL PIPELINE COMPANY LP
HOUSTON, TX 77079

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

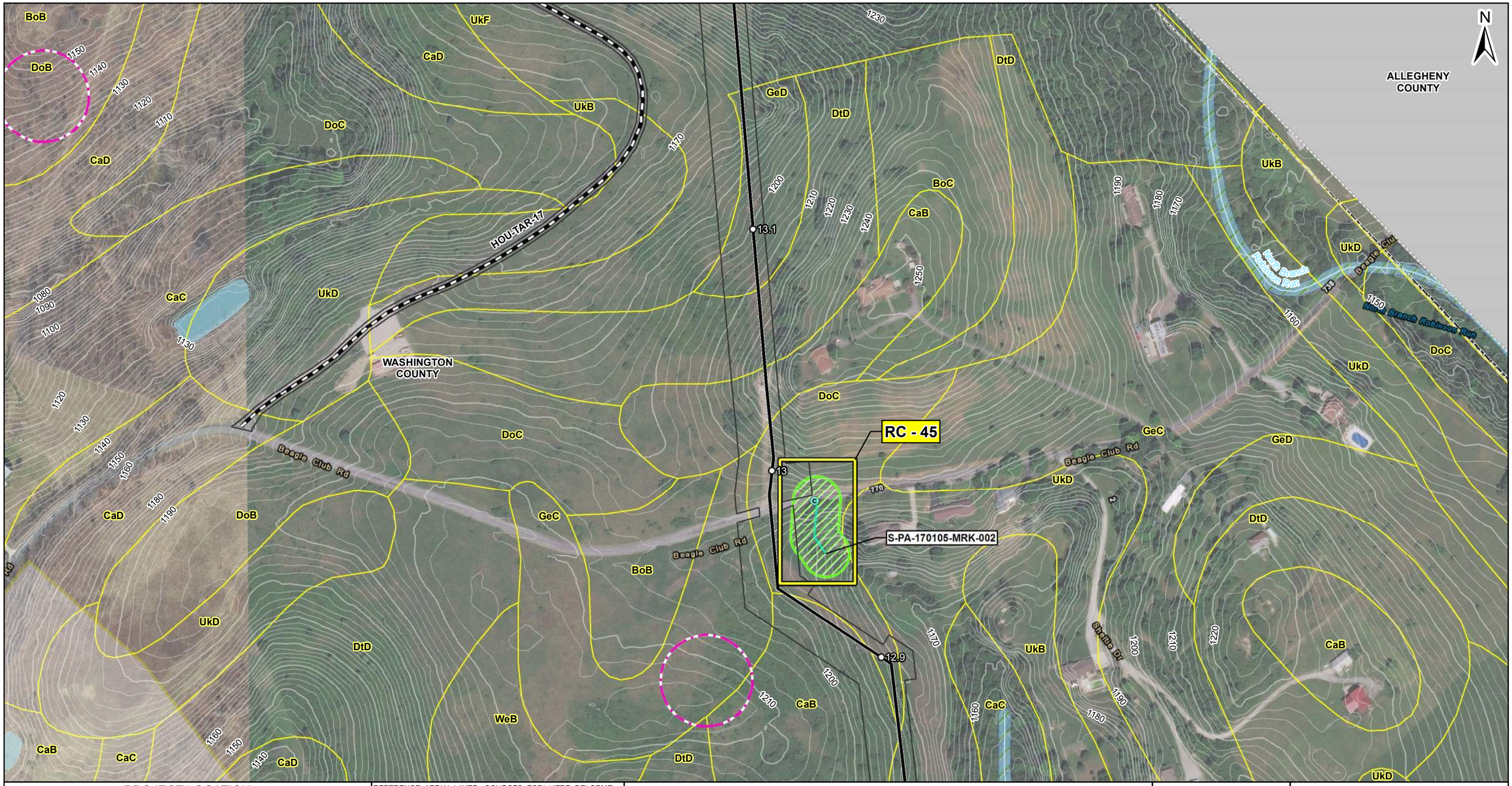
FIGURE 2

PLAN VIEW MAP

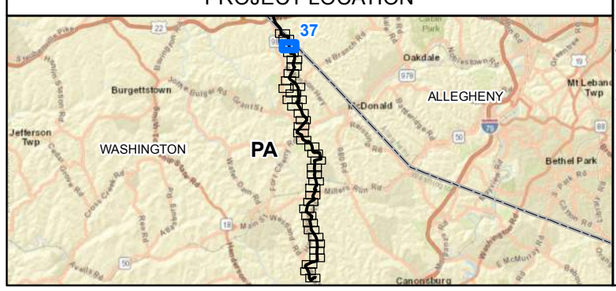
PITTSBURGH DISTRICT
SHEET 36 OF 39
WASHINGTON COUNTY, PENNSYLVANIA

SHELL PIPELINE COMPANY LP FALCON ETHANE PIPELINE SYSTEM

DRAWN BY: PMH DATE: 9/12/2017
APPROVED: NLS PROJECT #:60536988



PROJECT LOCATION



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COORDINATE SYSTEM: NAD 1983 UTM ZONE 17NTRANSVERSE MERCATOR

1 inch = 200 feet

0 100 200 400 Feet

LEGEND

- VALVE
- BRIDGE
- CULVERT LOCATION
- MILEPOST

PUBLIC WATER SUPPLY

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- SOIL TYPE BOUNDARY
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- STATE BOUNDARY

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- MODERN RESOURCE
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- ABOVE GROUND RESOURCE
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FALCON

SHELL PIPELINE COMPANY LP
HOUSTON, TX 77079

AECOM

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681 ANDERSEN DRIVE
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412-503-4700

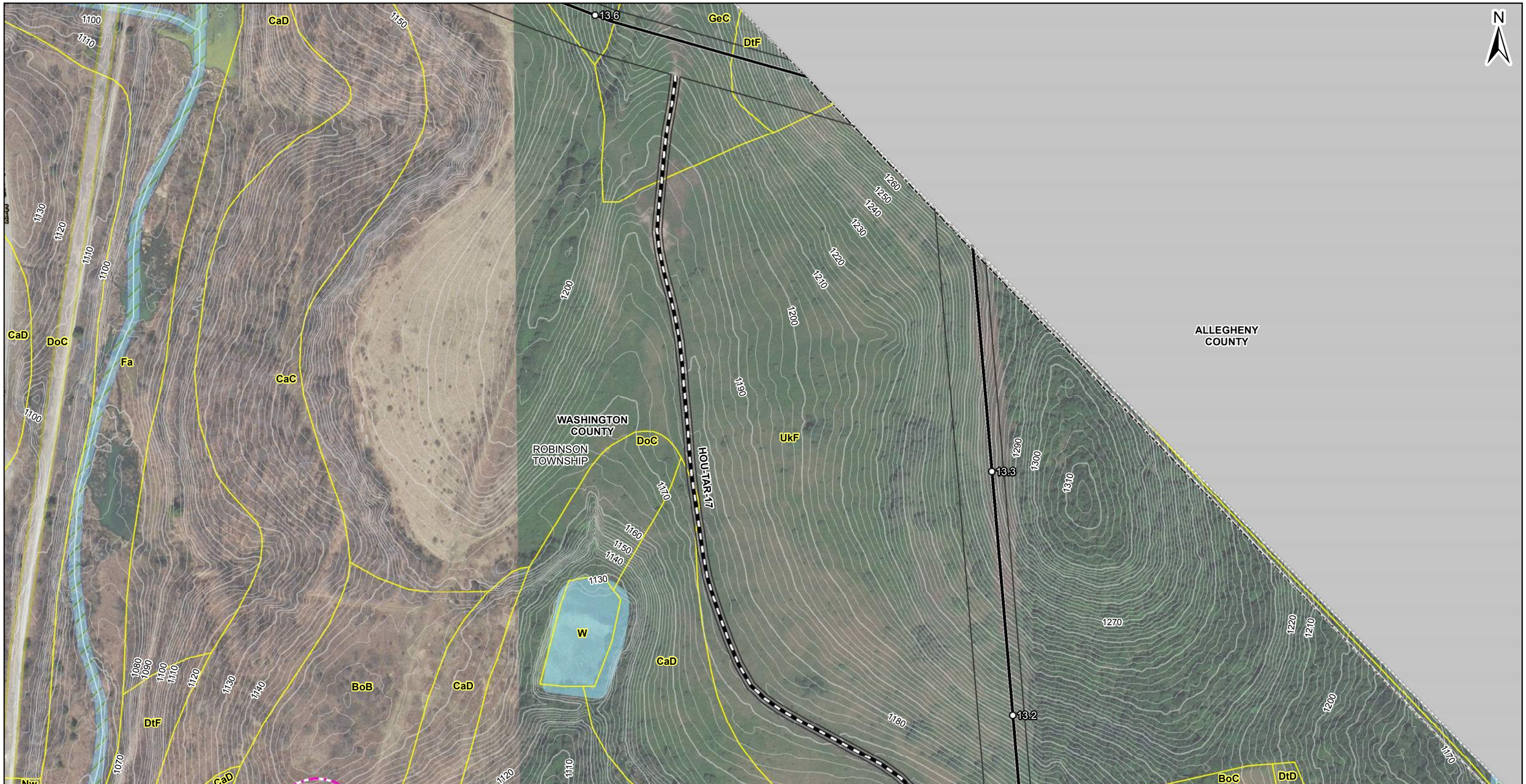
FIGURE 2

PLAN VIEW MAP

PITTSBURGH DISTRICT
SHEET 37 OF 39
WASHINGTON COUNTY, PENNSYLVANIA

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE SYSTEM

DRAWN BY: PMH DATE: 9/12/2017
APPROVED: NLS PROJECT #:60536988



PROJECT LOCATION

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LEGEND

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- BRIDGE
- CULVERT LOCATION
- MILEPOST

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- SOIL TYPE BOUNDARY
- LIMIT OF DISTURBANCE

- METER PAD FOOTPRINT
- METER SITE
- MUNICIPAL BOUNDARY
- COUNTY BOUNDARY
- STATE BOUNDARY

CULTURAL RESOURCES

- ISOLATED FINDS
- MODERN RESOURCE
- ARCHAEOLOGICAL SITE
- ABOVE GROUND RESOURCE
- PHMC SITE 1-MILE BUFFER

FALCON

SHELL PIPELINE COMPANY LP
HOUSTON, TX 77079

AECOM

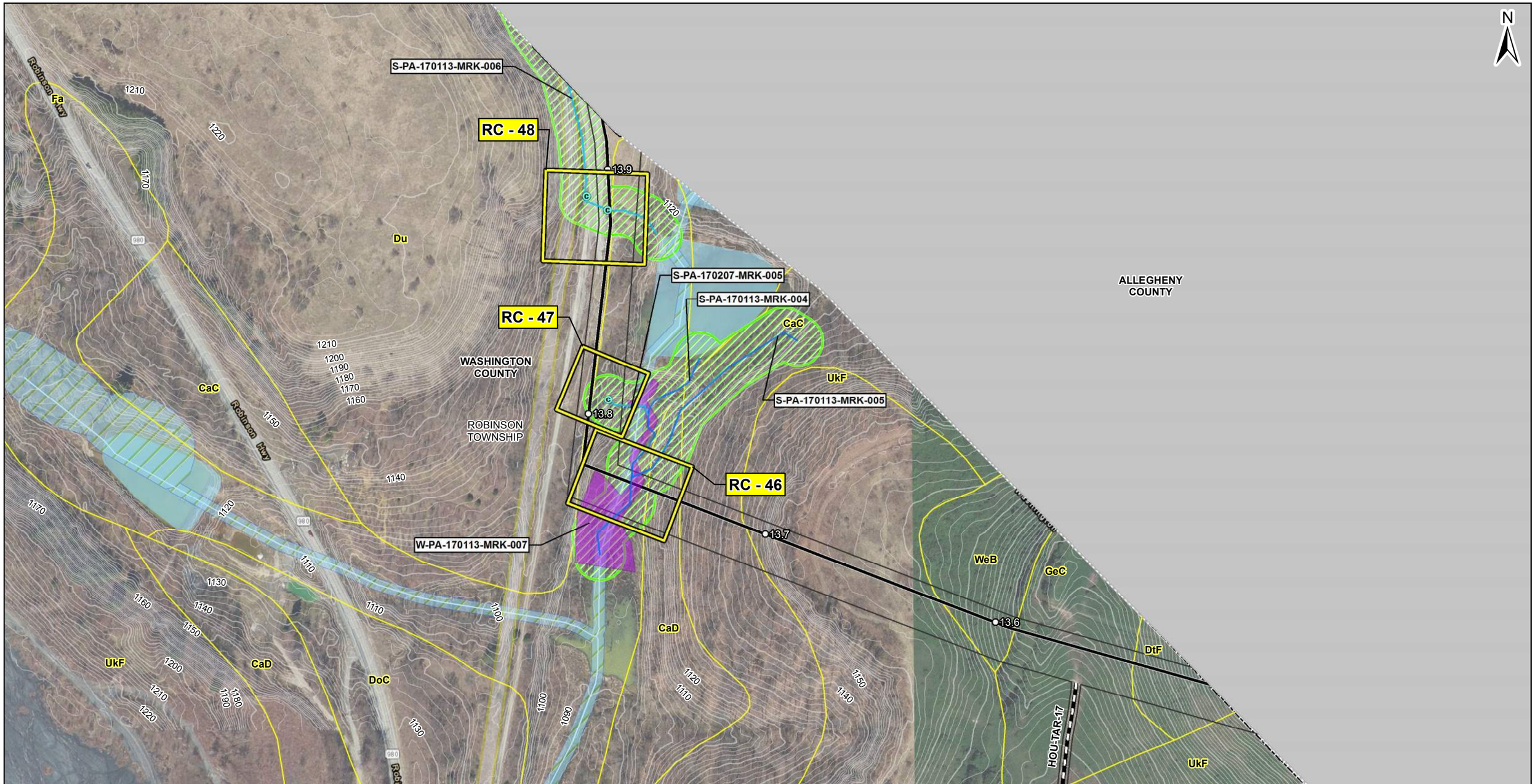
FOSTER PLAZA 6
681 ANDERSEN DRIVE
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

FIGURE 2

PLAN VIEW MAP
PITTSBURGH DISTRICT
SHEET 38 OF 39
WASHINGTON COUNTY, PENNSYLVANIA

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE SYSTEM

DRAWN BY: PMH DATE: 9/12/2017
APPROVED: NLS PROJECT #:60536988



PROJECT LOCATION

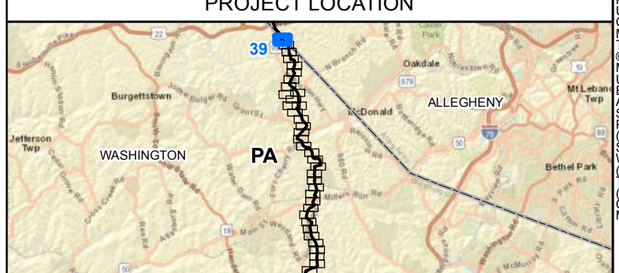


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FIGURE 2

PLAN VIEW MAP

PITTSBURGH DISTRICT
SHEET 39 OF 39
WASHINGTON COUNTY, PENNSYLVANIA

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE SYSTEM

DRAWN BY: PMH DATE: 9/12/2017
APPROVED: NLS PROJECT #:60536988

Attachment S2-4

PA Riverine L2RAP Data Sheets and Mapping

Riverine Assessment Form 1

Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

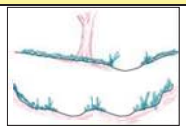
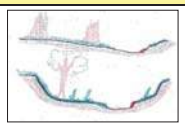
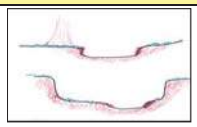
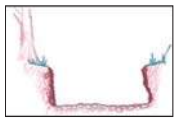
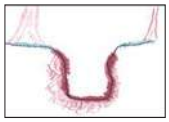
Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name		Locality	Date	Ch 93 Classification		AA Id	Length
					Designated:	Existing:		
60536988	Falcon Ethane Pipeline Project		Washington, PA	6/26/2017	WWF	None	S-PA-160406-MRK-002A	184
Latitude	40.268279	Longitude	-80.265577	FGM Level 1 Channel Classification			C	

Evaluator(s)	Stream Name and Information	Notes:
Matt Kline, Elliot Dillon	S-PA-160406-MRK-002: Perennial	

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	Severe
Channel / Floodplain	 **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present. **Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain. **Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.	 **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches. **Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts; **Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain.	 **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain.
SCORE	20 19 18 17	16 15 14 13	12 11 10 9	8 7 6 5	4 3 2 1

Comments:

CI = (Score)/20		CI
SCORE:	9	0.45

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category					
	Optimal	Suboptimal		Marginal		Poor	
Riparian Vegetation (Floodplain)	Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.
		High	Low	High	Low	High	Low
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1

Comments:

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	71%	0%	0%	0%	29%	0%	0%	0.65	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	16	0	0	0	6	0	0		
	Total Sub-score:	11.29	0.00	0.00	0.00	1.76	0.00	0.00		
	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor		
Left Side	% Riparian Area:	91%	0%	0%	0%	9%	0%	0%	0.75	CI = (Left Side CI + Right Side CI)/2
	Score:	16	0	0	0	6	0	0		
	Total Sub-score:	14.55	0.00	0.00	0.00	0.55	0.00	0.00		

CI
0.70

Riverine Assessment Form 1 - Page 2

2/4/2017

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

	Condition Category							Comments:
	Optimal	Suboptimal		Marginal		Poor		
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
		High	Low	High	Low	High	Low	
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1		

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index		
Right Side	% Riparian Area:	86%	0%	0%	0%	14%	0%	0%	0.73	Side Sub-Index = SUM(%Areas*Scores)/20	
	Score:	16	0	0	0	6	0	0			
	Total Sub-score:	13.77	0.00	0.00	0.00	0.84	0.00	0.00			
	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor			
Left Side	% Riparian Area:	82%	0%	0%	0%	18%	0%	0%	0.71	CI = (Left Side CI + Right Side CI)/2	CI
	Score:	16	0	0	0	6	0	0			0.72
	Total Sub-score:	13.18	0.00	0.00	0.00	1.06	0.00	0.00			

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

	Condition Category					Comments:		
	Optimal	Suboptimal	Marginal	Poor				
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.			CI = (Score)/20	CI
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1		SCORE:	11	0.55

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

	Condition Category							Comments:		
	Negligible	Minor		Moderate		Severe				
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	**Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.	**Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.				
		High	Low	High	Low				CI = (Score)/20	CI
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1		SCORE:	15	0.75

RIVERINE CONDITION INDEX (RCI)		RCI
NOTE: **The CIs and RCI should be rounded to 2 decimal places.**	**RCI = (Sum of all CI's)/5 or Ephemeral/Intermittent RCI = (Sum non instream CI's)/4**	0.63

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riparian Vegetation Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	1.20	71%	1.00	91%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.50	29%	0.10	9%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	1.70	100%	1.10	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	1.20	71%	1.00	91%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.50	29%	0.10	9%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	1.70	100%	1.10	100%

Entered Total Area **1.70** **1.10** From shape file for RV (zone)

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riparian ZOI Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	1.54	86%	1.31	82%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.25	14%	0.28	18%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	1.79	100%	1.59	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	1.54	86%	1.31	82%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.25	14%	0.28	18%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	1.79	100%	1.59	100%

Entered Total Area **1.79** **1.59** From shape file for Riparian ZOI

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riverine Assessment Form 1

Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

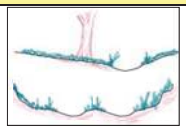
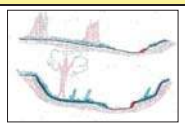
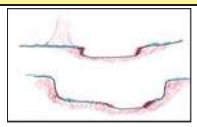
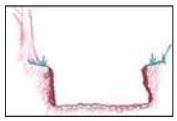
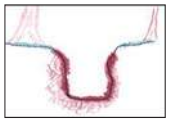
Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name		Locality	Date	Ch 93 Classification		AA Id	Length
					Designated:	Existing:		
60536988	Falcon Ethane Pipeline Project		Washington, PA	6/26/2017	WWF	None	S-PA-160406-MRK-002B	191
Latitude	40.268366	Longitude	-80.265669	FGM Level 1 Channel Classification			C	

Evaluator(s)	Stream Name and Information	Notes:
Matt Kline, Elliot Dillon	S-PA-160406-MRK-002: Perennial	

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	Severe
Channel / Floodplain	 **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present. **Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain. **Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.	 **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches. **Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts; **Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain.	 **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain.
SCORE	20 19 18 17	16 15 14 13	12 11 10 9	8 7 6 5	4 3 2 1

Comments:

CI = (Score)/20		CI
SCORE:	9	0.45

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category					
	Optimal	Suboptimal		Marginal		Poor	
Riparian Vegetation (Floodplain)	Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.
		High	Low	High	Low	High	Low
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1

Comments:

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	97%	0%	0%	0%	3%	0%	0%	0.78	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	16	0	0	0	6	0	0		
	Total Sub-score:	**15.49**	**0.00**	**0.00**	**0.00**	**0.19**	**0.00**	**0.00**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	100%	0%	0%	0%	0%	0%	0%	0.80	CI = (Left Side CI + Right Side CI)/2
	Score:	16	0	0	0	0	0	0		
	Total Sub-score:	**16.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		

CI
0.79

Riverine Assessment Form 1 - Page 2

2/4/2017

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

	Condition Category							Comments:
	Optimal	Suboptimal		Marginal		Poor		
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
		High	Low	High	Low	High	Low	
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1		

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index		
Right Side	% Riparian Area:	89%	0%	0%	0%	11%	0%	0%	0.74	Side Sub-Index = SUM(%Areas*Scores)/20	
	Score:	16	0	0	0	6	0	0			
	Total Sub-score:	14.23	0.00	0.00	0.00	0.66	0.00	0.00			
	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor			
Left Side	% Riparian Area:	80%	0%	0%	0%	0%	3%	17%	0.65	CI = (Left Side CI + Right Side CI)/2	CI
	Score:	16	0	0	0	0	4	1			0.70
	Total Sub-score:	12.80	0.00	0.00	0.00	0.00	0.11	0.17			

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

	Condition Category					Comments:		
	Optimal	Suboptimal	Marginal	Poor				
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.			CI = (Score)/20	CI
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1		SCORE:	11	0.55

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

	Condition Category							Comments:		
	Negligible	Minor		Moderate		Severe				
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	**Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.	**Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.				
		High	Low	High	Low				CI = (Score)/20	CI
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1		SCORE:	15	0.75

RIVERINE CONDITION INDEX (RCI)		RCI
NOTE: **The CIs and RCI should be rounded to 2 decimal places.**	**RCI = (Sum of all CI's)/5 or Ephemeral/Intermittent RCI = (Sum non instream CI's)/4**	0.65

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riparian Vegetation Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	3.06	97%	1.45	100%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.10	3%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	3.16	100%	1.45	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	3.06	97%	1.45	100%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.10	3%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	3.16	100%	1.45	100%

Entered Total Area **3.16** **1.45** From shape file for RV (zone)

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riparian ZOI Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	1.69	89%	1.46	80%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.21	11%	0.00	0%
High Poor	0.00	0%	0.05	3%
Low Poor	0.00	0%	0.30	17%
Calculated total area	1.90	100%	1.81	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	1.69	89%	1.45	80%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.21	11%	0.00	0%
High Poor	0.00	0%	0.05	3%
Low Poor	0.00	0%	0.30	17%
Calculated total area	1.90	100%	1.81	100%

Entered Total Area **1.90** **1.81** From shape file for Riparian ZOI

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riverine Assessment Form 1

Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

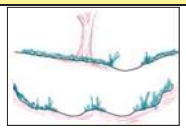
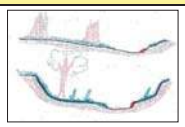
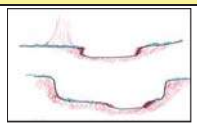
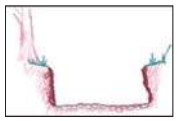
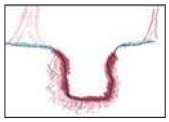
Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name		Locality	Date	Ch 93 Classification		AA Id	Length
					Designated:	Existing:		
60536988	Falcon Ethane Pipeline Project		Washington, PA	6/26/2017	WWF	None	S-PA-160229-MRK-001	115
Latitude	40.273698	Longitude	-80.264966	FGM Level 1 Channel Classification			B	

Evaluator(s)	Stream Name and Information	Notes:
Matt Kline, Elliot Dillon	S-PA-160229-MRK-001: Ephemeral	

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	Severe
Channel / Floodplain	 **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present. **Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain. **Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.	 **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches. **Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts; **Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain.	 **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain.
SCORE	20 19 18 17	16 15 14 13	12 11 10 9	8 7 6 5	4 3 2 1

Comments:

CI = (Score)/20		CI
SCORE:	8	0.40

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category					
	Optimal	Suboptimal		Marginal		Poor	
Riparian Vegetation (Floodplain)	Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.
		High	Low	High	Low	High	Low
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1

Comments:

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	100%	0%	0%	0%	0%	0%	0%	0.80	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	16	0	0	0	0	0	0		
	Total Sub-score:	**16.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	100%	0%	0%	0%	0%	0%	0%	0.80	CI = (Left Side CI + Right Side CI)/2
	Score:	16	0	0	0	0	0	0		
	Total Sub-score:	**16.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		

CI
0.80

Riverine Assessment Form 1 - Page 2

2/4/2017

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

	Condition Category							Comments:
	Optimal	Suboptimal		Marginal		Poor		
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
		High	Low	High	Low	High	Low	
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1		

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	100%	0%	0%	0%	0%	0%	0%	**0.80**	**Side Sub-Index = SUM(%Areas*Scores)/20**
	Score:	16	0	0	0	0	0	0		
	Total Sub-score:	**16.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	90%	0%	0%	0%	0%	0%	10%	**0.73**	**CI = (Left Side CI + Right Side CI)/2**
	Score:	16	0	0	0	0	0	2		
	Total Sub-score:	**14.40**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.20**		

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

	Condition Category				Comments:		
	Optimal	Suboptimal	Marginal	Poor			
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.		**CI = (Score)/20**	**CI**
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	**SCORE:**	NA	**NA**

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

	Condition Category							Comments:		
	Negligible	Minor		Moderate		Severe				
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	**Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.	**Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.			
		High	Low	High	Low			**CI = (Score)/20**		**CI**
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1		**SCORE:**	15	**0.75**

RIVERINE CONDITION INDEX (RCI)		**RCI**
***NOTE:* The CIs and RCI should be rounded to 2 decimal places.**	**RCI = (Sum of all CI's)/5 or Ephemeral/Intermittent RCI = (Sum non instream CI's)/4**	**0.68**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riparian Vegetation Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.62	100%	0.81	100%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.62	100%	0.81	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.62	100%	0.81	100%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.62	100%	0.81	100%

Entered Total Area **0.62** **0.81** From shape file for RV (zone)

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riparian ZOI Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.42	100%	0.90	90%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.10	10%
Calculated total area	0.42	100%	1.00	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.42	100%	0.90	90%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.10	10%
Calculated total area	0.42	100%	1.00	100%

Entered Total Area **0.42** **1.00** From shape file for Riparian ZOI

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riverine Assessment Form 1

Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

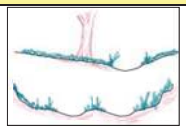
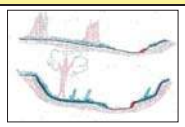
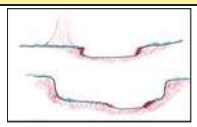
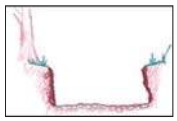
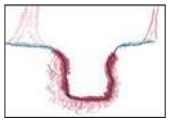
Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name		Locality	Date	Ch 93 Classification		AA Id	Length
					Designated:	Existing:		
60536988	Falcon Ethane Pipeline Project		Washington, PA	6/26/2017	WWF	None	S-PA-160229-MRK-003	91
Latitude	40.277955	Longitude	-80.260300	FGM Level 1 Channel Classification			A	

Evaluator(s)	Stream Name and Information	Notes:
Matt Kline, Elliot Dillon	S-PA-160229-MRK-003: Ephemeral	

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	Severe
Channel / Floodplain	 **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present. **Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain. **Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.	 **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches. **Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts; **Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain.	 **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain.
SCORE	20 19 18 17	16 15 14 13	12 11 10 9	8 7 6 5	4 3 2 1

Comments:

CI = (Score)/20		CI
SCORE:	12	0.60

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category					
	Optimal	Suboptimal		Marginal		Poor	
Riparian Vegetation (Floodplain)	Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.
		High	Low	High	Low	High	Low
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1

Comments:

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	100%	0%	0%	0%	0%	0%	0%	0.80	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	16	0	0	0	0	0	0		
	Total Sub-score:	**16.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	100%	0%	0%	0%	0%	0%	0%	0.80	CI = (Left Side CI + Right Side CI)/2
	Score:	16	0	0	0	0	0	0		
	Total Sub-score:	**16.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		

CI
0.80

Riverine Assessment Form 1 - Page 2

2/4/2017

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

	Condition Category							Comments:
	Optimal	Suboptimal		Marginal		Poor		
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
		High	Low	High	Low	High	Low	
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1	

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	100%	0%	0%	0%	0%	0%	0%	**0.80**	**Side Sub-Index = SUM(%Areas*Scores)/20**
	Score:	16	0	0	0	0	0	0		
	Total Sub-score:	**16.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		
	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor		
Left Side	% Riparian Area:	100%	0%	0%	0%	0%	0%	0%	**0.80**	**CI = (Left Side CI + Right Side CI)/2** — **CI**
	Score:	16	0	0	0	0	0	0		**0.80**
	Total Sub-score:	**16.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

	Condition Category				Comments:	
	Optimal	Suboptimal	Marginal	Poor		
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.		
					CI = (Score)/20	**CI**
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	**SCORE:** NA	**NA**

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

	Condition Category						Comments:	
	Negligible	Minor		Moderate		Severe		
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	**Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.	**Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.		
		High	Low	High	Low		**CI = (Score)/20**	**CI**
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3 2 1	**SCORE:** 16	**0.80**

RIVERINE CONDITION INDEX (RCI)		RCI
NOTE: **The CIs and RCI should be rounded to 2 decimal places.**	**RCI = (Sum of all CI's)/5 or Ephemeral/Intermittent RCI = (Sum non instream CI's)/4**	**0.75**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riparian Vegetation Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.65	100%	0.66	100%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.65	100%	0.66	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.65	100%	0.66	100%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.65	100%	0.66	100%

Entered Total Area **0.65** **0.66** From shape file for RV (zone)

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riparian ZOI Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.62	100%	0.67	100%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.62	100%	0.67	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.62	100%	0.67	100%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.62	100%	0.67	100%

Entered Total Area **0.62** **0.67** From shape file for Riparian ZOI

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riverine Assessment Form 1

Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

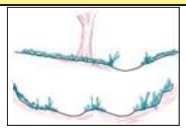
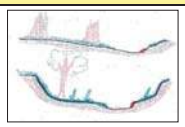
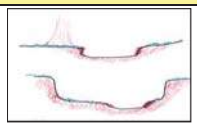
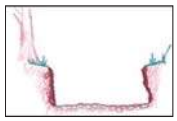
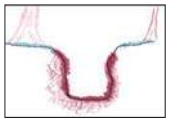
For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification		AA Id	Length
				Designated:	Existing:		
60536988	Falcon Ethane Pipeline Project	Washington, PA	6/26/2017	WWF	None	S-PA-160229-MRK-004	79

Latitude	40.279409	Longitude	-80.260345	FGM Level 1 Channel Classification	B

Evaluator(s)	Stream Name and Information	Notes:
Matt Kline, Elliot Dillon	S-PA-160229-MRK-004: Perennial	

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category				
	Optimal	**Suboptimal**	**Marginal**	**Poor**	**Severe**
Channel / Floodplain	 **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present. **Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain. **Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.	 **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches. **Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts; **Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain.	 **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain.
SCORE	20 19 18 17	16 15 14 13	12 11 10 9	8 7 6 5	4 3 2 1

Comments:

CI = (Score)/20		CI
SCORE:	15	0.75

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category					
	Optimal	**Suboptimal**		**Marginal**		**Poor**
Riparian Vegetation (Floodplain)	Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.
		High	Low	High	Low	High	Low
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1

Comments:

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	100%	0%	0%	0%	0%	0%	0%	0.80	**Side Sub-Index = SUM(%Areas*Scores)/20**
	Score:	16	0	0	0	0	0	0		
	Total Sub-score:	**16.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	100%	0%	0%	0%	0%	0%	0%	0.80	**CI = (Left Side CI + Right Side CI)/2**
	Score:	16	0	0	0	0	0	0		
	Total Sub-score:	**16.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		

CI
0.80

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3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

	Condition Category						Comments:
	Optimal	Suboptimal		Marginal		Poor	
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
		High	Low	High	Low	High	Low	
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1		

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	100%	0%	0%	0%	0%	0%	0%	**0.80**	**Side Sub-Index = SUM(%Areas*Scores)/20**
	Score:	16	0	0	0	0	0	0		
	Total Sub-score:	**16.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	100%	0%	0%	0%	0%	0%	0%	**0.80**	**CI = (Left Side CI + Right Side CI)/2**
	Score:	16	0	0	0	0	0	0		**CI**
	Total Sub-score:	**16.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**0.80**

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

	Condition Category					Comments:		
	Optimal	Suboptimal	Marginal	Poor				
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.			**CI = (Score)/20**	**CI**
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1		**SCORE:**	11	**0.55**

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

	Condition Category						Comments:	
	Negligible	Minor		Moderate		Severe		
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	**Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.	**Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.		
		High	Low	High	Low		**CI = (Score)/20**	**CI**
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1	**SCORE:** 16	**0.80**

RIVERINE CONDITION INDEX (RCI)		**RCI**
***NOTE:* The CIs and RCI should be rounded to 2 decimal places.**	**RCI = (Sum of all CI's)/5 or Ephemeral/Intermittent RCI = (Sum non instream CI's)/4**	**0.74**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riparian Vegetation Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.62	100%	0.63	100%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.62	100%	0.63	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.62	100%	0.63	100%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.62	100%	0.63	100%

Entered Total Area **0.62** **0.63** From shape file for RV (zone)

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riparian ZOI Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.59	100%	0.61	100%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.59	100%	0.61	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.59	100%	0.61	100%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.59	100%	0.61	100%

Entered Total Area **0.59** **0.61** From shape file for Riparian ZOI

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riverine Assessment Form 1

Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

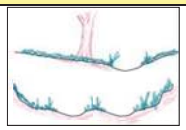
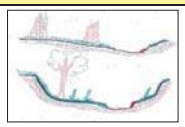
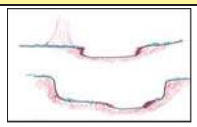
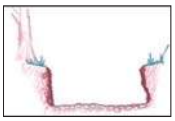
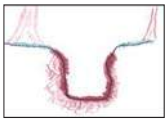
Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name		Locality	Date	Ch 93 Classification		AA Id	Length
					Designated:	Existing:		
60536988	Falcon Ethane Pipeline Project		Washington, PA	6/26/2017	WWF	None	S-PA-160301-MRK-001	84
Latitude	40.286947	Longitude	-80.260206	FGM Level 1 Channel Classification			A	

Evaluator(s)	Stream Name and Information	Notes:
Matt Kline, Elliot Dillon	S-PA-160301-MRK-001: Ephemeral	

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	Severe
Channel / Floodplain	 **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present. **Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain. **Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.	 **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches. **Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts; **Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain.	 **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain.
SCORE	20 19 18 17	16 15 14 13	12 11 10 9	8 7 6 5	4 3 2 1

Comments:

CI = (Score)/20		CI
SCORE:	19	0.95

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category					
	Optimal	Suboptimal		Marginal		Poor	
Riparian Vegetation (Floodplain)	Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.
		High	Low	High	Low	High	Low
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1

Comments:

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	100%	0%	0%	0%	0%	0%	0%	0.90	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	18	0	0	0	0	0	0		
	Total Sub-score:	**18.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	100%	0%	0%	0%	0%	0%	0%	0.90	CI = (Left Side CI + Right Side CI)/2
	Score:	18	0	0	0	0	0	0		
	Total Sub-score:	**18.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		

CI
0.90

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3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

	Condition Category							Comments:
	Optimal	Suboptimal		Marginal		Poor		
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
		High	Low	High	Low	High	Low	
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1		

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	100%	0%	0%	0%	0%	0%	0%	**0.90**	**Side Sub-Index = SUM(%Areas*Scores)/20**
	Score:	18	0	0	0	0	0	0		
	Total Sub-score:	**18.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	92%	0%	0%	0%	0%	8%	0%	**0.84**	**CI = (Left Side CI + Right Side CI)/2**
	Score:	18	0	0	0	0	4	0		**CI**
	Total Sub-score:	**16.57**	**0.00**	**0.00**	**0.00**	**0.00**	**0.32**	**0.00**		**0.87**

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

	Condition Category					Comments:	
	Optimal	Suboptimal	Marginal	Poor			
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.		**CI = (Score)/20**	**CI**
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1		**SCORE:** NA	**NA**

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

	Condition Category							Comments:	
	Negligible	Minor		Moderate		Severe			
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	**Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.	**Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.			
		High	Low	High	Low			**CI = (Score)/20**	**CI**
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1		**SCORE:** 19	**0.95**

RIVERINE CONDITION INDEX (RCI)		RCI
***NOTE:* The CIs and RCI should be rounded to 2 decimal places.**	**RCI = (Sum of all CI's)/5 or Ephemeral/Intermittent RCI = (Sum non instream CI's)/4**	**0.92**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riparian Vegetation Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.65	100%	0.64	100%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.65	100%	0.64	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.65	100%	0.64	100%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.65	100%	0.64	100%

Entered Total Area **0.65** **0.64** From shape file for RV (zone)

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riparian ZOI Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.63	100%	0.58	92%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.05	8%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.63	100%	0.63	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.63	100%	0.58	92%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.05	8%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.63	100%	0.63	100%

Entered Total Area **0.63** **0.63** From shape file for Riparian ZOI

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riverine Assessment Form 1

Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

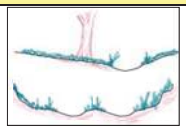
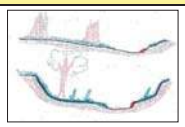
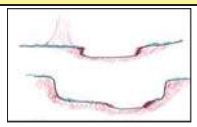
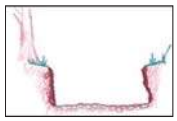
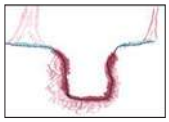
Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name		Locality	Date	Ch 93 Classification		AA Id	Length
					Designated:	Existing:		
60536988	Falcon Ethane Pipeline Project		Washington, PA	6/26/2017	WWF	None	S-PA-160301-MRK-002	46
Latitude	40.287467	Longitude	-80.260170	FGM Level 1 Channel Classification			A	

Evaluator(s)	Stream Name and Information	Notes:
Matt Kline, Elliot Dillon	S-PA-160301-MRK-002: Ephemeral	

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	Severe
Channel / Floodplain	 **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present. **Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain. **Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.	 **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches. **Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts; **Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain.	 **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain.
SCORE	20 19 18 17	16 15 14 13	12 11 10 9	8 7 6 5	4 3 2 1

Comments:

CI = (Score)/20		CI
SCORE:	19	0.95

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category					
	Optimal	Suboptimal		Marginal		Poor	
Riparian Vegetation (Floodplain)	Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.
		High	Low	High	Low	High	Low
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1

Comments:

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	100%	0%	0%	0%	0%	0%	0%	0.90	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	18	0	0	0	0	0	0		
	Total Sub-score:	**18.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	71%	0%	0%	0%	0%	29%	0%	0.70	CI = (Left Side CI + Right Side CI)/2
	Score:	18	0	0	0	0	4	0		
	Total Sub-score:	**12.86**	**0.00**	**0.00**	**0.00**	**0.00**	**1.14**	**0.00**		

CI
0.80

Riverine Assessment Form 1 - Page 2

2/4/2017

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

	Condition Category								Comments:
	Optimal	Suboptimal		Marginal		Poor			
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
		High	Low	High	Low	High	Low	
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1	

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sums of % Riparian ZOI Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	100%	0%	0%	0%	0%	0%	0%	0.90	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	18	0	0	0	0	0	0		
	Total Sub-score:	18.00	0.00	0.00	0.00	0.00	0.00	0.00		
	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor		
Left Side	% Riparian Area:	100%	0%	0%	0%	0%	0%	0%	0.90	CI = (Left Side CI + Right Side CI)/2 — CI: 0.90
	Score:	18	0	0	0	0	0	0		
	Total Sub-score:	18.00	0.00	0.00	0.00	0.00	0.00	0.00		

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

	Condition Category				Comments:	
	Optimal	Suboptimal	Marginal	Poor		
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.	CI = (Score)/20	CI
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	SCORE: NA	NA

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

	Condition Category						Comments:	
	Negligible	Minor		Moderate		Severe		
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	**Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.	**Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.		
		High	Low	High	Low		CI = (Score)/20	CI
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3 2 1	SCORE: 19	0.95

RIVERINE CONDITION INDEX (RCI)		RCI
NOTE: **The CIs and RCI should be rounded to 2 decimal places.**	RCI = (Sum of all CI's)/5 or Ephemeral/Intermittent RCI = (Sum non instream CI's)/4	0.90

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riparian Vegetation Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.32	100%	0.25	71%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.10	29%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.32	100%	0.35	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.32	100%	0.25	71%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.10	29%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.32	100%	0.35	100%

Entered Total Area **0.32** **0.35** From shape file for RV (zone)

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riparian ZOI Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.28	100%	0.38	100%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.28	100%	0.38	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.28	100%	0.38	100%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.28	100%	0.38	100%

Entered Total Area **0.28** **0.38** From shape file for Riparian ZOI

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riverine Assessment Form 1

Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

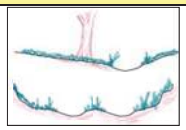
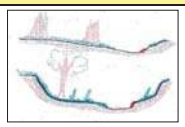
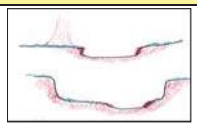
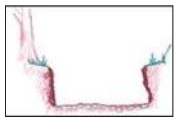
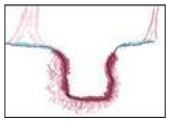
For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification		AA Id	Length
				Designated:	Existing:		
60536988	Falcon Ethane Pipeline Project	Washington, PA	6/26/2017	WWF	None	S-PA-160301-MRK-003	109

Latitude	40.290954	Longitude	-80.262307	FGM Level 1 Channel Classification	E

Evaluator(s)	Stream Name and Information	Notes:
Matt Kline, Elliot Dillon	S-PA-160301-MRK-003: Perennial	

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	Severe
Channel / Floodplain	 **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present. **Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain. **Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.	 **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches. **Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts; **Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain.	 **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain.
SCORE	20 19 18 17	16 15 14 13	12 11 10 9	8 7 6 5	4 3 2 1

Comments:

CI = (Score)/20		CI
SCORE:	11	0.55

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category					
	Optimal	Suboptimal		Marginal		Poor	
Riparian Vegetation (Floodplain)	Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.
		High	Low	High	Low	High	Low
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1

Comments:

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	100%	0%	0%	0%	0%	0%	0%	0.90	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	18	0	0	0	0	0	0		
	Total Sub-score:	**18.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	100%	0%	0%	0%	0%	0%	0%	0.90	CI = (Left Side CI + Right Side CI)/2
	Score:	18	0	0	0	0	0	0		
	Total Sub-score:	**18.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		

CI
0.90

Riverine Assessment Form 1 - Page 2

2/4/2017

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

	Condition Category							Comments:
	Optimal	Suboptimal		Marginal		Poor		
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
		High	Low	High	Low	High	Low	
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1	

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	100%	0%	0%	0%	0%	0%	0%	0.95	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	19	0	0	0	0	0	0		
	Total Sub-score:	19.00	0.00	0.00	0.00	0.00	0.00	0.00		
	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor		
Left Side	% Riparian Area:	100%	0%	0%	0%	0%	0%	0%	0.95	CI = (Left Side CI + Right Side CI)/2 — CI: 0.95
	Score:	19	0	0	0	0	0	0		
	Total Sub-score:	19.00	0.00	0.00	0.00	0.00	0.00	0.00		

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

	Condition Category				Comments:	
	Optimal	Suboptimal	Marginal	Poor		
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.		
					CI = (Score)/20	CI
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	SCORE: 5	0.25

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

	Condition Category						Comments:	
	Negligible	Minor		Moderate		Severe		
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	**Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.	**Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.		
		High	Low	High	Low		CI = (Score)/20	CI
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3 2 1	SCORE: 18	0.90

RIVERINE CONDITION INDEX (RCI)		RCI
NOTE: **The CIs and RCI should be rounded to 2 decimal places.**	**RCI = (Sum of all CI's)/5 or Ephemeral/Intermittent RCI = (Sum non instream CI's)/4**	**0.71**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riparian Vegetation Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.47	100%	0.66	100%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.47	100%	0.66	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.47	100%	0.66	100%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.47	100%	0.66	100%

Entered Total Area **0.47** **0.66** From shape file for RV (zone)

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riparian ZOI Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.30	100%	0.78	100%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.30	100%	0.78	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.30	100%	0.78	100%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.30	100%	0.78	100%

Entered Total Area **0.30** **0.78** From shape file for Riparian ZOI

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riverine Assessment Form 1

Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

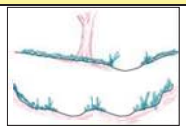
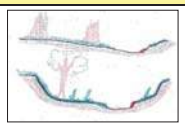
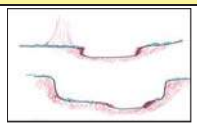
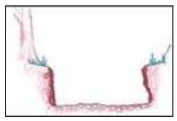
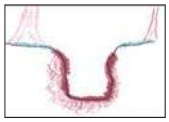
For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification		AA Id	Length
				Designated:	Existing:		
60536988	Falcon Ethane Pipeline Project	Washington, PA	6/27/2017	WWF	None	S-PA-151026-MRK-001	80

Latitude	40.303373	Longitude	-80.265348	FGM Level 1 Channel Classification	B

Evaluator(s)	Stream Name and Information	Notes:
Matt Kline, Elliot Dillon	S-PA-151026-MRK-001: Perennial	

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	Severe
Channel / Floodplain	 **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present. **Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain. **Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.	 **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches. **Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts; **Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain.	 **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain.
SCORE	20 19 18 17	16 15 14 13	12 11 10 9	8 7 6 5	4 3 2 1

Comments:

CI = (Score)/20		CI
SCORE:	7	0.35

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category					
	Optimal	Suboptimal		Marginal		Poor	
Riparian Vegetation (Floodplain)	Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.
		High	Low	High	Low	High	Low
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1

Comments:

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	13%	0%	0%	0%	43%	16%	28%	0.31	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	18	0	0	0	6	4	2		
	Total Sub-score:	2.36	0.00	0.00	0.00	2.56	0.66	0.56		
	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor		
Left Side	% Riparian Area:	3%	0%	65%	0%	0%	0%	32%	0.42	CI = (Left Side CI + Right Side CI)/2
	Score:	16	0	11	0	0	0	2		CI: 0.36
	Total Sub-score:	0.54	0.00	7.15	0.00	0.00	0.00	0.64		

Riverine Assessment Form 1 - Page 2

2/4/2017

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

	Condition Category						Comments:
	Optimal	Suboptimal		Marginal		Poor	
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
		High	Low	High	Low	High	Low	
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1		

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	0%	0%	0%	68%	0%	32%	0%	**0.39**	**Side Sub-Index = SUM(%Areas*Scores)/20**
	Score:	0	0	0	9	0	5	0		
	Total Sub-score:	**0.00**	**0.00**	**0.00**	**6.10**	**0.00**	**1.61**	**0.00**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	0%	0%	0%	0%	0%	74%	26%	**0.21**	**CI = (Left Side CI + Right Side CI)/2**
	Score:	0	0	0	0	0	5	2		**CI**
	Total Sub-score:	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**3.71**	**0.52**		**0.30**

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

	Condition Category					Comments:		
	Optimal	Suboptimal	Marginal	Poor				
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.			**CI = (Score)/20**	**CI**
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1		**SCORE:**	1	**0.05**

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

	Condition Category						Comments:	
	Negligible	Minor		Moderate		Severe		
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	**Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.	**Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.		
		High	Low	High	Low		**CI = (Score)/20**	**CI**
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1	**SCORE:** 19	**0.95**

RIVERINE CONDITION INDEX (RCI)		RCI
***NOTE:* The CIs and RCI should be rounded to 2 decimal places.**	**RCI = (Sum of all CI's)/5 or Ephemeral/Intermittent RCI = (Sum non instream CI's)/4**	**0.40**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riparian Vegetation Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.08	13%	0.02	3%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.38	65%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.26	43%	0.00	0%
High Poor	0.10	16%	0.00	0%
Low Poor	0.17	28%	0.19	32%
Calculated total area	0.61	100%	0.59	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.08	13%	0.02	3%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.38	65%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.26	43%	0.00	0%
High Poor	0.10	16%	0.00	0%
Low Poor	0.17	28%	0.19	32%
Calculated total area	0.61	100%	0.59	100%

Entered Total Area **0.61** **0.59** From shape file for RV (zone)

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riparian ZOI Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.00	0%	0.00	0%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.40	68%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.19	32%	0.43	74%
Low Poor	0.00	0%	0.15	26%
Calculated total area	0.59	100%	0.58	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.00	0%	0.00	0%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.40	68%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.19	32%	0.43	74%
Low Poor	0.00	0%	0.15	26%
Calculated total area	0.59	100%	0.58	100%

Entered Total Area **0.59** **0.58** From shape file for Riparian ZOI

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riverine Assessment Form 1

Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

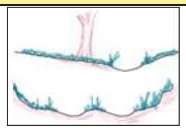
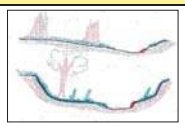
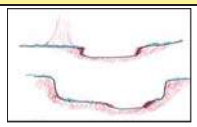
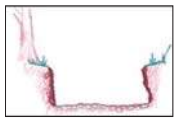
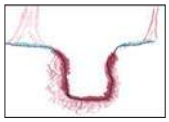
Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name		Locality	Date	Ch 93 Classification		AA Id	Length
					Designated:	Existing:		
60536988	Falcon Ethane Pipeline Project		Washington, PA	6/27/2017	WWF	None	S-PA-160302-MRK-003A	76
Latitude	40.303433	Longitude	-80.265479	FGM Level 1 Channel Classification			B	

Evaluator(s)	Stream Name and Information	Notes:
Matt Kline, Elliot Dillon	S-PA-160302-MRK-003: Intermittent	

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	Severe
Channel / Floodplain	 **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present. **Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain. **Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.	 **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches. **Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts; **Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain.	 **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain.
SCORE	20 19 18 17	16 15 14 13	12 11 10 9	8 7 6 5	4 3 2 1

Comments:

CI = (Score)/20		CI
SCORE:	10	0.50

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category					
	Optimal	Suboptimal		Marginal		Poor	
Riparian Vegetation (Floodplain)	Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.
		High	Low	High	Low	High	Low
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1

Comments:

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	0%	0%	0%	0%	48%	41%	11%	0.29	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	0	0	0	0	7	5	3		
	Total Sub-score:	0.00	0.00	0.00	0.00	3.35	2.07	0.33		
	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor		
Left Side	% Riparian Area:	27%	0%	0%	0%	46%	0%	27%	0.39	CI = (Left Side CI + Right Side CI)/2
	Score:	16	0	0	0	6	0	3		
	Total Sub-score:	4.31	0.00	0.00	0.00	2.77	0.00	0.81		

CI
0.34

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3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

	Condition Category								Comments:
	Optimal	Suboptimal		Marginal		Poor			
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
		High	Low	High	Low	High	Low		
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1			

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	0%	0%	0%	0%	33%	62%	5%	**0.28**	**Side Sub-Index = SUM(%Areas*Scores)/20**
	Score:	0	0	0	0	7	5	3		
	Total Sub-score:	**0.00**	**0.00**	**0.00**	**0.00**	**2.31**	**3.10**	**0.15**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	0%	0%	0%	0%	24%	48%	28%	**0.24**	**CI = (Left Side CI + Right Side CI)/2**
	Score:	0	0	0	0	8	5	2		
	Total Sub-score:	**0.00**	**0.00**	**0.00**	**0.00**	**1.90**	**2.38**	**0.56**		

CI
0.26

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

	Condition Category					Comments:		
	Optimal	Suboptimal	Marginal	Poor				
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.			**CI = (Score)/20**	**CI**
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1		**SCORE:**	NA	**NA**

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

	Condition Category								Comments:		
	Negligible	Minor		Moderate		Severe					
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	**Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.	**Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.					
		High	Low	High	Low				**CI = (Score)/20**		**CI**
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1			**SCORE:**	15	**0.75**

RIVERINE CONDITION INDEX (RCI)		RCI
***NOTE:* The CIs and RCI should be rounded to 2 decimal places.**	**RCI = (Sum of all CI's)/5 or Ephemeral/Intermittent RCI = (Sum non instream CI's)/4**	**0.46**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riparian Vegetation Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.00	0%	0.07	27%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.22	48%	0.12	46%
High Poor	0.19	41%	0.00	0%
Low Poor	0.05	11%	0.07	27%
Calculated total area	0.46	100%	0.26	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.00	0%	0.07	27%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.22	48%	0.12	46%
High Poor	0.19	41%	0.00	0%
Low Poor	0.05	11%	0.07	27%
Calculated total area	0.46	100%	0.26	100%

Entered Total Area **0.46** **0.26** From shape file for RV (zone)

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riparian ZOI Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.00	0%	0.00	0%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.33	33%	0.10	24%
High Poor	0.62	62%	0.20	48%
Low Poor	0.05	5%	0.12	28%
Calculated total area	1.00	100%	0.42	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.00	0%	0.00	0%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.33	33%	0.10	24%
High Poor	0.62	62%	0.20	48%
Low Poor	0.05	5%	0.12	28%
Calculated total area	1.00	100%	0.42	100%

Entered Total Area **1.00** **0.42** From shape file for Riparian ZOI

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riverine Assessment Form 1

Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

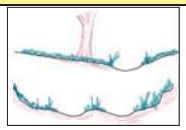
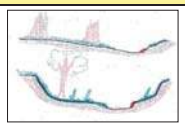
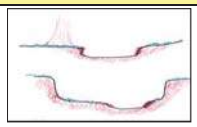
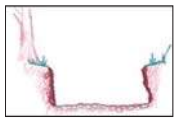
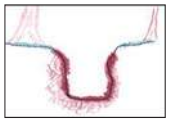
Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name		Locality	Date	Ch 93 Classification		AA Id	Length
					Designated:	Existing:		
60536988	Falcon Ethane Pipeline Project		Washington, PA	7/27/2017	WWF	None	S-PA-160302-MRK-003B	13
Latitude	40.304537	Longitude	-80.267157	FGM Level 1 Channel Classification			B	

Evaluator(s)	Stream Name and Information	Notes:
Matt Kline, Elliot Dillon	S-PA-160302-MRK-003: Intermittent	

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	Severe
Channel / Floodplain	 **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present. **Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain. **Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.	 **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches. **Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts; **Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain.	 **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain.
SCORE	20 19 18 17	16 15 14 13	12 11 10 9	8 7 6 5	4 3 2 1

Comments:

CI = (Score)/20		CI
SCORE:	11	0.55

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category					
	Optimal	Suboptimal		Marginal		Poor	
Riparian Vegetation (Floodplain)	Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.
		High	Low	High	Low	High	Low
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1

Comments:

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	0%	0%	40%	20%	0%	40%	0%	0.43	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	0	0	13	9	0	4	0		
	Total Sub-score:	**0.00**	**0.00**	**5.20**	**1.80**	**0.00**	**1.60**	**0.00**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	0%	0%	100%	0%	0%	0%	0%	0.65	CI = (Left Side CI + Right Side CI)/2
	Score:	0	0	13	0	0	0	0		
	Total Sub-score:	**0.00**	**0.00**	**13.00**	**0.00**	**0.00**	**0.00**	**0.00**		

CI
0.54

Riverine Assessment Form 1 - Page 2

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3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

	Condition Category								Comments:
	Optimal	Suboptimal		Marginal		Poor			
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
		High	Low	High	Low	High	Low		
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1			

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	0%	0%	0%	100%	0%	0%	0%	**0.50**	**Side Sub-Index = SUM(%Areas*Scores)/20**
	Score:	0	0	0	10	0	0	0		
	Total Sub-score:	**0.00**	**0.00**	**0.00**	**10.00**	**0.00**	**0.00**	**0.00**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	0%	0%	0%	0%	0%	100%	0%	**0.25**	**CI = (Left Side CI + Right Side CI)/2**
	Score:	0	0	0	0	0	5	0		**CI**
	Total Sub-score:	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**5.00**	**0.00**		**0.38**

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

	Condition Category					Comments:		
	Optimal	Suboptimal	Marginal	Poor				
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.			**CI = (Score)/20**	**CI**
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1		**SCORE:**	NA	**NA**

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

	Condition Category								Comments:		
	Negligible	Minor		Moderate		Severe					
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	**Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.	**Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.					
		High	Low	High	Low				**CI = (Score)/20**		**CI**
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1			**SCORE:**	19	**0.95**

RIVERINE CONDITION INDEX (RCI)		RCI
NOTE: **The CIs and RCI should be rounded to 2 decimal places.**	**RCI = (Sum of all CI's)/5 or Ephemeral/Intermittent RCI = (Sum non instream CI's)/4**	**0.60**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riparian Vegetation Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.00	0%	0.00	0%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.05	100%	0.03	60%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.02	40%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.05	100%	0.05	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.00	0%	0.00	0%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.02	40%	0.05	100%
High Marginal	0.01	20%	0.00	
Low Marginal	0.00	0%	0.00	0%
High Poor	0.02	40%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.05	100%	0.05	100%

Entered Total Area **0.05** **0.05** From shape file for RV (zone)

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riparian ZOI Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.00	0%	0.00	0%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.05	100%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.06	100%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.05	100%	0.06	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.00	0%	0.00	0%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.05	100%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.06	100%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.05	100%	0.06	100%

Entered Total Area **0.05** **0.06** From shape file for Riparian ZOI

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riverine Assessment Form 1

Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

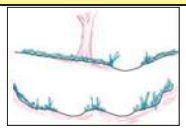
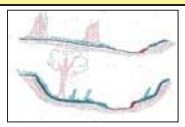
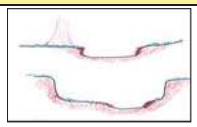
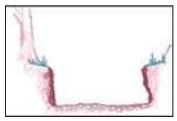
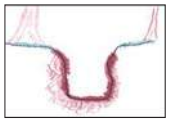
Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name		Locality	Date	Ch 93 Classification		AA Id	Length
					Designated:	Existing:		
60536988	Falcon Ethane Pipeline Project		Washington, PA	6/27/2017	WWF	None	S-PA-151029-MRK-003	106
Latitude	40.310069	Longitude	-80.267298	FGM Level 1 Channel Classification			B	

Evaluator(s)	Stream Name and Information	Notes:
Matt Kline, Elliot Dillon	S-PA-151029-MRK-003: Intermittent	

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	Severe
Channel / Floodplain	 **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present. **Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain. **Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.	 **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches. **Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts; **Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain.	 **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain.
SCORE	20 19 18 17	16 15 14 13	12 11 10 9	8 7 6 5	4 3 2 1

Comments:

CI = (Score)/20		CI
SCORE:	11	0.55

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category					
	Optimal	Suboptimal		Marginal		Poor	
Riparian Vegetation (Floodplain)	Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.
		High	Low	High	Low	High	Low
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1

Comments:

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	100%	0%	0%	0%	0%	0%	0%	0.95	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	19	0	0	0	0	0	0		
	Total Sub-score:	**19.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	82%	0%	0%	0%	0%	18%	0%	0.82	CI = (Left Side CI + Right Side CI)/2
	Score:	19	0	0	0	0	5	0		CI: 0.89
	Total Sub-score:	**15.51**	**0.00**	**0.00**	**0.00**	**0.00**	**0.92**	**0.00**		

Riverine Assessment Form 1 - Page 2

2/4/2017

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

	Condition Category							Comments:
	Optimal	Suboptimal		Marginal		Poor		
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
		High	Low	High	Low	High	Low	
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1		

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	100%	0%	0%	0%	0%	0%	0%	0.95	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	19	0	0	0	0	0	0		
	Total Sub-score:	19.00	0.00	0.00	0.00	0.00	0.00	0.00		
	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor		
Left Side	% Riparian Area:	0%	0%	0%	0%	26%	74%	0%	0.28	CI = (Left Side CI + Right Side CI)/2
	Score:	0	0	0	0	7	5	0		CI
	Total Sub-score:	0.00	0.00	0.00	0.00	1.83	3.70	0.00		0.61

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

	Condition Category					Comments:	
	Optimal	Suboptimal	Marginal	Poor			
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.		CI = (Score)/20	CI
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1		SCORE: NA	NA

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

	Condition Category							Comments:	
	Negligible	Minor		Moderate		Severe			
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	**Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.	**Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.			
		High	Low	High	Low			CI = (Score)/20	CI
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1		SCORE: 18	0.90

RIVERINE CONDITION INDEX (RCI)		RCI
NOTE: **The CIs and RCI should be rounded to 2 decimal places.**	**RCI = (Sum of all CI's)/5 or Ephemeral/Intermittent RCI = (Sum non instream CI's)/4**	0.74

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riparian Vegetation Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.75	100%	0.71	82%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.16	18%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.75	100%	0.87	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.75	100%	0.71	82%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.16	18%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.75	100%	0.87	100%

Entered Total Area **0.75** **0.87** From shape file for RV (zone)

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riparian ZOI Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.62	100%	0.00	0%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.24	26%
High Poor	0.00	0%	0.68	74%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.62	100%	0.92	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.62	100%	0.00	0%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.24	26%
High Poor	0.00	0%	0.68	74%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.62	100%	0.92	100%

Entered Total Area **0.62** **0.92** From shape file for Riparian ZOI

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riverine Assessment Form 1

Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

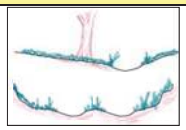
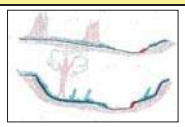
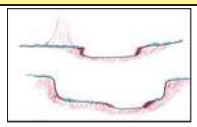
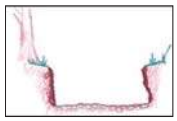
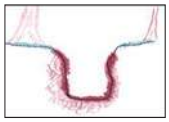
Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name		Locality	Date	Ch 93 Classification		AA Id	Length
					Designated:	Existing:		
60536988	Falcon Ethane Pipeline Project		Washington, PA	6/27/2017	WWF	None	S-PA-151029-MRK-004	5
Latitude	40.310096	Longitude	-80.267454	FGM Level 1 Channel Classification			A	

Evaluator(s)	Stream Name and Information	Notes:
Matt Kline, Elliot Dillon	S-PA-151029-MRK-004: Ephemeral	

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	Severe
Channel / Floodplain	 **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present. **Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain. **Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.	 **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches. **Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts; **Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain.	 **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain.
SCORE	20 19 18 17	16 15 14 13	12 11 10 9	8 7 6 5	4 3 2 1

Comments:

CI = (Score)/20		CI
SCORE:	8	0.40

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category					
	Optimal	Suboptimal		Marginal		Poor	
Riparian Vegetation (Floodplain)	Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.
		High	Low	High	Low	High	Low
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1

Comments:

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	59%	0%	0%	0%	0%	41%	0%	0.63	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	18	0	0	0	0	5	0		
	Total Sub-score:	10.59	0.00	0.00	0.00	0.00	2.06	0.00		
	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor		
Left Side	% Riparian Area:	75%	0%	0%	0%	0%	25%	0%	0.74	CI = (Left Side CI + Right Side CI)/2
	Score:	18	0	0	0	0	5	0		
	Total Sub-score:	13.50	0.00	0.00	0.00	0.00	1.25	0.00		

CI
0.68

Riverine Assessment Form 1 - Page 2

2/4/2017

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

	Condition Category						Comments:
	Optimal	Suboptimal		Marginal		Poor	
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
		High	Low	High	Low	High	Low	
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1		

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	37%	0%	0%	0%	0%	63%	0%	**0.46**	**Side Sub-Index = SUM(%Areas*Scores)/20**
	Score:	18	0	0	0	0	4	0		
	Total Sub-score:	**6.73**	**0.00**	**0.00**	**0.00**	**0.00**	**2.51**	**0.00**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	10%	0%	0%	0%	0%	90%	0%	**0.27**	**CI = (Left Side CI + Right Side CI)/2**
	Score:	18	0	0	0	0	4	0		**CI**
	Total Sub-score:	**1.88**	**0.00**	**0.00**	**0.00**	**0.00**	**3.58**	**0.00**		**0.37**

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

	Condition Category					Comments:	
	Optimal	Suboptimal	Marginal	Poor			
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.		**CI = (Score)/20**	**CI**
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1		**SCORE:** NA	**NA**

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

	Condition Category					1	
	Negligible	Minor		Moderate		Severe		
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	**Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.	**Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.		
		High	Low	High	Low		**CI = (Score)/20**	**CI**
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1	**SCORE:** 18	**0.90**

RIVERINE CONDITION INDEX (RCI)		RCI
***NOTE:* The CIs and RCI should be rounded to 2 decimal places.**	**RCI = (Sum of all CI's)/5 or Ephemeral/Intermittent RCI = (Sum non instream CI's)/4**	**0.59**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riparian Vegetation Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.30	59%	0.30	75%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.21	41%	0.10	25%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.51	100%	0.40	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.30	59%	0.30	75%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.21	41%	0.10	25%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.51	100%	0.40	100%

Entered Total Area **0.51** **0.40** From shape file for RV (zone)

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riparian ZOI Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.37	37%	0.07	10%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.62	63%	0.60	90%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.99	100%	0.67	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.37	37%	0.07	10%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.62	63%	0.60	90%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.99	100%	0.67	100%

Entered Total Area **0.99** **0.67** From shape file for Riparian ZOI

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riverine Assessment Form 1

Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

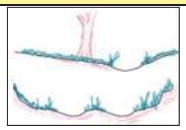
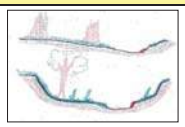
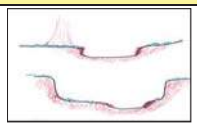
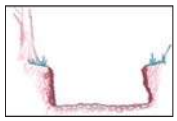
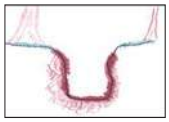
For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification		AA Id	Length
				Designated:	Existing:		
60536988	Falcon Ethane Pipeline Project	Washington, PA	6/27/2017	WWF	None	S-PA-151029-MRK-002	136

Latitude	40.312585	Longitude	-80.263244	FGM Level 1 Channel Classification	C

Evaluator(s)	Stream Name and Information	Notes:
Matt Kline, Elliot Dillon	S-PA-151029-MRK-002: Perennial	

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	Severe
Channel / Floodplain	 **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present. **Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain. **Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.	 **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches. **Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts; **Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain.	 **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain.
SCORE	20 19 18 17	16 15 14 13	12 11 10 9	8 7 6 5	4 3 2 1

Comments:

CI = (Score)/20		CI
SCORE:	10	0.50

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category					
	Optimal	Suboptimal		Marginal		Poor	
Riparian Vegetation (Floodplain)	Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.
		High	Low	High	Low	High	Low
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1

Comments:

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	78%	0%	0%	0%	0%	22%	0%	0.79	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	19	0	0	0	0	4	0		
	Total Sub-score:	**14.88**	**0.00**	**0.00**	**0.00**	**0.00**	**0.87**	**0.00**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	96%	0%	0%	0%	0%	4%	0%	0.92	CI = (Left Side CI + Right Side CI)/2
	Score:	19	0	0	0	0	4	0		
	Total Sub-score:	**18.16**	**0.00**	**0.00**	**0.00**	**0.00**	**0.18**	**0.00**		

CI
0.85

Riverine Assessment Form 1 - Page 2

2/4/2017

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

	Condition Category								Comments:
	Optimal	Suboptimal		Marginal		Poor			
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
		High	Low	High	Low	High	Low		
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1			

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	77%	0%	0%	0%	0%	23%	0%	**0.78**	**Side Sub-Index = SUM(%Areas*Scores)/20**
	Score:	19	0	0	0	0	4	0		
	Total Sub-score:	**14.58**	**0.00**	**0.00**	**0.00**	**0.00**	**0.93**	**0.00**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	96%	0%	0%	0%	0%	4%	0%	**0.92**	**CI = (Left Side CI + Right Side CI)/2**
	Score:	19	0	0	0	0	4	0		**CI**
	Total Sub-score:	**18.21**	**0.00**	**0.00**	**0.00**	**0.00**	**0.17**	**0.00**		**0.85**

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

	Condition Category					1		
	Optimal	Suboptimal	Marginal	Poor				
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.		**CI = (Score)/20**		**CI**
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1		**SCORE:**	10	**0.50**

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

	Condition Category								Comments:		
	Negligible	Minor		Moderate		Severe					
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	**Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.	**Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.					
		High	Low	High	Low				**CI = (Score)/20**		**CI**
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1			**SCORE:**	19	**0.95**

RIVERINE CONDITION INDEX (RCI)		RCI
***NOTE:* The CIs and RCI should be rounded to 2 decimal places.**	**RCI = (Sum of all CI's)/5 or Ephemeral/Intermittent RCI = (Sum non instream CI's)/4**	**0.73**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riparian Vegetation Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.47	78%	0.65	96%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.13	22%	0.03	4%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.60	100%	0.68	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.47	78%	0.65	96%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.13	22%	0.03	4%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.60	100%	0.68	100%

Entered Total Area **0.60** **0.68** From shape file for RV (zone)

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riparian ZOI Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.33	77%	0.69	96%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.10	23%	0.03	4%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.43	100%	0.72	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.33	77%	0.69	96%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.10	23%	0.03	4%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.43	100%	0.72	100%

Entered Total Area **0.43** **0.72** From shape file for Riparian ZOI

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riverine Assessment Form 1

Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

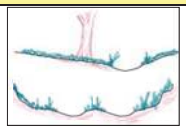
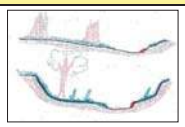
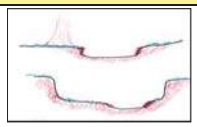
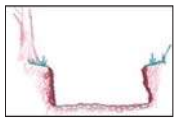
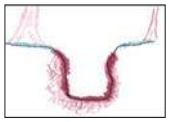
For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification		AA Id	Length
				Designated:	Existing:		
60536988	Falcon Ethane Pipeline Project	Washington, PA	6/27/2017	WWF	None	S-PA-161205-CBA-002	51

Latitude	40.318229	Longitude	-80.260936	FGM Level 1 Channel Classification	D

Evaluator(s)	Stream Name and Information	Notes:
Matt Kline, Elliot Dillon	S-PA-161205-CBA-002: Intermittent	

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	Severe
Channel / Floodplain	 **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present. **Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain. **Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.	 **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches. **Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts; **Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain.	 **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain.
SCORE	20 19 18 17	16 15 14 13	12 11 10 9	8 7 6 5	4 3 2 1

Comments:

CI = (Score)/20		CI
SCORE:	8	0.40

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category					
	Optimal	Suboptimal		Marginal		Poor	
Riparian Vegetation (Floodplain)	Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.
		High	Low	High	Low	High	Low
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1

Comments:

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	0%	0%	0%	80%	0%	20%	0%	0.36	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	0	0	0	8	0	4	0		
	Total Sub-score:	**0.00**	**0.00**	**0.00**	**6.40**	**0.00**	**0.80**	**0.00**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	90%	0%	0%	0%	0%	10%	0%	0.88	CI = (Left Side CI + Right Side CI)/2
	Score:	19	0	0	0	0	4	0		
	Total Sub-score:	**17.10**	**0.00**	**0.00**	**0.00**	**0.00**	**0.40**	**0.00**		

CI
0.62

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3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

	Condition Category								Comments:
	Optimal	Suboptimal		Marginal		Poor			
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
		High	Low	High	Low	High	Low		
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1			

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	0%	0%	0%	15%	0%	85%	0%	**0.23**	**Side Sub-Index = SUM(%Areas*Scores)/20**
	Score:	0	0	0	8	0	4	0		
	Total Sub-score:	**0.00**	**0.00**	**0.00**	**1.20**	**0.00**	**3.40**	**0.00**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	21%	0%	0%	0%	0%	79%	0%	**0.35**	**CI = (Left Side CI + Right Side CI)/2**
	Score:	19	0	0	0	0	4	0		**CI**
	Total Sub-score:	**3.94**	**0.00**	**0.00**	**0.00**	**0.00**	**3.16**	**0.00**		**0.29**

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

	Condition Category					Comments:	
	Optimal	Suboptimal	Marginal	Poor			
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.		**CI = (Score)/20**	**CI**
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1		**SCORE:** NA	**NA**

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

	Condition Category					18	
	Negligible	Minor		Moderate		Severe			
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	**Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.	**Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.		
		High	Low	High	Low		**CI = (Score)/20**	**CI**
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1	**SCORE:** 18	**0.90**

RIVERINE CONDITION INDEX (RCI)		RCI
***NOTE:* The CIs and RCI should be rounded to 2 decimal places.**	**RCI = (Sum of all CI's)/5 or Ephemeral/Intermittent RCI = (Sum non instream CI's)/4**	**0.55**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riparian Vegetation Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.28	51%	0.35	70%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.15	30%
High Poor	0.00	0%	0.00	0%
Low Poor	0.27	49%	0.00	0%
Calculated total area	0.55	100%	0.50	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.00	0%	0.45	90%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.44	80%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.11	20%	0.05	10%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.55	100%	0.50	100%

Entered Total Area **0.55** **0.50** From shape file for RV (zone)

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riparian ZOI Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.14	15%	0.17	21%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.65	79%
High Poor	0.13	14%	0.00	0%
Low Poor	0.69	72%	0.00	0%
Calculated total area	0.96	100%	0.82	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.00	0%	0.17	21%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.14	15%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.82	85%	0.65	79%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.96	100%	0.82	100%

Entered Total Area **0.96** **0.82** From shape file for Riparian ZOI

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riverine Assessment Form 1

Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

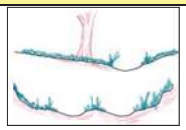
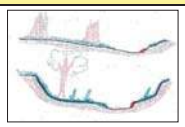
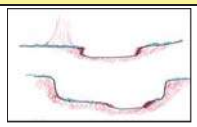
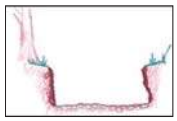
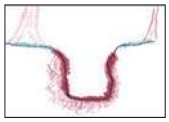
Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name		Locality	Date	Ch 93 Classification		AA Id	Length
					Designated:	Existing:		
60536988	Falcon Ethane Pipeline Project		Washington, PA	6/27/2017	WWF	None	S-PA-151029-MRK-001	81
Latitude	40.318396	Longitude	-80.260883	FGM Level 1 Channel Classification			D	

Evaluator(s)	Stream Name and Information	Notes:
Matt Kline, Elliot Dillon	S-PA-151029-MRK-001: Perennial	

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	Severe
Channel / Floodplain	 **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present. **Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain. **Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.	 **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches. **Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts; **Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain.	 **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain.
SCORE	20 19 18 17	16 15 14 13	12 11 10 9	8 7 6 5	4 3 2 1

Comments:

CI = (Score)/20		CI
SCORE:	11	0.55

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category					
	Optimal	Suboptimal		Marginal		Poor	
Riparian Vegetation (Floodplain)	Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.
		High	Low	High	Low	High	Low
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1

Comments:

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	85%	0%	0%	15%	0%	0%	0%	0.87	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	19	0	0	8	0	0	0		
	Total Sub-score:	**16.15**	**0.00**	**0.00**	**1.20**	**0.00**	**0.00**	**0.00**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	0%	0%	0%	0%	0%	100%	0%	0.25	CI = (Left Side CI + Right Side CI)/2
	Score:	0	0	0	0	0	5	0		
	Total Sub-score:	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**5.00**	**0.00**		

CI
0.56

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3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

	Condition Category								Comments:
	Optimal	Suboptimal		Marginal		Poor			
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
		High	Low	High	Low	High	Low		
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1			

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	0%	0%	0%	0%	0%	100%	0%	**0.20**	**Side Sub-Index = SUM(%Areas*Scores)/20**
	Score:	0	0	0	0	0	4	0		
	Total Sub-score:	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**4.00**	**0.00**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	0%	0%	0%	0%	0%	100%	0%	**0.20**	**CI = (Left Side CI + Right Side CI)/2**
	Score:	0	0	0	0	0	4	0		
	Total Sub-score:	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**4.00**	**0.00**		

CI: **0.20**

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

	Condition Category					Comments:	
	Optimal	Suboptimal	Marginal	Poor			
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.		**CI = (Score)/20**	**CI**
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1		**SCORE:** 3	**0.15**

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

	Condition Category								Comments:	
	Negligible	Minor		Moderate		Severe				
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	**Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.	**Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.				
		High	Low	High	Low				**CI = (Score)/20**	**CI**
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1			**SCORE:** 13	**0.65**

RIVERINE CONDITION INDEX (RCI)		RCI
NOTE: **The CIs and RCI should be rounded to 2 decimal places.**	**RCI = (Sum of all CI's)/5 or Ephemeral/Intermittent RCI = (Sum non instream CI's)/4**	**0.42**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riparian Vegetation Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.06	10%	0.53	84%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.55	90%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.10	16%
Calculated total area	0.61	100%	0.63	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.52	85%	0.00	0%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.09	15%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.63	100%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.61	100%	0.63	100%

Entered Total Area **0.61** **0.63** From shape file for RV (zone)

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riparian ZOI Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.00	0%	0.05	8%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.60	92%
High Poor	0.00	0%	0.00	0%
Low Poor	0.55	100%	0.00	0%
Calculated total area	0.55	100%	0.65	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.00	0%	0.00	0%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.55	100%	0.65	100%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.55	100%	0.65	100%

Entered Total Area **0.55** **0.65** From shape file for Riparian ZOI

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riverine Assessment Form 1

Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

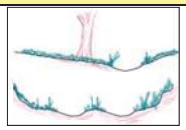
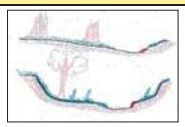
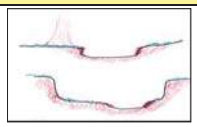
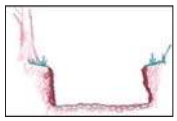
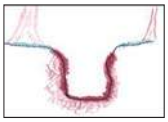
Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name		Locality	Date	Ch 93 Classification		AA Id	Length
					Designated:	Existing:		
60536988	Falcon Ethane Pipeline Project		Washington, PA	6/27/2017	WWF	None	S-PA-151210-MRK-001	59
Latitude	40.326710	Longitude	-80.261234	FGM Level 1 Channel Classification			D	

Evaluator(s)	Stream Name and Information	Notes:
Matt Kline, Elliot Dillon	S-PA-151210-MRK-001: Perennial	

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	Severe
Channel / Floodplain	 **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present. **Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain. **Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.	 **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches. **Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts; **Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain.	 **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain.
SCORE	20 19 18 17	16 15 14 13	12 11 10 9	8 7 6 5	4 3 2 1

Comments:

CI = (Score)/20		CI
SCORE:	4	0.20

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category					
	Optimal	Suboptimal		Marginal		Poor	
Riparian Vegetation (Floodplain)	Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.
		High	Low	High	Low	High	Low
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1

Comments:

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	100%	0%	0%	0%	0%	0%	0%	0.85	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	17	0	0	0	0	0	0		
	Total Sub-score:	**17.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	90%	0%	0%	0%	0%	10%	0%	0.78	CI = (Left Side CI + Right Side CI)/2
	Score:	17	0	0	0	0	3	0		
	Total Sub-score:	**15.30**	**0.00**	**0.00**	**0.00**	**0.00**	**0.30**	**0.00**		

CI
0.82

Riverine Assessment Form 1 - Page 2

2/4/2017

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

	Condition Category						Comments:
	Optimal	Suboptimal		Marginal		Poor	
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
		High	Low	High	Low	High	Low	
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1		

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	88%	0%	0%	0%	0%	12%	0%	**0.77**	**Side Sub-Index = SUM(%Areas*Scores)/20**
	Score:	17	0	0	0	0	4	0		
	Total Sub-score:	**14.94**	**0.00**	**0.00**	**0.00**	**0.00**	**0.49**	**0.00**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	12%	0%	0%	0%	52%	17%	19%	**0.33**	**CI = (Left Side CI + Right Side CI)/2**
	Score:	17	0	0	0	7	4	2		**CI**
	Total Sub-score:	**2.04**	**0.00**	**0.00**	**0.00**	**3.61**	**0.66**	**0.38**		**0.55**

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

	Condition Category					Comments:		
	Optimal	Suboptimal	Marginal	Poor				
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.			**CI = (Score)/20**	**CI**
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1		**SCORE:**	16	**0.80**

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

	Condition Category						Comments:	
	Negligible	Minor		Moderate		Severe		
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	**Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.	**Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.		
		High	Low	High	Low		**CI = (Score)/20**	**CI**
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1	**SCORE:** 15	**0.75**

RIVERINE CONDITION INDEX (RCI)		RCI
NOTE: **The CIs and RCI should be rounded to 2 decimal places.**	**RCI = (Sum of all CI's)/5 or Ephemeral/Intermittent RCI = (Sum non instream CI's)/4**	**0.62**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riparian Vegetation Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.19	100%	0.10	100%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.19	100%	0.10	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.19	100%	0.09	90%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.01	10%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.19	100%	0.10	100%

Entered Total Area **0.19** **0.10** From shape file for RV (zone)

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riparian ZOI Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	1.52	88%	0.20	12%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.84	52%
High Poor	0.21	12%	0.27	17%
Low Poor	0.00	0%	0.32	19%
Calculated total area	1.73	100%	1.63	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	1.52	88%	0.20	12%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.84	52%
High Poor	0.21	12%	0.27	17%
Low Poor	0.00	0%	0.32	19%
Calculated total area	1.73	100%	1.63	100%

Entered Total Area **1.73** **1.63** From shape file for Riparian ZOI

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riverine Assessment Form 1

Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

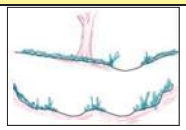
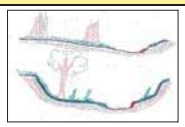
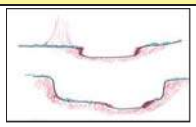
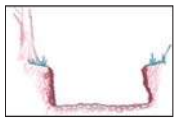
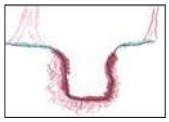
For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification		AA Id	Length
				Designated:	Existing:		
60536988	Falcon Ethane Pipeline Project	Washington, PA	6/27/2017	WWF	None	S-PA-151215-MRK-004	214.09

Latitude	40.333217	Longitude	-80.261706	FGM Level 1 Channel Classification	C

Evaluator(s)	Stream Name and Information	Notes:
Matt Kline, Elliot Dillon	S-PA-151215-MRK-004: Intermittent	

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	Severe
Channel / Floodplain	 **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present. **Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain. **Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.	 **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches. **Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts; **Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain.	 **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain.
SCORE	20 19 18 17	16 15 14 13	12 11 10 9	8 7 6 5	4 3 2 1

Comments:

CI = (Score)/20		CI
SCORE:	10	0.50

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category					
	Optimal	Suboptimal		Marginal		Poor	
Riparian Vegetation (Floodplain)	Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.
		High	Low	High	Low	High	Low
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1

Comments:

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	50%	0%	0%	0%	0%	50%	0%	0.53	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	17	0	0	0	0	4	0		
	Total Sub-score:	8.50	0.00	0.00	0.00	0.00	2.00	0.00		
	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor		
Left Side	% Riparian Area:	50%	0%	0%	0%	50%	0%	0%	0.60	CI = (Left Side CI + Right Side CI)/2
	Score:	17	0	0	0	7	0	0		
	Total Sub-score:	8.50	0.00	0.00	0.00	3.50	0.00	0.00		

CI
0.56

Riverine Assessment Form 1 - Page 2

2/4/2017

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

	Condition Category							Comments:
	Optimal	Suboptimal		Marginal		Poor		
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
		High	Low	High	Low	High	Low	
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1		

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index		
Right Side	% Riparian Area:	0%	0%	0%	0%	100%	0%	0%	0.35	Side Sub-Index = SUM(%Areas*Scores)/20	
	Score:	0	0	0	0	7	0	0			
	Total Sub-score:	0.00	0.00	0.00	0.00	7.00	0.00	0.00			
	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor			
Left Side	% Riparian Area:	40%	0%	0%	0%	0%	60%	0%	0.44	CI = (Left Side CI + Right Side CI)/2	CI
	Score:	16	0	0	0	0	4	0			0.40
	Total Sub-score:	6.40	0.00	0.00	0.00	0.00	2.40	0.00			

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

	Condition Category					Comments:		
	Optimal	Suboptimal	Marginal	Poor				
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.			CI = (Score)/20	CI
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1		SCORE:	NA	NA

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

	Condition Category								Comments:		
	Negligible	Minor		Moderate		Severe					
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	**Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.	**Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.					
		High	Low	High	Low				CI = (Score)/20		CI
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1			SCORE:	19	0.95

RIVERINE CONDITION INDEX (RCI)		RCI
NOTE: **The CIs and RCI should be rounded to 2 decimal places.**	**RCI = (Sum of all CI's)/5 or Ephemeral/Intermittent RCI = (Sum non instream CI's)/4**	**0.60**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riparian Vegetation Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.72	80%	0.35	42%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.48	58%
High Poor	0.18	20%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.90	100%	0.83	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.45	50%	0.42	50%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.42	50%
High Poor	0.45	50%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.90	100%	0.83	100%

Entered Total Area **0.90** **0.83** From shape file for RV (zone)

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riparian ZOI Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.17	23%	0.00	0%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.61	100%
High Poor	0.56	77%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.73	100%	0.61	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.00	0%	0.24	40%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.73	100%	0.00	0%
High Poor	0.00	0%	0.37	60%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.73	100%	0.61	100%

Entered Total Area **0.73** **0.61** From shape file for Riparian ZOI

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riverine Assessment Form 1

Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

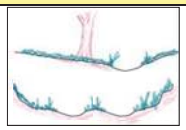
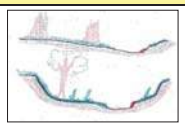
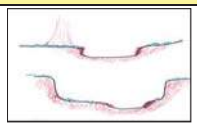
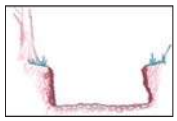
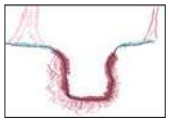
For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification		AA Id	Length
				Designated:	Existing:		
60536988	Falcon Ethane Pipeline Project	Washington, PA	6/27/2017	WWF	None	S-PA-170214-CBA-001	52

Latitude	40.338033	Longitude	-80.259043	FGM Level 1 Channel Classification	B

Evaluator(s)	Stream Name and Information	Notes:
Matt Kline, Elliot Dillon	S-PA-170214-CBA-001: Ephemeral	

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	Severe
Channel / Floodplain	 **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present. **Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain. **Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.	 **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches. **Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts; **Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain.	 **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain.
SCORE	20 19 18 17	16 15 14 13	12 11 10 9	8 7 6 5	4 3 2 1

Comments:

CI = (Score)/20		CI
SCORE:	11	0.55

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category					
	Optimal	Suboptimal		Marginal		Poor	
Riparian Vegetation (Floodplain)	Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.
		High	Low	High	Low	High	Low
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1

Comments:

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	90%	0%	0%	0%	0%	8%	2%	0.83	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	18	0	0	0	0	4	2		
	Total Sub-score:	16.20	0.00	0.00	0.00	0.00	0.32	0.04		
	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor		
Left Side	% Riparian Area:	90%	0%	0%	0%	0%	8%	2%	0.83	CI = (Left Side CI + Right Side CI)/2
	Score:	18	0	0	0	0	4	2		
	Total Sub-score:	16.20	0.00	0.00	0.00	0.00	0.32	0.04		

CI
0.83

Riverine Assessment Form 1 - Page 2

2/4/2017

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

	Condition Category								Comments:
	Optimal	Suboptimal		Marginal		Poor			
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
		High	Low	High	Low	High	Low		
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1			

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	50%	0%	0%	0%	0%	48%	2%	**0.55**	**Side Sub-Index = SUM(%Areas*Scores)/20**
	Score:	18	0	0	0	0	4	1		
	Total Sub-score:	**9.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.92**	**0.02**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	50%	0%	0%	0%	0%	48%	2%	**0.55**	**CI = (Left Side CI + Right Side CI)/2**
	Score:	18	0	0	0	0	4	2		
	Total Sub-score:	**9.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.92**	**0.04**		

CI: 0.55

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

	Condition Category				Comments:
	Optimal	Suboptimal	Marginal	Poor	
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

CI = (Score)/20		CI
SCORE:	NA	**NA**

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

	Condition Category								Comments:
	Negligible	Minor		Moderate		Severe			
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	**Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.	**Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.		
		High	Low	High	Low				
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1			

CI = (Score)/20		CI
SCORE:	18	**0.90**

RIVERINE CONDITION INDEX (RCI)		RCI
NOTE: **The CIs and RCI should be rounded to 2 decimal places.**	**RCI = (Sum of all CI's)/5 or Ephemeral/Intermittent RCI = (Sum non instream CI's)/4**	**0.71**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riparian Vegetation Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.00	0%	0.00	0%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.72	47%
High Poor	1.08	85%	0.74	48%
Low Poor	0.19	15%	0.08	5%
Calculated total area	1.27	100%	1.54	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	1.14	90%	1.39	90%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.10	8%	0.12	8%
Low Poor	0.03	2%	0.03	2%
Calculated total area	1.27	100%	1.54	100%

Entered Total Area **1.27** **1.54** From shape file for RV (zone)

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riparian ZOI Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.00	0%	0.00	0%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.44	24%
High Poor	0.96	87%	1.24	68%
Low Poor	0.14	13%	0.14	8%
Calculated total area	1.10	100%	1.82	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.55	50%	0.91	50%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.53	48%	0.87	48%
Low Poor	0.02	2%	0.04	2%
Calculated total area	1.10	100%	1.82	100%

Entered Total Area **1.10** **1.82** From shape file for Riparian ZOI

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riverine Assessment Form 1

Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

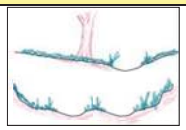
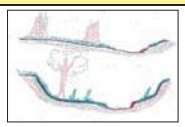
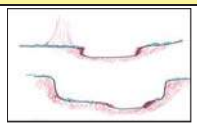
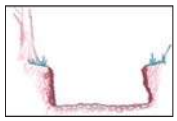
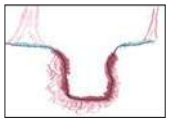
Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name		Locality	Date	Ch 93 Classification		AA Id	Length
					Designated:	Existing:		
60536988	Falcon Ethane Pipeline Project		Washington, PA	6/27/2017	WWF	None	S-PA-160314-NLS-002B	161
Latitude	40.338149	Longitude	-80.259108	FGM Level 1 Channel Classification			E	

Evaluator(s)	Stream Name and Information	Notes:
Matt Kline, Elliot Dillon	S-PA-160314-NLS-002B: Perennial	

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	Severe
Channel / Floodplain	 **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present. **Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain. **Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.	 **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches. **Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts; **Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain.	 **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain.
SCORE	20 19 18 17	16 15 14 13	12 11 10 9	8 7 6 5	4 3 2 1

Comments:

CI = (Score)/20		CI
SCORE:	10	0.50

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category					
	Optimal	Suboptimal		Marginal		Poor	
Riparian Vegetation (Floodplain)	Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.
		High	Low	High	Low	High	Low
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1

Comments:

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	90%	0%	0%	0%	0%	0%	10%	0.82	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	18	0	0	0	0	0	2		
	Total Sub-score:	16.20	0.00	0.00	0.00	0.00	0.00	0.20		
	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor		
Left Side	% Riparian Area:	0%	10%	0%	0%	0%	90%	0%	0.25	CI = (Left Side CI + Right Side CI)/2
	Score:	0	14	0	0	0	4	0		
	Total Sub-score:	0.00	1.40	0.00	0.00	0.00	3.60	0.00		

CI
0.54

Riverine Assessment Form 1 - Page 2

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3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

	Condition Category							Comments:
	Optimal	Suboptimal		Marginal		Poor		
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
		High	Low	High	Low	High	Low	
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1		

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	90%	0%	0%	0%	0%	0%	10%	**0.82**	**Side Sub-Index = SUM(%Areas*Scores)/20**
	Score:	18	0	0	0	0	0	2		
	Total Sub-score:	**16.20**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.20**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	0%	0%	0%	0%	0%	100%	0%	**0.20**	**CI = (Left Side CI + Right Side CI)/2**
	Score:	0	0	0	0	0	4	0		**CI**
	Total Sub-score:	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**4.00**	**0.00**		**0.51**

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

	Condition Category					Comments:		
	Optimal	Suboptimal	Marginal	Poor				
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.			**CI = (Score)/20**	**CI**
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1		**SCORE:**	13	**0.65**

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

	Condition Category							Comments:		
	Negligible	Minor		Moderate		Severe				
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	**Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.	**Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.				
		High	Low	High	Low			**CI = (Score)/20**		**CI**
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1		**SCORE:**	18	**0.90**

RIVERINE CONDITION INDEX (RCI)		RCI
***NOTE:* The CIs and RCI should be rounded to 2 decimal places.**	**RCI = (Sum of all CI's)/5 or Ephemeral/Intermittent RCI = (Sum non instream CI's)/4**	**0.62**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riparian Vegetation Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.71	55%	0.00	0%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.31	24%	0.00	0%
Low Marginal	0.21	16%	1.24	100%
High Poor	0.06	5%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	1.29	100%	1.24	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	1.16	90%	0.00	0%
High Suboptimal	0.00	0%	0.12	10%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	1.12	90%
Low Poor	0.13	10%	0.00	0%
Calculated total area	1.29	100%	1.24	100%

Entered Total Area **1.29** **1.24** From shape file for RV (zone)

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riparian ZOI Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.53	42%	0.00	0%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.63	50%	1.16	100%
High Poor	0.10	8%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	1.26	100%	1.16	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	1.13	90%	0.00	0%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	1.16	100%
Low Poor	0.13	10%	0.00	0%
Calculated total area	1.26	100%	1.16	100%

Entered Total Area **1.26** **1.16** From shape file for Riparian ZOI

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riverine Assessment Form 1

Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

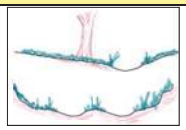
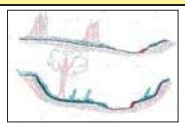
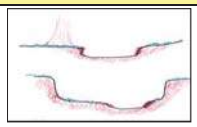
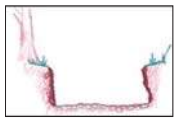
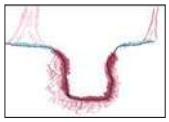
For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification		AA Id	Length
				Designated:	Existing:		
60536988	Falcon Ethane Pipeline Project	Washington, PA	6/28/2017	WWF	None	S-PA-170214-CBA-002	225

Latitude	40.342141	Longitude	-80.260066	FGM Level 1 Channel Classification	C

Evaluator(s)	Stream Name and Information	Notes:
Matt Kline, Janna Napoli	S-PA-170214-CBA-002: Intermittent	

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	Severe
Channel / Floodplain	 **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present. **Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain. **Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.	 **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches. **Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts; **Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain.	 **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain.
SCORE	20 19 18 17	16 15 14 13	12 11 10 9	8 7 6 5	4 3 2 1

Comments:

CI = (Score)/20		CI
SCORE:	6	0.30

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category					
	Optimal	Suboptimal		Marginal		Poor	
Riparian Vegetation (Floodplain)	Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.
		High	Low	High	Low	High	Low
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1

Comments:

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	0%	0%	0%	0%	0%	85%	15%	0.18	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	0	0	0	0	0	4	1		
	Total Sub-score:	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**3.40**	**0.15**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	0%	0%	0%	0%	47%	48%	5%	0.24	CI = (Left Side CI + Right Side CI)/2
	Score:	0	0	0	0	6	4	1		
	Total Sub-score:	**0.00**	**0.00**	**0.00**	**0.00**	**2.81**	**1.92**	**0.05**		

CI
0.21

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3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

	Condition Category								Comments:
	Optimal	Suboptimal		Marginal		Poor			
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
		High	Low	High	Low	High	Low		
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1			

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	0%	0%	0%	0%	0%	87%	13%	**0.18**	**Side Sub-Index = SUM(%Areas*Scores)/20**
	Score:	0	0	0	0	0	4	1		
	Total Sub-score:	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**3.49**	**0.13**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	0%	0%	0%	0%	24%	68%	8%	**0.22**	**CI = (Left Side CI + Right Side CI)/2**
	Score:	0	0	0	0	7	4	1		
	Total Sub-score:	**0.00**	**0.00**	**0.00**	**0.00**	**1.69**	**2.73**	**0.08**		

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

	Condition Category																				Comments:		
	Optimal					Suboptimal					Marginal					Poor							
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.								CI = (Score)/20		CI
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE:	NA	**NA**

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

	Condition Category																				Comments:		
	Negligible					Minor					Moderate					Severe							
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.					**Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.					**Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				**Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.										
						High					Low										CI = (Score)/20		CI
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE:	6	**0.30**

RIVERINE CONDITION INDEX (RCI)		RCI
***NOTE:* The CIs and RCI should be rounded to 2 decimal places.**	**RCI = (Sum of all CI's)/5 or Ephemeral/Intermittent RCI = (Sum non instream CI's)/4**	**0.25**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riparian Vegetation Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.00	0%	0.00	0%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.72	47%
High Poor	1.08	85%	0.74	48%
Low Poor	0.19	15%	0.08	5%
Calculated total area	1.27	100%	1.54	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.00	0%	0.00	0%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.72	47%
High Poor	1.08	85%	0.74	48%
Low Poor	0.19	15%	0.08	5%
Calculated total area	1.27	100%	1.54	100%

Entered Total Area **1.27** **1.54** From shape file for RV (zone)

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riparian ZOI Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.00	0%	0.00	0%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.44	24%
High Poor	0.96	87%	1.24	68%
Low Poor	0.14	13%	0.14	8%
Calculated total area	1.10	100%	1.82	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.00	0%	0.00	0%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.44	24%
High Poor	0.96	87%	1.24	68%
Low Poor	0.14	13%	0.14	8%
Calculated total area	1.10	100%	1.82	100%

Entered Total Area **1.10** **1.82** From shape file for Riparian ZOI

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riverine Assessment Form 1

Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

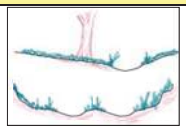
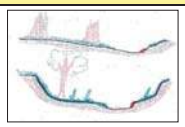
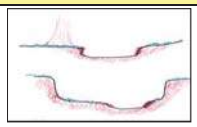
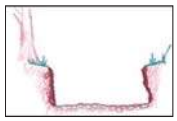
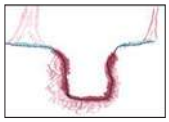
For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification		AA Id	Length
				Designated:	Existing:		
60536988	Falcon Ethane Pipeline Project	Washington, PA	6/28/2017	WWF	None	S-PA-160404-CBA-001	184

Latitude	40.342683	Longitude	-80.262203	FGM Level 1 Channel Classification	B

Evaluator(s)	Stream Name and Information	Notes:
Matt Kline, Janna Napoli	S-PA-160404-CBA-001: Intermittent	

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	Severe
Channel / Floodplain	 **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present. **Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain. **Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.	 **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches. **Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts; **Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain.	 **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain.
SCORE	20 19 18 17	16 15 14 13	12 11 10 9	8 7 6 5	4 3 2 1

Comments:

CI = (Score)/20		CI
SCORE:	11	0.55

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category					
	Optimal	Suboptimal		Marginal		Poor	
Riparian Vegetation (Floodplain)	Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.
		High	Low	High	Low	High	Low
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1

Comments:

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	15%	0%	0%	0%	77%	0%	8%	0.39	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	16	0	0	0	7	0	1		
	Total Sub-score:	2.41	0.00	0.00	0.00	5.39	0.00	0.08		
	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor		
Left Side	% Riparian Area:	48%	0%	0%	0%	1%	0%	51%	0.42	CI = (Left Side CI + Right Side CI)/2
	Score:	16	0	0	0	7	0	1		
	Total Sub-score:	7.75	0.00	0.00	0.00	0.07	0.00	0.51		

CI
0.41

Riverine Assessment Form 1 - Page 2

2/4/2017

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

	Condition Category							Comments:
	Optimal	Suboptimal		Marginal		Poor		
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
		High	Low	High	Low	High	Low	
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1		

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	32%	0%	0%	0%	36%	0%	32%	**0.40**	**Side Sub-Index = SUM(%Areas*Scores)/20**
	Score:	16	0	0	0	7	0	1		
	Total Sub-score:	**5.13**	**0.00**	**0.00**	**0.00**	**2.51**	**0.00**	**0.32**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	44%	0%	0%	0%	0%	56%	0%	**0.47**	**CI = (Left Side CI + Right Side CI)/2**
	Score:	16	0	0	0	0	4	0		**CI**
	Total Sub-score:	**7.07**	**0.00**	**0.00**	**0.00**	**0.00**	**2.23**	**0.00**		**0.43**

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

	Condition Category					Comments:	
	Optimal	Suboptimal	Marginal	Poor			
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.		**CI = (Score)/20**	**CI**
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1		**SCORE:** NA	**NA**

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

	Condition Category							Comments:	
	Negligible	Minor		Moderate		Severe			
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	**Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.	**Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.			
		High	Low	High	Low			**CI = (Score)/20**	**CI**
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1		**SCORE:** 8	**0.40**

RIVERINE CONDITION INDEX (RCI)		RCI
***NOTE:* The CIs and RCI should be rounded to 2 decimal places.**	**RCI = (Sum of all CI's)/5 or Ephemeral/Intermittent RCI = (Sum non instream CI's)/4**	**0.45**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riparian Vegetation Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.19	15%	0.47	48%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.97	77%	0.01	1%
High Poor	0.00	0%	0.00	0%
Low Poor	0.10	8%	0.49	51%
Calculated total area	1.26	100%	0.97	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.19	15%	0.47	48%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.97	77%	0.01	1%
High Poor	0.00	0%	0.00	0%
Low Poor	0.10	8%	0.49	51%
Calculated total area	1.26	100%	0.97	100%

Entered Total Area **1.26** **0.97** From shape file for RV (zone)

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riparian ZOI Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.17	32%	0.65	44%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.19	36%	0.00	0%
High Poor	0.00	0%	0.82	56%
Low Poor	0.17	32%	0.00	0%
Calculated total area	0.53	100%	1.47	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.17	32%	0.65	44%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.19	36%	0.00	0%
High Poor	0.00	0%	0.82	56%
Low Poor	0.17	32%	0.00	0%
Calculated total area	0.53	100%	1.47	100%

Entered Total Area **0.53** **1.47** From shape file for Riparian ZOI

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riverine Assessment Form 1

Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

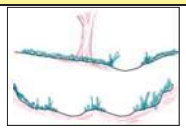
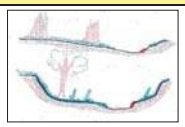
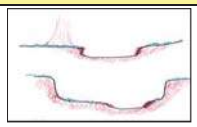
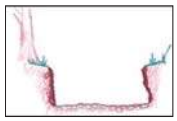
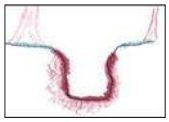
For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification		AA Id	Length
				Designated:	Existing:		
60536988	Falcon Ethane Pipeline Project	Washington, PA	6/28/2017	WWF	None	S-PA-151208-MRK-003	137

Latitude	40.342831	Longitude	-80.263021	FGM Level 1 Channel Classification	B

Evaluator(s)	Stream Name and Information	Notes:
Matt Kline, Janna Napoli	S-PA-151208-MRK-003: Perennial	

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	Severe
Channel / Floodplain	 **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present. **Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain. **Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.	 **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches. **Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts; **Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain.	 **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain.
SCORE	20 19 18 17	16 15 14 13	12 11 10 9	8 7 6 5	4 3 2 1

Comments:

CI = (Score)/20		CI
SCORE:	11	0.55

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category					
	Optimal	Suboptimal		Marginal		Poor	
Riparian Vegetation (Floodplain)	Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.
		High	Low	High	Low	High	Low
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1

Comments:

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	42%	0%	20%	0%	6%	32%	0%	0.53	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	16	0	11	0	6	4	0		
	Total Sub-score:	6.75	0.00	2.23	0.00	0.38	1.28	0.00		
	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor		
Left Side	% Riparian Area:	13%	0%	0%	0%	10%	77%	0%	0.29	CI = (Left Side CI + Right Side CI)/2
	Score:	16	0	0	0	6	4	0		
	Total Sub-score:	2.12	0.00	0.00	0.00	0.61	3.06	0.00		

CI
0.41

Riverine Assessment Form 1 - Page 2

2/4/2017

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

	Condition Category							Comments:
	Optimal	Suboptimal		Marginal		Poor		
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
		High	Low	High	Low	High	Low	
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1	

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sums of % Riparian ZOI Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	0%	0%	0%	0%	0%	100%	0%	**0.20**	**Side Sub-Index = SUM(%Areas*Scores)/20**
	Score:	0	0	0	0	0	4	0		
	Total Sub-score:	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**4.00**	**0.00**		
	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor		
Left Side	% Riparian Area:	0%	0%	0%	0%	0%	100%	0%	**0.20**	**CI = (Left Side CI + Right Side CI)/2** — CI: **0.20**
	Score:	0	0	0	0	0	4	0		
	Total Sub-score:	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**4.00**	**0.00**		

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

	Condition Category				Comments:	
	Optimal	Suboptimal	Marginal	Poor		
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.		
					CI = (Score)/20	**CI**
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	**SCORE:** 6	**0.30**

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

	Condition Category						Comments:	
	Negligible	Minor		Moderate		Severe		
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	**Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.	**Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.		
		High	Low	High	Low		**CI = (Score)/20**	**CI**
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3 2 1	**SCORE:** 15	**0.75**

RIVERINE CONDITION INDEX (RCI)		RCI
NOTE: **The CIs and RCI should be rounded to 2 decimal places.**	**RCI = (Sum of all CI's)/5 or Ephemeral/Intermittent RCI = (Sum non instream CI's)/4**	**0.44**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riparian Vegetation Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.27	42%	0.13	13%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.13	20%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.04	6%	0.10	10%
High Poor	0.20	32%	0.75	77%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.64	101%	0.98	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.27	42%	0.13	13%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.13	20%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.04	6%	0.10	10%
High Poor	0.20	32%	0.75	77%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.64	100%	0.98	100%

Entered Total Area **0.64** **0.98** From shape file for RV (zone)

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riparian ZOI Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.00	0%	0.00	0%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.26	100%	1.23	100%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.26	100%	1.23	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.00	0%	0.00	0%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.26	100%	1.23	100%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.26	100%	1.23	100%

Entered Total Area **0.26** **1.23** From shape file for Riparian ZOI

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riverine Assessment Form 1

Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

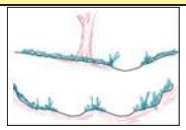
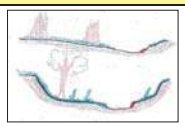
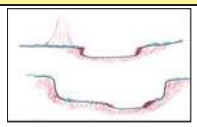
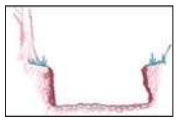
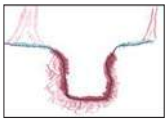
Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name		Locality	Date	Ch 93 Classification		AA Id	Length
					Designated:	Existing:		
60536988	Falcon Ethane Pipeline Project		Washington, PA	6/28/2017	WWF	None	S-PA-170214-CBA-006	49
Latitude	40.349079	Longitude	-80.265749	FGM Level 1 Channel Classification			B	

Evaluator(s)	Stream Name and Information	Notes:
Matt Kline, Janna Napoli	S-PA-170214-CBA-006: Intermittent	

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	Severe
Channel / Floodplain	 **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present. **Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain. **Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.	 **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches. **Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts; **Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain.	 **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain.
SCORE	20 19 18 17	16 15 14 13	12 11 10 9	8 7 6 5	4 3 2 1

Comments:

CI = (Score)/20		CI
SCORE:	7	0.35

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category					
	Optimal	Suboptimal		Marginal		Poor	
Riparian Vegetation (Floodplain)	Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.
		High	Low	High	Low	High	Low
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1

Comments:

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	20%	0%	0%	0%	80%	0%	0%	0.40	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	16	0	0	0	6	0	0		
	Total Sub-score:	**3.20**	**0.00**	**0.00**	**0.00**	**4.80**	**0.00**	**0.00**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	20%	0%	0%	0%	80%	0%	0%	0.40	CI = (Left Side CI + Right Side CI)/2
	Score:	16	0	0	0	6	0	0		
	Total Sub-score:	**3.20**	**0.00**	**0.00**	**0.00**	**4.80**	**0.00**	**0.00**		

CI
0.40

Riverine Assessment Form 1 - Page 2

2/4/2017

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

	Condition Category							Comments:
	Optimal	Suboptimal		Marginal		Poor		
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
		High	Low	High	Low	High	Low	
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1		

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	20%	0%	0%	0%	80%	0%	0%	0.44	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	16	0	0	0	7	0	0		
	Total Sub-score:	3.20	0.00	0.00	0.00	5.60	0.00	0.00		
	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor		
Left Side	% Riparian Area:	20%	0%	0%	0%	80%	0%	0%	0.44	CI = (Left Side CI + Right Side CI)/2
	Score:	16	0	0	0	7	0	0		
	Total Sub-score:	3.20	0.00	0.00	0.00	5.60	0.00	0.00		

	CI
Left Side CI	0.44

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

	Condition Category					Comments:	
	Optimal	Suboptimal	Marginal	Poor			
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.		CI = (Score)/20	CI
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1		SCORE: NA	NA

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

	Condition Category							Comments:	
	Negligible	Minor		Moderate		Severe			
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	**Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.	**Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.			
		High	Low	High	Low			CI = (Score)/20	CI
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1		SCORE: 14	0.70

RIVERINE CONDITION INDEX (RCI)		RCI
NOTE: **The CIs and RCI should be rounded to 2 decimal places.**	**RCI = (Sum of all CI's)/5 or Ephemeral/Intermittent RCI = (Sum non instream CI's)/4**	0.47

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riparian Vegetation Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.17	43%	0.03	12%
High Suboptimal	0.23	58%	0.22	88%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.40	100%	0.25	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.08	20%	0.05	20%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.32	80%	0.20	80%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.40	100%	0.25	100%

Entered Total Area **0.40** **0.25** From shape file for RV (zone)

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riparian ZOI Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.12	13%	0.00	0%
High Suboptimal	0.51	56%	0.06	13%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.28	31%	0.41	87%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.91	100%	0.47	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.18	20%	0.09	20%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.73	80%	0.38	80%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.91	100%	0.47	100%

Entered Total Area **0.91** **0.47** From shape file for Riparian ZOI

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riverine Assessment Form 1

Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

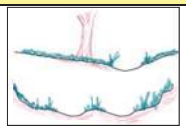
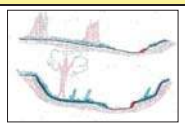
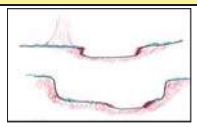
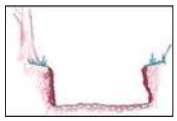
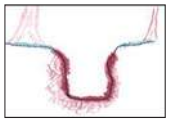
For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification		AA Id	Length
				Designated:	Existing:		
60536988	Falcon Ethane Pipeline Project	Washington, PA	6/28/2017	WWF	None	S-PA-170214-CBA-005	56

Latitude	40.349083	Longitude	-80.265866	FGM Level 1 Channel Classification	B

Evaluator(s)	Stream Name and Information	Notes:
Matt Kline, Janna Napoli	S-PA-170214-CBA-005: Intermittent	

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	Severe
Channel / Floodplain	 **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present. **Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain. **Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.	 **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches. **Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts; **Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain.	 **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain.
SCORE	20 19 18 17	16 15 14 13	12 11 10 9	8 7 6 5	4 3 2 1

Comments:

CI = (Score)/20		CI
SCORE:	8	0.40

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category					
	Optimal	Suboptimal		Marginal		Poor	
Riparian Vegetation (Floodplain)	Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.
		High	Low	High	Low	High	Low
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1

Comments:

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	68%	0%	32%	0%	0%	0%	0%	0.72	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	16	0	11	0	0	0	0		
	Total Sub-score:	**10.82**	**0.00**	**3.56**	**0.00**	**0.00**	**0.00**	**0.00**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	100%	0%	0%	0%	0%	0%	0%	0.80	CI = (Left Side CI + Right Side CI)/2
	Score:	16	0	0	0	0	0	0		
	Total Sub-score:	**16.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		

CI
0.76

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3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

	Condition Category								Comments:
	Optimal	Suboptimal		Marginal		Poor			
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
		High	Low	High	Low	High	Low		
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1			

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	0%	0%	100%	0%	0%	0%	0%	**0.55**	**Side Sub-Index = SUM(%Areas*Scores)/20**
	Score:	0	0	11	0	0	0	0		
	Total Sub-score:	**0.00**	**0.00**	**11.00**	**0.00**	**0.00**	**0.00**	**0.00**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	100%	0%	0%	0%	0%	0%	0%	**0.80**	**CI = (Left Side CI + Right Side CI)/2**
	Score:	16	0	0	0	0	0	0		
	Total Sub-score:	**16.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		

			CI
			0.68

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

	Condition Category					Comments:		
	Optimal	Suboptimal	Marginal	Poor				
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.			**CI = (Score)/20**	**CI**
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1		**SCORE:**	NA	**NA**

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

	Condition Category								Comments:		
	Negligible	Minor		Moderate		Severe					
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	**Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.	**Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.					
		High	Low	High	Low				**CI = (Score)/20**		**CI**
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1			**SCORE:**	14	**0.70**

RIVERINE CONDITION INDEX (RCI)		RCI
***NOTE:* The CIs and RCI should be rounded to 2 decimal places.**	**RCI = (Sum of all CI's)/5 or Ephemeral/Intermittent RCI = (Sum non instream CI's)/4**	**0.63**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riparian Vegetation Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.23	68%	0.41	100%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.11	32%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.34	100%	0.41	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.23	68%	0.41	100%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.11	32%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.34	100%	0.41	100%

Entered Total Area **0.34** **0.41** From shape file for RV (zone)

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riparian ZOI Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.00	0%	0.46	100%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.26	100%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.26	100%	0.46	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.00	0%	0.46	100%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.26	100%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.26	100%	0.46	100%

Entered Total Area **0.26** **0.46** From shape file for Riparian ZOI

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riverine Assessment Form 1

Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

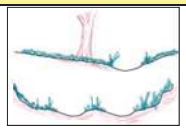
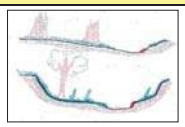
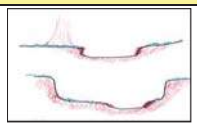
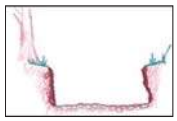
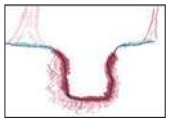
For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification		AA Id	Length
				Designated:	Existing:		
60536988	Falcon Ethane Pipeline Project	Washington, PA	6/28/2017	WWF	None	S-PA-151109-MRK-003	109

Latitude	40.351652	Longitude	-80.271426	FGM Level 1 Channel Classification	B

Evaluator(s)	Stream Name and Information	Notes:
Matt Kline, Janna Napoli	S-PA-151109-MRK-003: Perennial	

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	Severe
Channel / Floodplain	 **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present. **Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain. **Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.	 **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches. **Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts; **Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain.	 **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain.
SCORE	20 19 18 17	16 15 14 13	12 11 10 9	8 7 6 5	4 3 2 1

Comments:

CI = (Score)/20		CI
SCORE:	6	0.30

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category					
	Optimal	Suboptimal		Marginal		Poor	
Riparian Vegetation (Floodplain)	Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.
		High	Low	High	Low	High	Low
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1

Comments:

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	42%	0%	18%	0%	40%	0%	0%	0.58	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	16	0	11	0	7	0	0		
	Total Sub-score:	**6.75**	**0.00**	**1.99**	**0.00**	**2.78**	**0.00**	**0.00**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	7%	0%	0%	0%	93%	0%	0%	0.38	CI = (Left Side CI + Right Side CI)/2
	Score:	16	0	0	0	7	0	0		
	Total Sub-score:	**1.14**	**0.00**	**0.00**	**0.00**	**6.50**	**0.00**	**0.00**		

CI
0.48

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3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

	Condition Category						Comments:
	Optimal	Suboptimal		Marginal		Poor	
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
		High	Low	High	Low	High	Low	
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1		

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	7%	0%	21%	0%	68%	0%	4%	**0.37**	**Side Sub-Index = SUM(%Areas*Scores)/20**
	Score:	16	0	11	0	6	0	1		
	Total Sub-score:	**1.05**	**0.00**	**2.30**	**0.00**	**4.09**	**0.00**	**0.04**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	0%	0%	0%	0%	100%	0%	0%	**0.30**	**CI = (Left Side CI + Right Side CI)/2**
	Score:	0	0	0	0	6	0	0		
	Total Sub-score:	**0.00**	**0.00**	**0.00**	**0.00**	**6.00**	**0.00**	**0.00**		

	Condition Category																					Comments:
	Optimal					Suboptimal					Marginal					Poor						
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.							
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	**SCORE:**	8

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

CI = (Score)/20	CI
	CI
	0.40

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

	Condition Category																					Comments:
	Negligible					Minor					Moderate					Severe						
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.					**Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.					**Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.					Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.							
						Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.					**Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.											
						High					Low											
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	**SCORE:**	11

CI = (Score)/20	CI
	CI
	0.55

RIVERINE CONDITION INDEX (RCI)		RCI
NOTE: **The CIs and RCI should be rounded to 2 decimal places.**	**RCI = (Sum of all CI's)/5 or Ephemeral/Intermittent RCI = (Sum non instream CI's)/4**	**0.41**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riparian Vegetation Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.35	42%	0.05	7%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.15	18%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.33	40%	0.65	93%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.83	100%	0.70	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.35	42%	0.05	7%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.15	18%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.33	40%	0.65	93%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.83	100%	0.70	100%

Entered Total Area **0.83** **0.70** From shape file for RV (zone)

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riparian ZOI Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.06	7%	0.00	0%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.19	21%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.62	68%	0.58	100%
High Poor	0.00	0%	0.00	0%
Low Poor	0.04	4%	0.00	0%
Calculated total area	0.91	100%	0.58	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.06	7%	0.00	0%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.19	21%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.62	68%	0.58	100%
High Poor	0.00	0%	0.00	0%
Low Poor	0.04	4%	0.00	0%
Calculated total area	0.91	100%	0.58	100%

Entered Total Area **0.91** **0.58** From shape file for Riparian ZOI

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riverine Assessment Form 1

Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

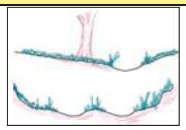
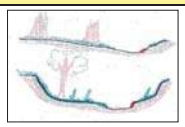
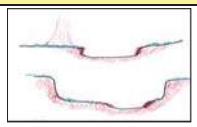
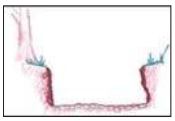
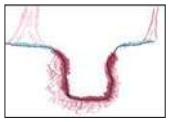
For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification		AA Id	Length
				Designated:	Existing:		
60536988	Falcon Ethane Pipeline Project	Washington, PA	6/28/2017	WWF	None	S-PA-151012-MRK-001	56

Latitude	40.359582	Longitude	-80.271121	FGM Level 1 Channel Classification	C

Evaluator(s)	Stream Name and Information	Notes:
Matt Kline, Janna Napoli	S-PA-151012-MRK-001: Perennial	

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	Severe
Channel / Floodplain	 **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present. **Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain. **Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.	 **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches. **Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts; **Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain.	 **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain.
SCORE	20 19 18 17	16 15 14 13	12 11 10 9	8 7 6 5	4 3 2 1

Comments:

CI = (Score)/20		CI
SCORE:	6	0.30

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category					
	Optimal	Suboptimal		Marginal		Poor	
Riparian Vegetation (Floodplain)	Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.
		High	Low	High	Low	High	Low
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1

Comments:

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	0%	100%	0%	0%	0%	0%	0%	0.70	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	0	14	0	0	0	0	0		
	Total Sub-score:	**0.00**	**14.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	0%	100%	0%	0%	0%	0%	0%	0.70	CI = (Left Side CI + Right Side CI)/2
	Score:	0	14	0	0	0	0	0		
	Total Sub-score:	**0.00**	**14.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		

CI
0.70

Riverine Assessment Form 1 - Page 2

2/4/2017

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

	Condition Category								Comments:
	Optimal	Suboptimal		Marginal		Poor			
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
		High	Low	High	Low	High	Low		
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1			

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	67%	28%	0%	0%	0%	0%	5%	**0.74**	**Side Sub-Index = SUM(%Areas*Scores)/20**
	Score:	16	14	0	0	0	0	1		
	Total Sub-score:	**10.76**	**3.92**	**0.00**	**0.00**	**0.00**	**0.00**	**0.05**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	0%	85%	0%	0%	0%	0%	15%	**0.61**	**CI = (Left Side CI + Right Side CI)/2**
	Score:	16	14	0	0	0	0	1		**CI**
	Total Sub-score:	**0.00**	**11.96**	**0.00**	**0.00**	**0.00**	**0.00**	**0.15**		**0.67**

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

	Condition Category					Comments:		
	Optimal	Suboptimal	Marginal	Poor				
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.			**CI = (Score)/20**	**CI**
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1		**SCORE:**	6	**0.30**

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

	Condition Category								Comments:		
	Negligible	Minor		Moderate		Severe					
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	**Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.	**Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.					
		High	Low	High	Low				**CI = (Score)/20**		**CI**
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1			**SCORE:**	14	**0.70**

RIVERINE CONDITION INDEX (RCI)		RCI
***NOTE:* The CIs and RCI should be rounded to 2 decimal places.**	**RCI = (Sum of all CI's)/5 or Ephemeral/Intermittent RCI = (Sum non instream CI's)/4**	**0.53**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riparian Vegetation Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.00	0%	0.00	0%
High Suboptimal	0.20	100%	0.41	100%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.20	100%	0.41	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.00	0%	0.00	0%
High Suboptimal	0.20	100%	0.41	100%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.20	100%	0.41	100%

Entered Total Area **0.20** **0.41** From shape file for RV (zone)

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riparian ZOI Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.74	67%	0.00	0%
High Suboptimal	0.30	28%	0.94	85%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.06	5%	0.16	15%
Calculated total area	1.10	100%	1.10	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.74	67%	0.00	0%
High Suboptimal	0.30	28%	0.94	85%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.06	5%	0.16	15%
Calculated total area	1.10	100%	1.10	100%

Entered Total Area **1.10** **1.10** From shape file for Riparian ZOI

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riverine Assessment Form 1

Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

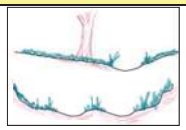
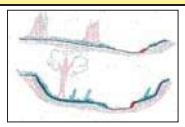
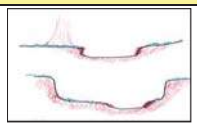
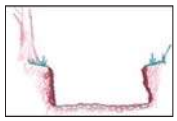
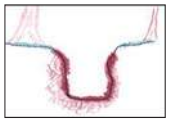
For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification		AA Id	Length
				Designated:	Existing:		
60536988	Falcon Ethane Pipeline Project	Washington, PA	6/28/2017	WWF	None	S-PA-151203-MRK-001	259

Latitude	40.379510	Longitude	-80.274330	FGM Level 1 Channel Classification	C

Evaluator(s)	Stream Name and Information	Notes:
Matt Kline, Janna Napoli	S-PA-151203-MRK-001: Intermittent	

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category				
	Optimal	**Suboptimal**	**Marginal**	**Poor**	**Severe**
Channel / Floodplain	 **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present. **Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain. **Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.	 **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches. **Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts; **Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain.	 **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain.
SCORE	20 19 18 17	16 15 14 13	12 11 10 9	8 7 6 5	4 3 2 1

Comments:

CI = (Score)/20		CI
SCORE:	4	0.20

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category					
	Optimal	**Suboptimal**		**Marginal**		**Poor**
Riparian Vegetation (Floodplain)	Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.
		High	Low	High	Low	High	Low
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1

Comments:

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	0%	0%	0%	100%	0%	0%	0%	0.40	**Side Sub-Index = SUM(%Areas*Scores)/20**
	Score:	0	0	0	8	0	0	0		
	Total Sub-score:	**0.00**	**0.00**	**0.00**	**8.00**	**0.00**	**0.00**	**0.00**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	0%	0%	0%	100%	0%	0%	0%	0.40	**CI = (Left Side CI + Right Side CI)/2**
	Score:	0	0	0	8	0	0	0		
	Total Sub-score:	**0.00**	**0.00**	**0.00**	**8.00**	**0.00**	**0.00**	**0.00**		

CI
0.40

Riverine Assessment Form 1 - Page 2

2/4/2017

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

	Condition Category							Comments:
	Optimal	Suboptimal		Marginal		Poor		
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
		High	Low	High	Low	High	Low	
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1		

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	0%	0%	0%	100%	0%	0%	0%	0.40	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	0	0	0	8	0	0	0		
	Total Sub-score:	0.00	0.00	0.00	8.00	0.00	0.00	0.00		
	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor		
Left Side	% Riparian Area:	0%	0%	0%	100%	0%	0%	0%	0.40	CI = (Left Side CI + Right Side CI)/2
	Score:	0	0	0	8	0	0	0		
	Total Sub-score:	0.00	0.00	0.00	8.00	0.00	0.00	0.00		

CI	0.40

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

	Condition Category				Comments:
	Optimal	Suboptimal	Marginal	Poor	
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.	CI = (Score)/20 / CI
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	SCORE: NA / NA

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

	Condition Category								Comments:
	Negligible	Minor		Moderate		Severe			
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	**Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.	**Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.		CI = (Score)/20 / CI
		High	Low	High	Low				
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1			SCORE: 5 / 0.25

RIVERINE CONDITION INDEX (RCI)		RCI
NOTE: **The CIs and RCI should be rounded to 2 decimal places.**	**RCI = (Sum of all CI's)/5 or Ephemeral/Intermittent RCI = (Sum non instream CI's)/4**	**0.31**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riparian Vegetation Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.00	0%	0.00	0%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	1.14	100%	1.10	100%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	1.14	100%	1.10	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.00	0%	0.00	0%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	1.14	100%	1.10	100%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	1.14	100%	1.10	100%

Entered Total Area **1.14** **1.10** From shape file for RV (zone)

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riparian ZOI Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.00	0%	0.00	0%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	1.23	100%	0.98	100%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	1.23	100%	0.98	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.00	0%	0.00	0%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	1.23	100%	0.98	100%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	1.23	100%	0.98	100%

Entered Total Area **1.23** **0.98** From shape file for Riparian ZOI

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riverine Assessment Form 1

Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

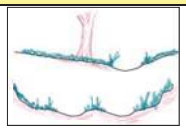
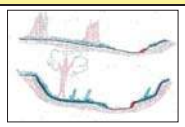
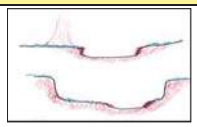
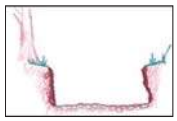
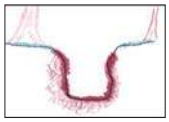
Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name		Locality	Date	Ch 93 Classification		AA Id	Length
					Designated:	Existing:		
60536988	Falcon Ethane Pipeline Project		Washington, PA	6/29/2017	WWF	None	S-PA-161130-CBA-001	90
Latitude	40.404330	Longitude	-80.279490	FGM Level 1 Channel Classification			C	

Evaluator(s)	Stream Name and Information	Notes:
Matt Kline, Janna Napoli	S-PA-161130-CBA-001: Ephemeral	

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	Severe
Channel / Floodplain	 **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present. **Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain. **Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.	 **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches. **Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts; **Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain.	 **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain.
SCORE	20 19 18 17	16 15 14 13	12 11 10 9	8 7 6 5	4 3 2 1

Comments:

CI = (Score)/20		CI
SCORE:	6	0.30

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category					
	Optimal	Suboptimal		Marginal		Poor	
Riparian Vegetation (Floodplain)	Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.
		High	Low	High	Low	High	Low
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1

Comments:

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	0%	0%	0%	75%	25%	0%	0%	0.42	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	0	0	0	9	7	0	0		
	Total Sub-score:	**0.00**	**0.00**	**0.00**	**6.72**	**1.77**	**0.00**	**0.00**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	0%	0%	0%	79%	21%	0%	0%	0.43	CI = (Left Side CI + Right Side CI)/2
	Score:	0	0	0	9	7	0	0		
	Total Sub-score:	**0.00**	**0.00**	**0.00**	**7.13**	**1.45**	**0.00**	**0.00**		

CI
0.43

Riverine Assessment Form 1 - Page 2

2/4/2017

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

	Condition Category							Comments:
	Optimal	Suboptimal		Marginal		Poor		
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
		High	Low	High	Low	High	Low	
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1		

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index		
Right Side	% Riparian Area:	0%	0%	0%	42%	58%	0%	0%	**0.39**	**Side Sub-Index = SUM(%Areas*Scores)/20**	
	Score:	0	0	0	9	7	0	0			
	Total Sub-score:	**0.00**	**0.00**	**0.00**	**3.82**	**4.03**	**0.00**	**0.00**			
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**			
Left Side	% Riparian Area:	0%	0%	0%	77%	23%	0%	0%	**0.43**	**CI = (Left Side CI + Right Side CI)/2**	**CI**
	Score:	0	0	0	9	7	0	0			**0.41**
	Total Sub-score:	**0.00**	**0.00**	**0.00**	**6.93**	**1.58**	**0.00**	**0.00**			

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

	Condition Category					Comments:		
	Optimal	Suboptimal	Marginal	Poor				
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.			**CI = (Score)/20**	**CI**
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1		**SCORE:**	NA	**NA**

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

	Condition Category											
	Negligible	Minor		Moderate		Severe						
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	**Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.	**Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.						
		High	Low	High	Low					**CI = (Score)/20**		**CI**
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1				**SCORE:**	12	**0.60**

RIVERINE CONDITION INDEX (RCI)		RCI
NOTE: **The CIs and RCI should be rounded to 2 decimal places.**	**RCI = (Sum of all CI's)/5 or Ephemeral/Intermittent RCI = (Sum non instream CI's)/4**	**0.43**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riparian Vegetation Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.00	0%	0.00	0%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.53	75%	0.61	79%
Low Marginal	0.18	25%	0.16	21%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.71	100%	0.77	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.00	0%	0.00	0%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.53	75%	0.61	79%
Low Marginal	0.18	25%	0.16	21%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.71	100%	0.77	100%

Entered Total Area **0.71** **0.77** From shape file for RV (zone)

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riparian ZOI Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.00	0%	0.00	0%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.28	42%	0.62	77%
Low Marginal	0.38	58%	0.18	23%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.66	100%	0.80	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.00	0%	0.00	0%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.28	42%	0.62	77%
Low Marginal	0.38	58%	0.18	23%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.66	100%	0.80	100%

Entered Total Area **0.66** **0.80** From shape file for Riparian ZOI

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riverine Assessment Form 1

Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

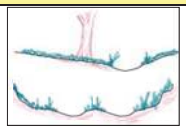
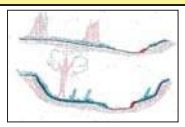
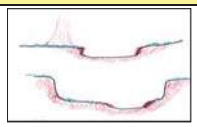
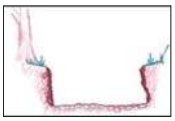
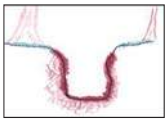
Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name		Locality	Date	Ch 93 Classification		AA Id	Length
					Designated:	Existing:		
60536988	Falcon Ethane Pipeline Project		Washington, PA	6/29/2017	WWF	None	S-PA-170113-MRK-005	20
Latitude	40.416448	Longitude	-80.293237	FGM Level 1 Channel Classification			B	

Evaluator(s)	Stream Name and Information	Notes:
Matt Kline, Janna Napoli	S-PA-170113-MRK-005: Perennial	

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	Severe
Channel / Floodplain	 **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present. **Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain. **Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.	 **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches. **Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts; **Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain.	 **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain.
SCORE	20 19 18 17	16 15 14 13	12 11 10 9	8 7 6 5	4 3 2 1

Comments:

CI = (Score)/20		CI
SCORE:	9	0.45

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category					
	Optimal	Suboptimal		Marginal		Poor	
Riparian Vegetation (Floodplain)	Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.
		High	Low	High	Low	High	Low
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1

Comments:

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	100%	0%	0%	0%	0%	0%	0%	0.80	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	16	0	0	0	0	0	0		
	Total Sub-score:	**16.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	100%	0%	0%	0%	0%	0%	0%	0.80	CI = (Left Side CI + Right Side CI)/2
	Score:	16	0	0	0	0	0	0		
	Total Sub-score:	**16.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		

CI
0.80

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3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

	Condition Category								Comments:
	Optimal	Suboptimal		Marginal		Poor			
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
		High	Low	High	Low	High	Low		
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1			

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	77%	0%	0%	18%	0%	0%	5%	**0.70**	**Side Sub-Index = SUM(%Areas*Scores)/20**
	Score:	16	0	0	9	0	0	1		
	Total Sub-score:	**12.31**	**0.00**	**0.00**	**1.62**	**0.00**	**0.00**	**0.05**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	100%	0%	0%	0%	0%	0%	0%	**0.80**	**CI = (Left Side CI + Right Side CI)/2**
	Score:	16	0	0	0	0	0	0		**CI**
	Total Sub-score:	**16.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**0.75**

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

	Condition Category					Comments:		
	Optimal	Suboptimal	Marginal	Poor				
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.			**CI = (Score)/20**	**CI**
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1		**SCORE:**	12	**0.60**

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

	Condition Category					10		
	Negligible	Minor		Moderate		Severe		
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	**Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.	**Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.		
		High	Low	High	Low		**CI = (Score)/20**	**CI**
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1	**SCORE:** 10	**0.50**

RIVERINE CONDITION INDEX (RCI)		RCI
***NOTE:* The CIs and RCI should be rounded to 2 decimal places.**	**RCI = (Sum of all CI's)/5 or Ephemeral/Intermittent RCI = (Sum non instream CI's)/4**	**0.62**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riparian Vegetation Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.39	100%	0.39	100%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.39	100%	0.39	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.39	100%	0.39	100%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.39	100%	0.39	100%

Entered Total Area **0.39** **0.39** From shape file for RV (zone)

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riparian ZOI Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.30	77%	0.38	100%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.07	18%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.02	5%	0.00	0%
Calculated total area	0.39	100%	0.38	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.30	77%	0.38	100%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.07	18%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.02	5%	0.00	0%
Calculated total area	0.39	100%	0.38	100%

Entered Total Area **0.39** **0.38** From shape file for Riparian ZOI

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riverine Assessment Form 1

Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

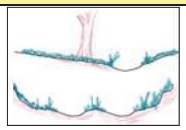
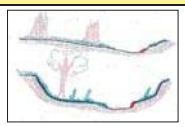
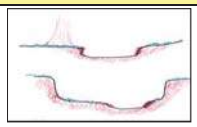
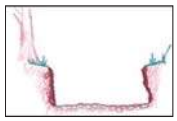
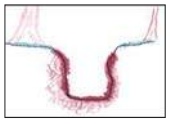
For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification		AA Id	Length
				Designated:	Existing:		
60536988	Falcon Ethane Pipeline Project	Washington, PA	6/29/2017	WWF	None	S-PA-170113-MRK-004	108

Latitude	40.416320	Longitude	-80.287881	FGM Level 1 Channel Classification	C

Evaluator(s)	Stream Name and Information	Notes:
Matt Kline, Janna Napoli	S-PA-170113-MRK-004: Perennial	

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	Severe
Channel / Floodplain	 **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present. **Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain. **Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.	 **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches. **Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts; **Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain.	 **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain.
SCORE	20 19 18 17	16 15 14 13	12 11 10 9	8 7 6 5	4 3 2 1

Comments:

CI = (Score)/20		CI
SCORE:	7	0.35

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category					
	Optimal	Suboptimal		Marginal		Poor	
Riparian Vegetation (Floodplain)	Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.
		High	Low	High	Low	High	Low
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1

Comments:

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	100%	0%	0%	0%	0%	0%	0%	0.80	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	16	0	0	0	0	0	0		
	Total Sub-score:	**16.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	100%	0%	0%	0%	0%	0%	0%	0.80	CI = (Left Side CI + Right Side CI)/2
	Score:	16	0	0	0	0	0	0		
	Total Sub-score:	**16.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		

CI
0.80

Riverine Assessment Form 1 - Page 2

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3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

	Condition Category								Comments:
	Optimal	Suboptimal		Marginal		Poor			
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
		High	Low	High	Low	High	Low		
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1			

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	82%	0%	0%	0%	0%	0%	18%	**0.67**	**Side Sub-Index = SUM(%Areas*Scores)/20**
	Score:	16	0	0	0	0	0	1		
	Total Sub-score:	**13.12**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.18**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	100%	0%	0%	0%	0%	0%	0%	**0.80**	**CI = (Left Side CI + Right Side CI)/2**
	Score:	16	0	0	0	0	0	0		**CI**
	Total Sub-score:	**16.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**0.73**

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

	Condition Category					Comments:		
	Optimal	Suboptimal	Marginal	Poor				
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.			**CI = (Score)/20**	**CI**
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1		**SCORE:**	3	**0.15**

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

	Condition Category								Comments:		
	Negligible	Minor		Moderate		Severe					
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	**Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.	**Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.					
		High	Low	High	Low				**CI = (Score)/20**		**CI**
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1			**SCORE:**	11	**0.55**

RIVERINE CONDITION INDEX (RCI)		RCI
***NOTE:* The CIs and RCI should be rounded to 2 decimal places.**	**RCI = (Sum of all CI's)/5 or Ephemeral/Intermittent RCI = (Sum non instream CI's)/4**	**0.52**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riparian Vegetation Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.88	100%	0.86	100%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.88	100%	0.86	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.88	100%	0.86	100%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.00	0%	0.00	0%
Calculated total area	0.88	100%	0.86	100%

Entered Total Area **0.88** **0.86** From shape file for RV (zone)

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riparian ZOI Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.73	82%	0.82	100%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.16	18%	0.00	0%
Calculated total area	0.89	100%	0.82	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.73	82%	0.82	100%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.00	0%	0.00	0%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.16	18%	0.00	0%
Calculated total area	0.89	100%	0.82	100%

Entered Total Area **0.89** **0.82** From shape file for Riparian ZOI

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riverine Assessment Form 1

Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

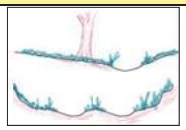
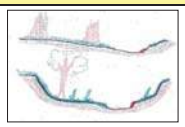
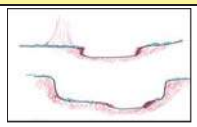
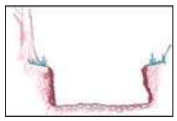
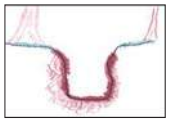
Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name		Locality	Date	Ch 93 Classification		AA Id	Length
					Designated:	Existing:		
60536988	Falcon Ethane Pipeline Project		Washington, PA	6/29/2017	WWF	None	S-PA-170207-MRK-005	34
Latitude	40.416866	Longitude	-80.287994	FGM Level 1 Channel Classification			B	

Evaluator(s)	Stream Name and Information	Notes:
Matt Kline, Janna Napoli	S-PA-170207-MRK-005: Intermittent	

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	Severe
Channel / Floodplain	 **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present. **Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain. **Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.	 **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches. **Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts; **Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain.	 **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain.
SCORE	20 19 18 17	16 15 14 13	12 11 10 9	8 7 6 5	4 3 2 1

Comments:

CI = (Score)/20		CI
SCORE:	7	0.35

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category					
	Optimal	Suboptimal		Marginal		Poor	
Riparian Vegetation (Floodplain)	Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.
		High	Low	High	Low	High	Low
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1

Comments:

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	71%	0%	0%	24%	0%	0%	5%	0.67	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	16	0	0	8	0	0	1		
	Total Sub-score:	11.43	0.00	0.00	1.90	0.00	0.00	0.05		
	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor		
Left Side	% Riparian Area:	89%	0%	0%	11%	0%	0%	0%	0.76	CI = (Left Side CI + Right Side CI)/2
	Score:	16	0	0	8	0	0	0		
	Total Sub-score:	14.32	0.00	0.00	0.84	0.00	0.00	0.00		

CI
0.71

Riverine Assessment Form 1 - Page 2

2/4/2017

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

	Condition Category								Comments:
	Optimal	Suboptimal		Marginal		Poor			
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
		High	Low	High	Low	High	Low		
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1			

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	88%	0%	0%	4%	0%	0%	8%	0.72	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	16	0	0	8	0	0	1		
	Total Sub-score:	**14.08**	**0.00**	**0.00**	**0.30**	**0.00**	**0.00**	**0.08**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	60%	0%	0%	9%	22%	0%	9%	0.60	CI = (Left Side CI + Right Side CI)/2
	Score:	16	0	0	8	7	0	1		
	Total Sub-score:	**9.65**	**0.00**	**0.00**	**0.71**	**1.54**	**0.00**	**0.09**		

	CI
	0.66

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

	Condition Category					Comments:		
	Optimal	Suboptimal	Marginal	Poor				
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.			CI = (Score)/20	CI
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1		SCORE:	NA	NA

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

	Condition Category								Comments:		
	Negligible	Minor		Moderate		Severe					
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	**Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.	**Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.					
		High	Low	High	Low				CI = (Score)/20		CI
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1			SCORE:	6	0.30

RIVERINE CONDITION INDEX (RCI)		RCI
NOTE: **The CIs and RCI should be rounded to 2 decimal places.**	**RCI = (Sum of all CI's)/5 or Ephemeral/Intermittent RCI = (Sum non instream CI's)/4**	0.51

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riparian Vegetation Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.30	71%	0.34	89%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.10	24%	0.04	11%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.02	5%	0.00	0%
Calculated total area	0.42	100%	0.38	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.30	71%	0.34	89%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.10	24%	0.04	11%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.02	5%	0.00	0%
Calculated total area	0.42	100%	0.38	100%

Entered Total Area **0.42** **0.38** From shape file for RV (zone)

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riparian ZOI Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.70	88%	0.41	60%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.03	4%	0.06	9%
Low Marginal	0.00	0%	0.15	22%
High Poor	0.00	0%	0.00	0%
Low Poor	0.06	8%	0.06	9%
Calculated total area	0.79	99%	0.68	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.70	88%	0.41	60%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.03	4%	0.06	9%
Low Marginal	0.00	0%	0.15	22%
High Poor	0.00	0%	0.00	0%
Low Poor	0.06	8%	0.06	9%
Calculated total area	0.79	100%	0.68	100%

Entered Total Area **0.79** **0.68** From shape file for Riparian ZOI

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riverine Assessment Form 1

Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

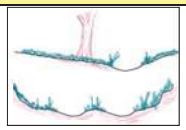
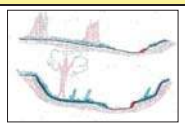
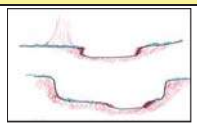
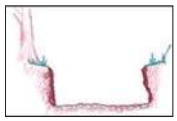
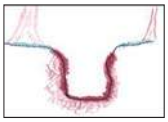
For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification		AA Id	Length
				Designated:	Existing:		
60536988	Falcon Ethane Pipeline Project	Washington, PA	6/29/2017	WWF	None	S-PA-170113-MRK-006	92

Latitude	40.417989	Longitude	-80.287994	FGM Level 1 Channel Classification	B

Evaluator(s)	Stream Name and Information	Notes:
Matt Kline, Janna Napoli	S-PA-170113-MRK-006: Intermittent	

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	Severe
Channel / Floodplain	 **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present. **Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain. **Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.	 **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches. **Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts; **Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain.	 **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain.	 **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain.
SCORE	20 19 18 17	16 15 14 13	12 11 10 9	8 7 6 5	4 3 2 1

Comments:

CI = (Score)/20		CI
SCORE:	2	0.10

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category					
	Optimal	Suboptimal		Marginal		Poor	
Riparian Vegetation (Floodplain)	Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.
		High	Low	High	Low	High	Low
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1

Comments:

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	30%	0%	0%	56%	0%	0%	14%	0.47	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	16	0	0	8	0	0	1		
	Total Sub-score:	4.80	0.00	0.00	4.48	0.00	0.00	0.14		
	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor		
Left Side	% Riparian Area:	25%	0%	0%	64%	0%	0%	11%	0.46	CI = (Left Side CI + Right Side CI)/2
	Score:	16	0	0	8	0	0	1		
	Total Sub-score:	4.00	0.00	0.00	5.12	0.00	0.00	0.11		

CI
0.47

Riverine Assessment Form 1 - Page 2

2/4/2017

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

	Condition Category								Comments:
	Optimal	Suboptimal		Marginal		Poor			
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
		High	Low	High	Low	High	Low		
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1			

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

	Condition Category	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Side Sub-Index	
Right Side	% Riparian Area:	44%	0%	0%	48%	0%	0%	8%	**0.55**	**Side Sub-Index = SUM(%Areas*Scores)/20**
	Score:	16	0	0	8	0	0	1		
	Total Sub-score:	**7.05**	**0.00**	**0.00**	**3.81**	**0.00**	**0.00**	**0.08**		
	Condition Category	**Optimal**	**High Suboptimal**	**Low Suboptimal**	**High Marginal**	**Low Marginal**	**High Poor**	**Low Poor**		
Left Side	% Riparian Area:	84%	0%	0%	16%	0%	0%	0%	**0.74**	**CI = (Left Side CI + Right Side CI)/2**
	Score:	16	0	0	8	0	0	0		
	Total Sub-score:	**13.47**	**0.00**	**0.00**	**1.26**	**0.00**	**0.00**	**0.00**		

		CI
		0.64

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

	Condition Category					Comments:		
	Optimal	Suboptimal	Marginal	Poor				
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.			**CI = (Score)/20**	**CI**
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1		**SCORE:**	NA	**NA**

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

	Condition Category								Comments:		
	Negligible	Minor		Moderate		Severe					
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	**Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	**Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.	**Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.					
		High	Low	High	Low				**CI = (Score)/20**		**CI**
SCORE	20 19 18 17 16	15 14 13 12 11		10 9 8 7 6		5 4 3 2 1			**SCORE:**	2	**0.10**

RIVERINE CONDITION INDEX (RCI)		RCI
NOTE: **The CIs and RCI should be rounded to 2 decimal places.**	**RCI = (Sum of all CI's)/5 or Ephemeral/Intermittent RCI = (Sum non instream CI's)/4**	**0.33**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riparian Vegetation Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.45	65%	0.35	64%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.14	20%	0.14	25%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.10	14%	0.06	11%
Calculated total area	0.69	100%	0.55	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.21	30%	0.14	25%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.39	56%	0.35	64%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.10	14%	0.06	11%
Calculated total area	0.69	100%	0.55	100%

Entered Total Area **0.69** **0.55** From shape file for RV (zone)

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Riparian ZOI Worksheet

Desktop Review

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.37	44%	0.32	84%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.40	48%	0.06	16%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.07	8%	0.00	0%
Calculated total area	0.84	100%	0.38	100%

Field View

Condition Category	R Size (Ac)	R %	L Size (Ac)	L %
Optimal	0.37	44%	0.32	84%
High Suboptimal	0.00	0%	0.00	0%
Low Suboptimal	0.00	0%	0.00	0%
High Marginal	0.40	48%	0.06	16%
Low Marginal	0.00	0%	0.00	0%
High Poor	0.00	0%	0.00	0%
Low Poor	0.07	8%	0.00	0%
Calculated total area	0.84	100%	0.38	100%

Entered Total Area **0.84** **0.38** From shape file for Riparian ZOI

Calculated total area and Entered Total Area must be equal

Optimal
Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

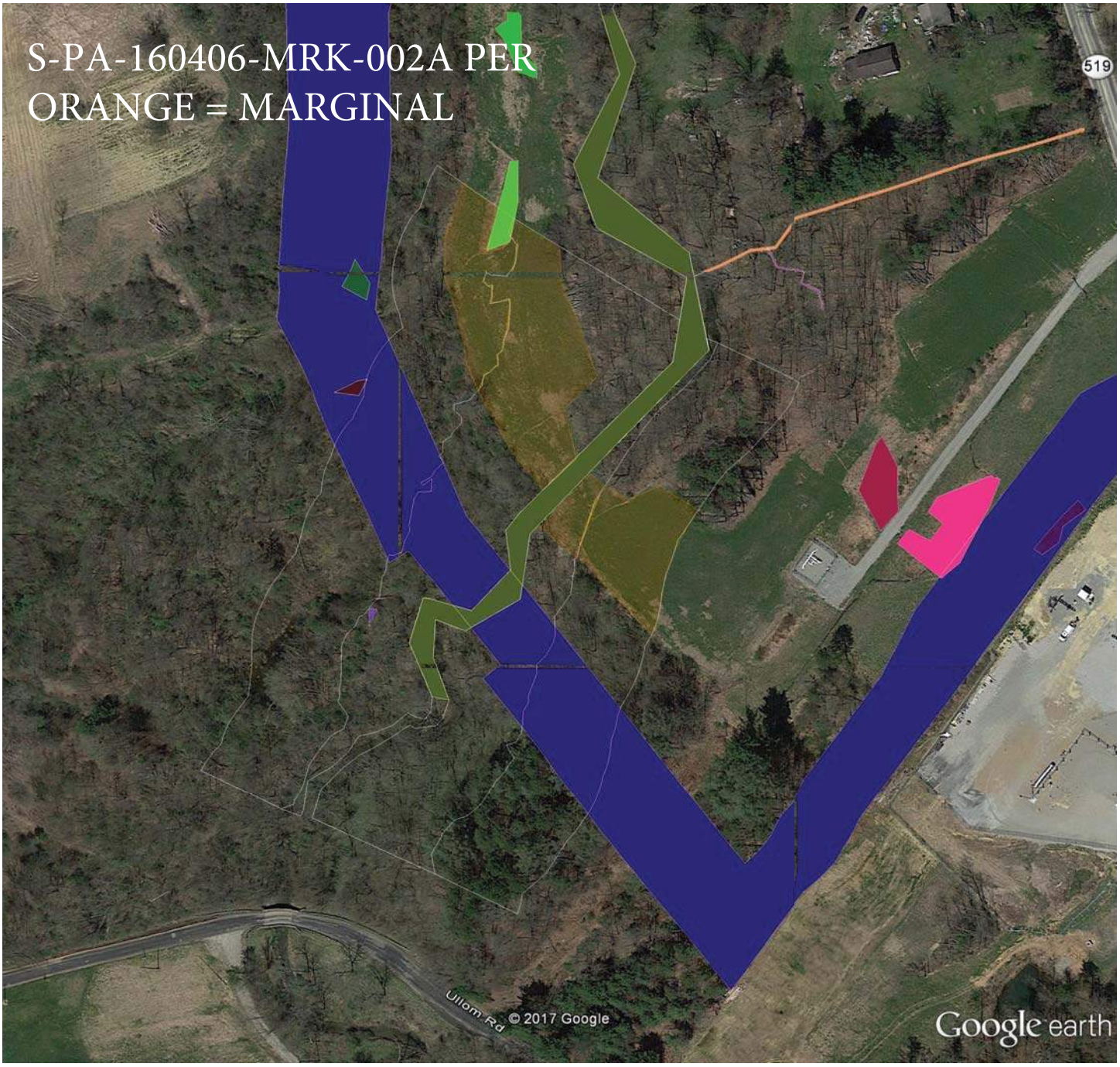
Low Suboptimal
Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal
Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor
Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor
Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.



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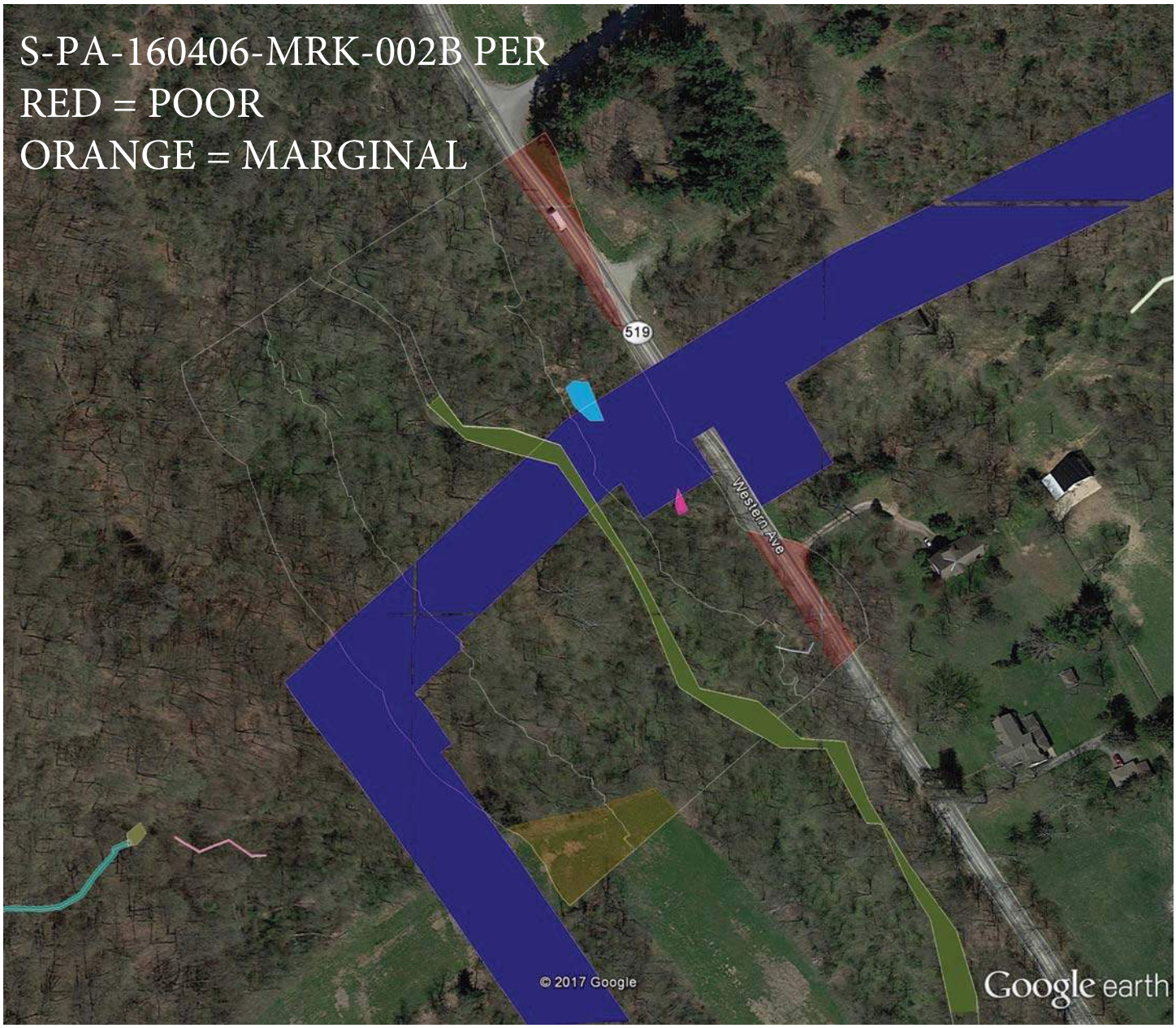

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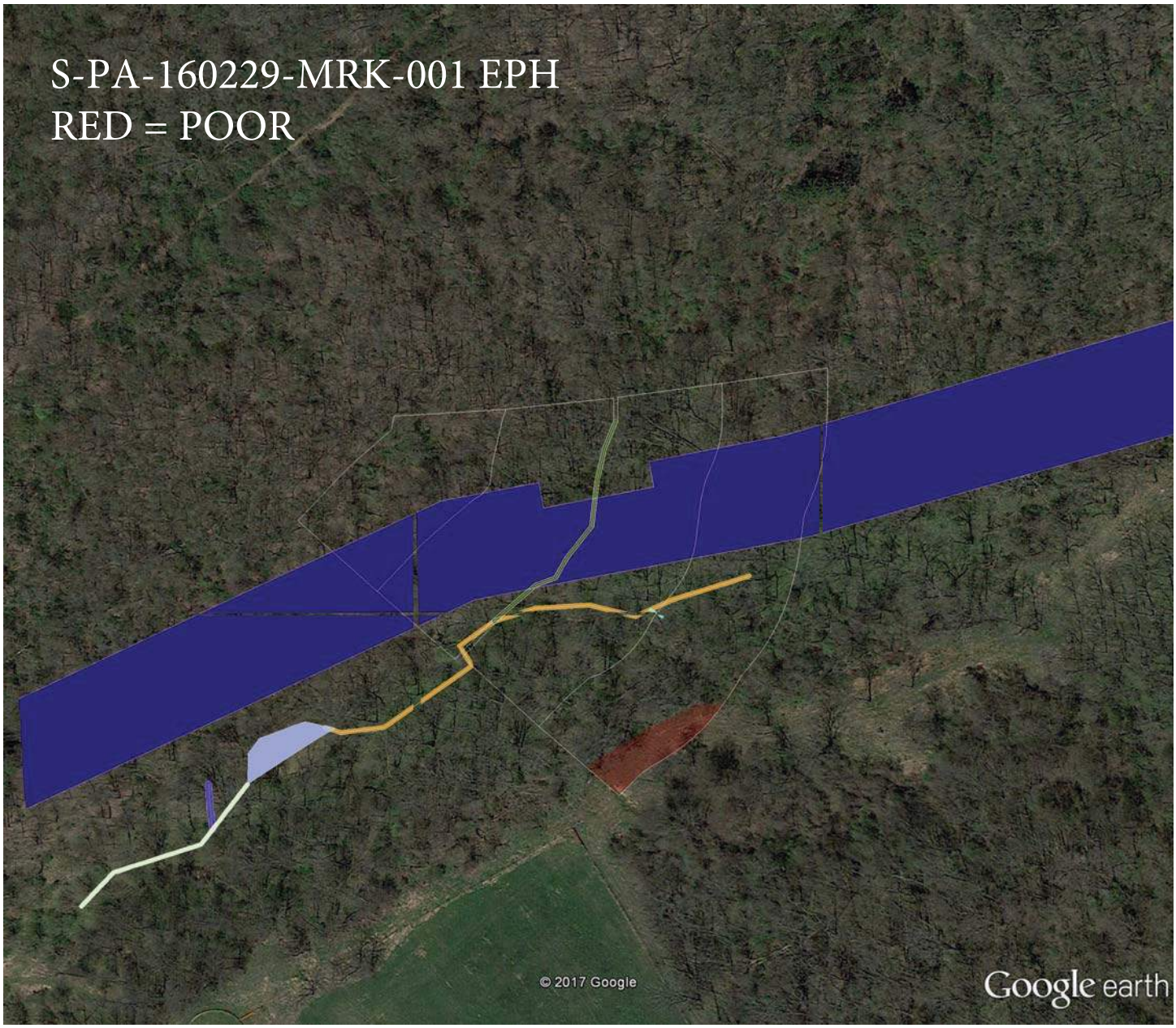

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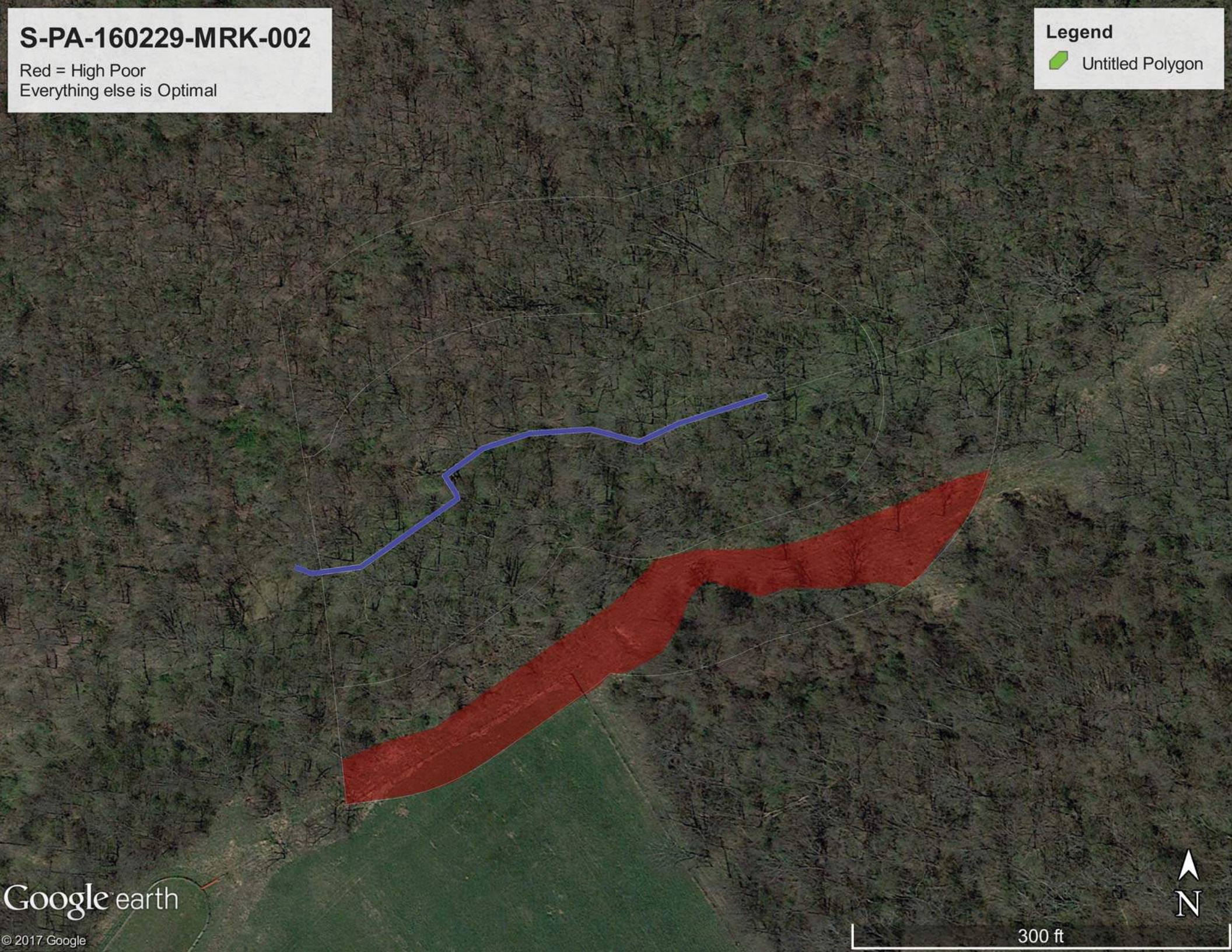
S-PA-160229-MRK-002
Red = High Poor
Everything else is Optimal
Legend
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Google earth
© 2017 Google
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300 ft

Google Earth Pro

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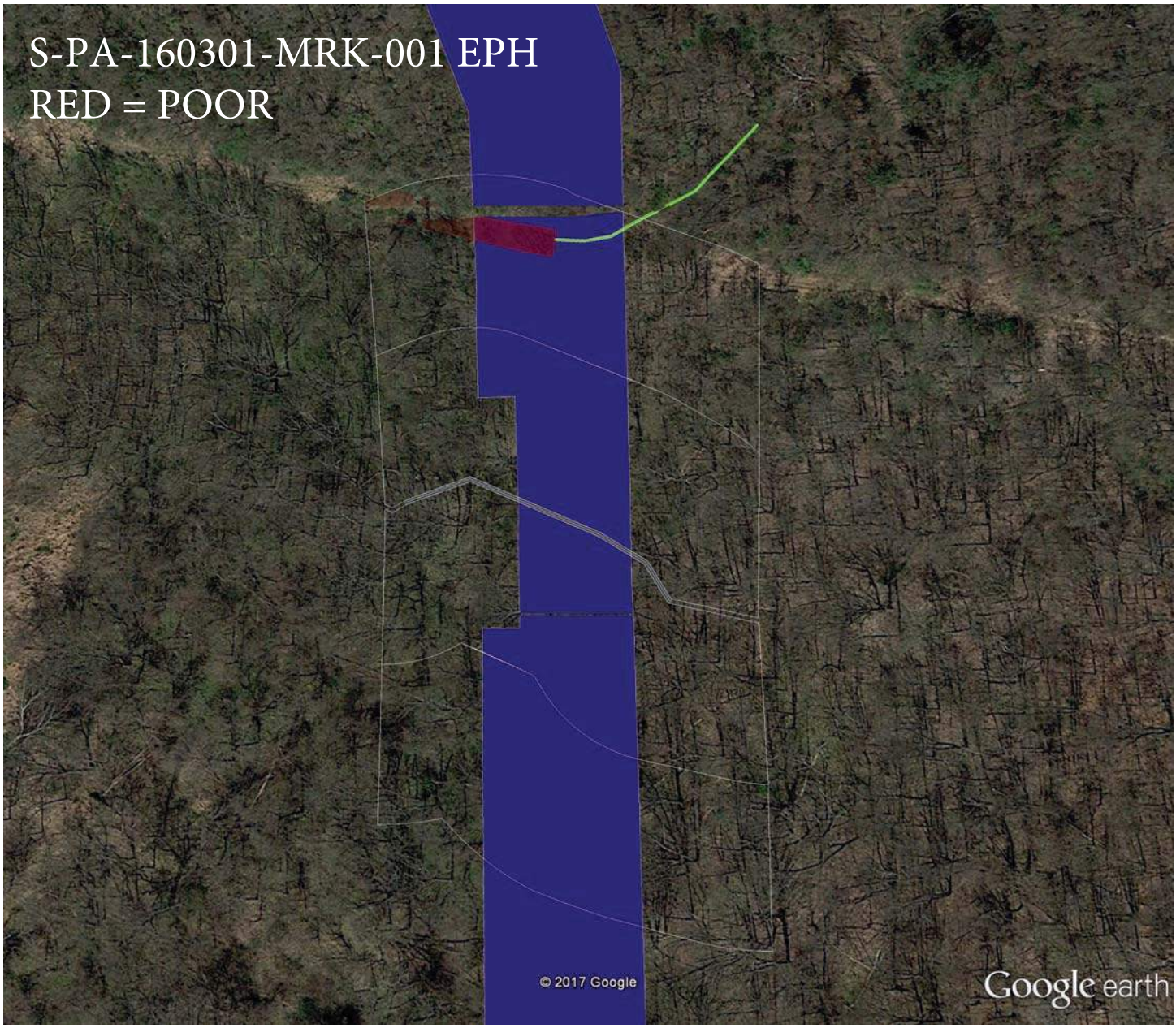
meters 300

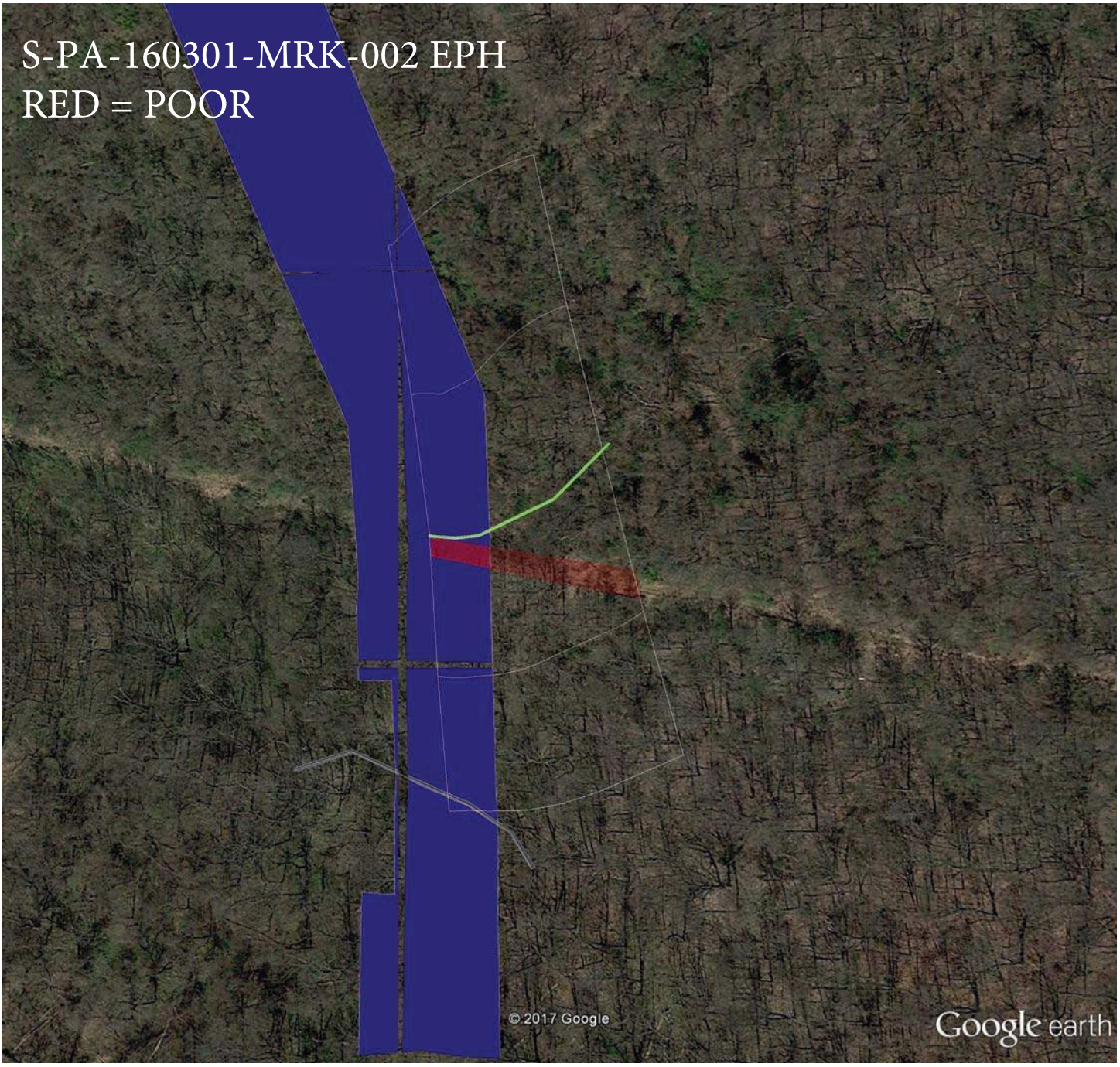
Google Earth Pro

feet 900
meters 300



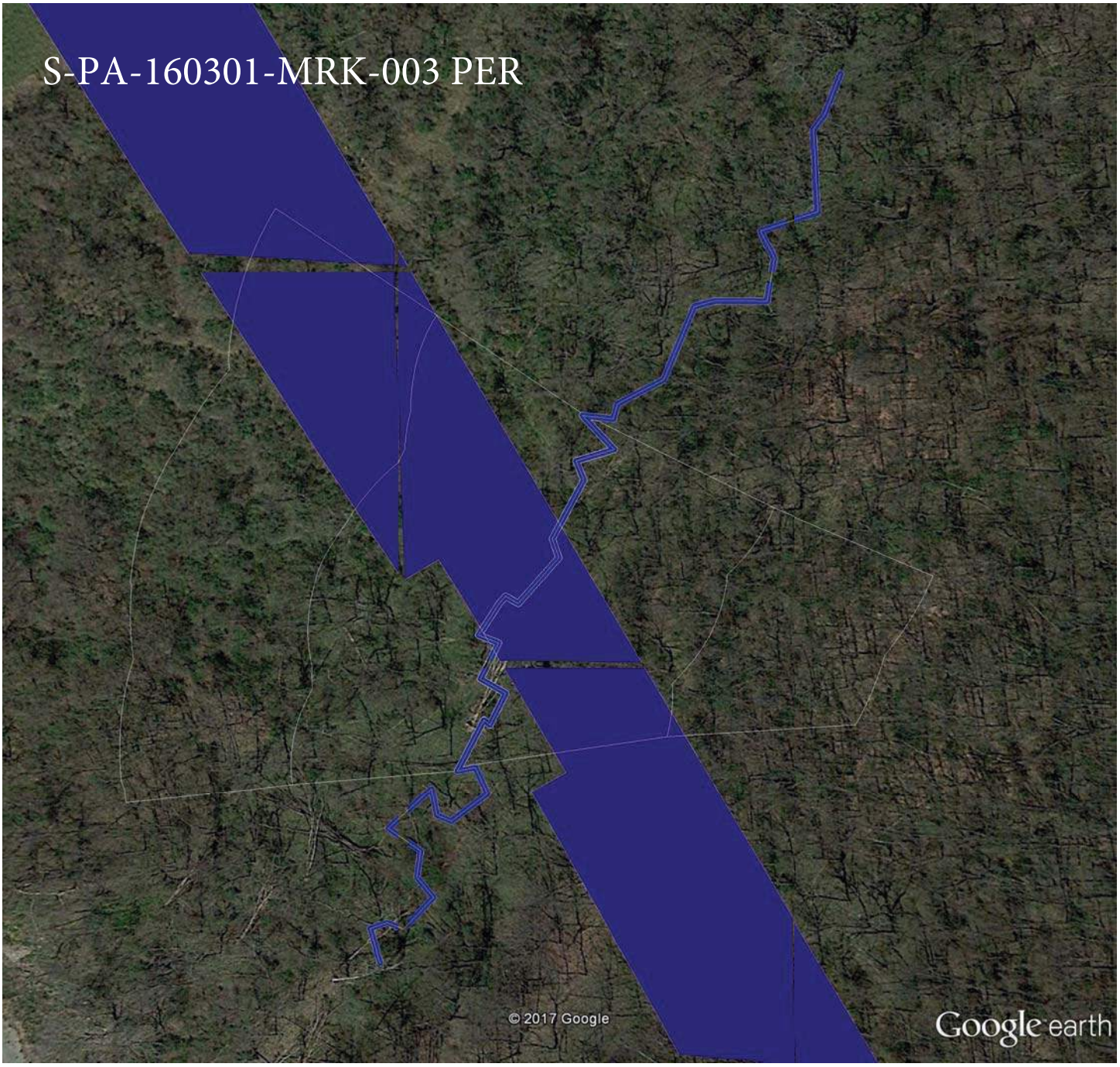
Google Earth Pro

feet 900
meters 200



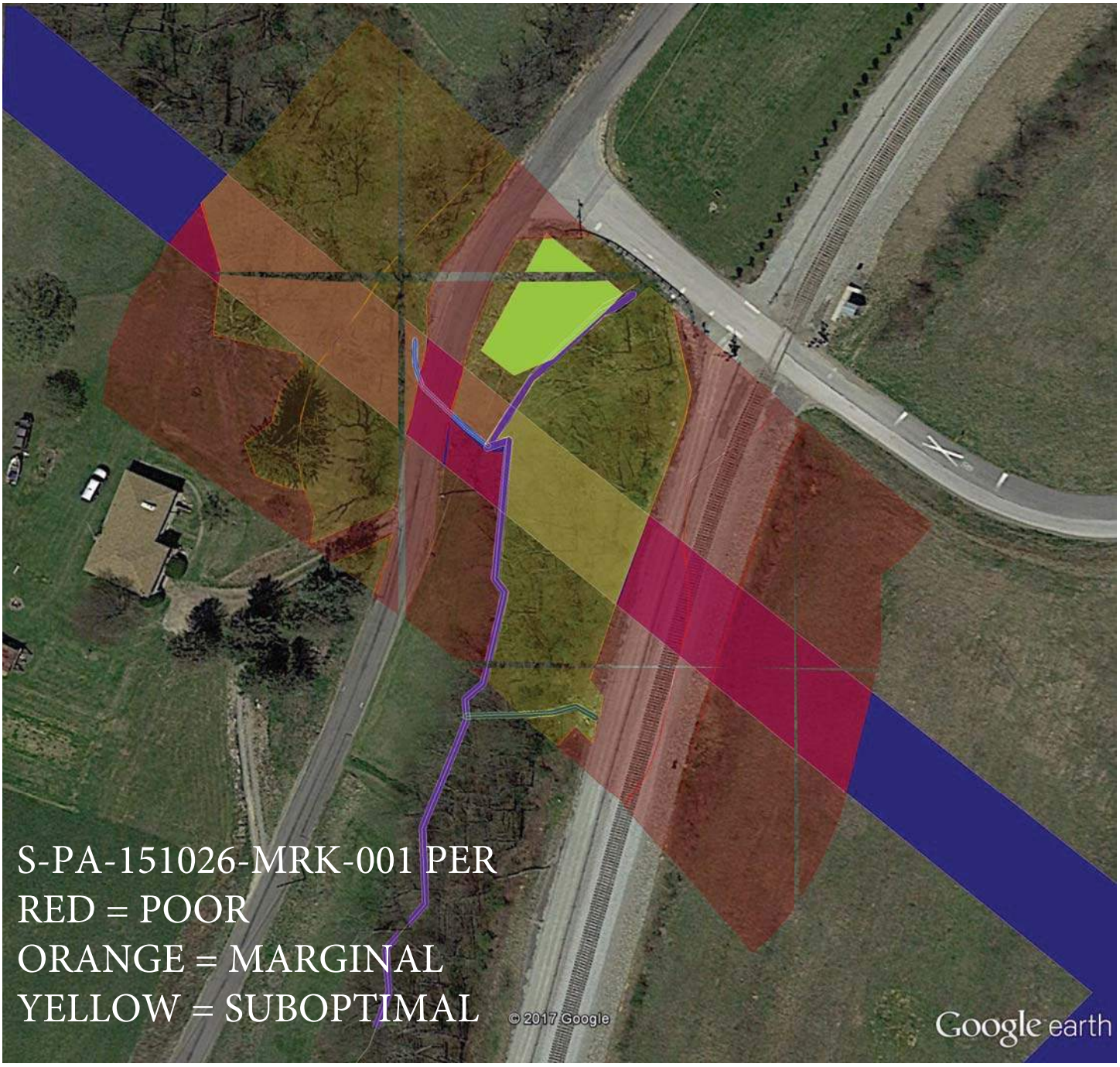
Google Earth Pro

feet 900
meters 200



Google Earth Pro

feet 800
meters 200



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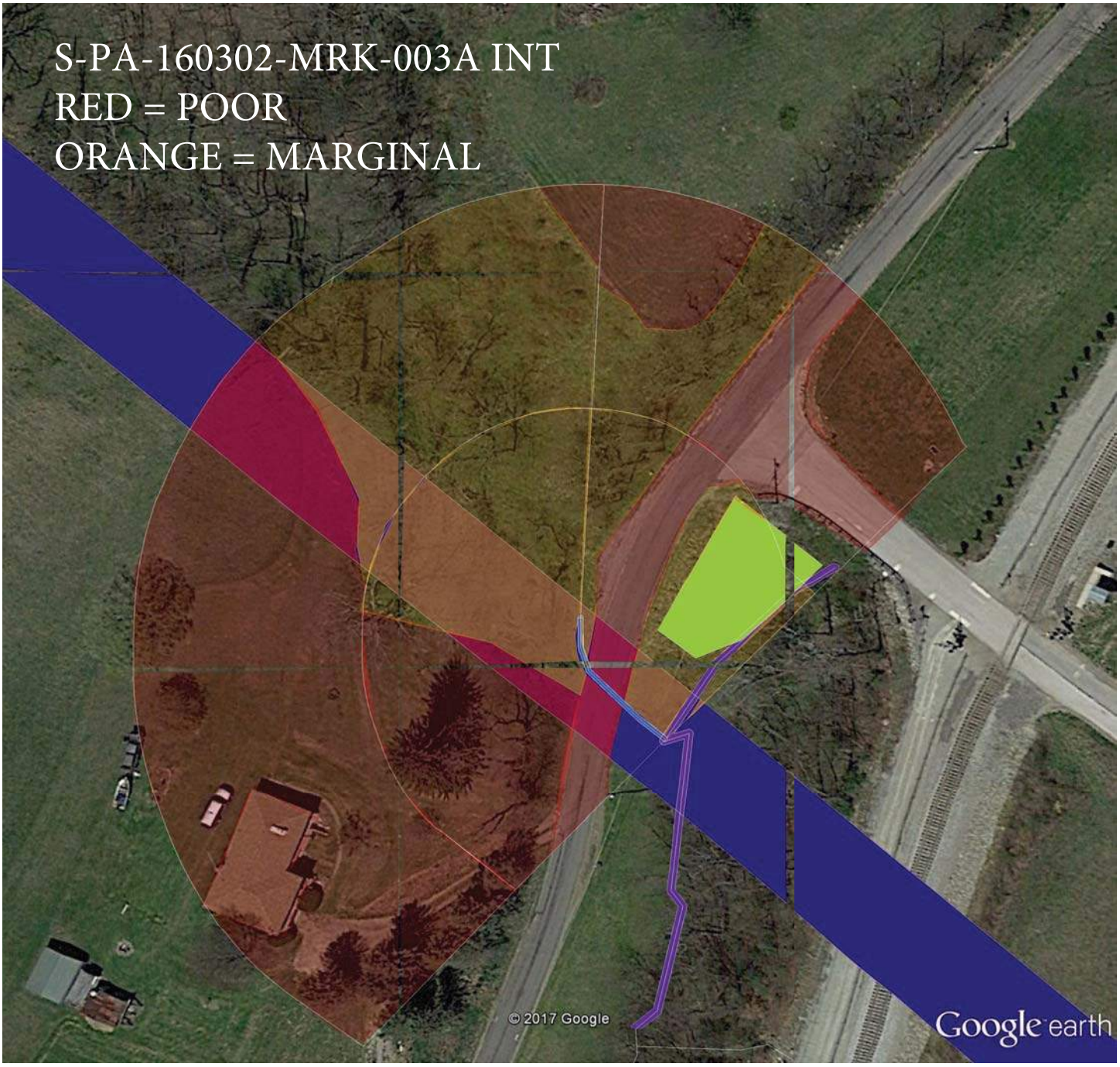

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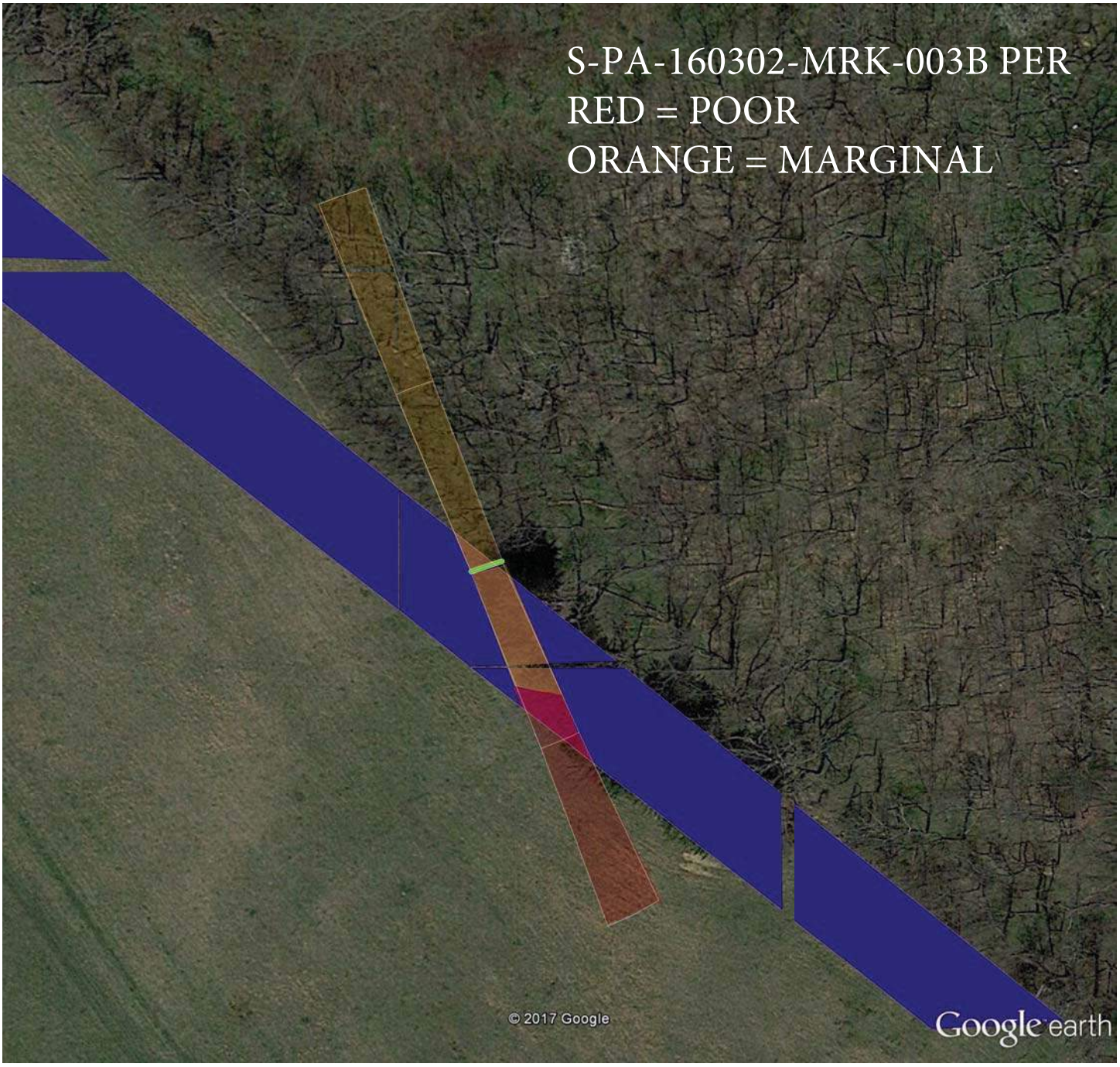

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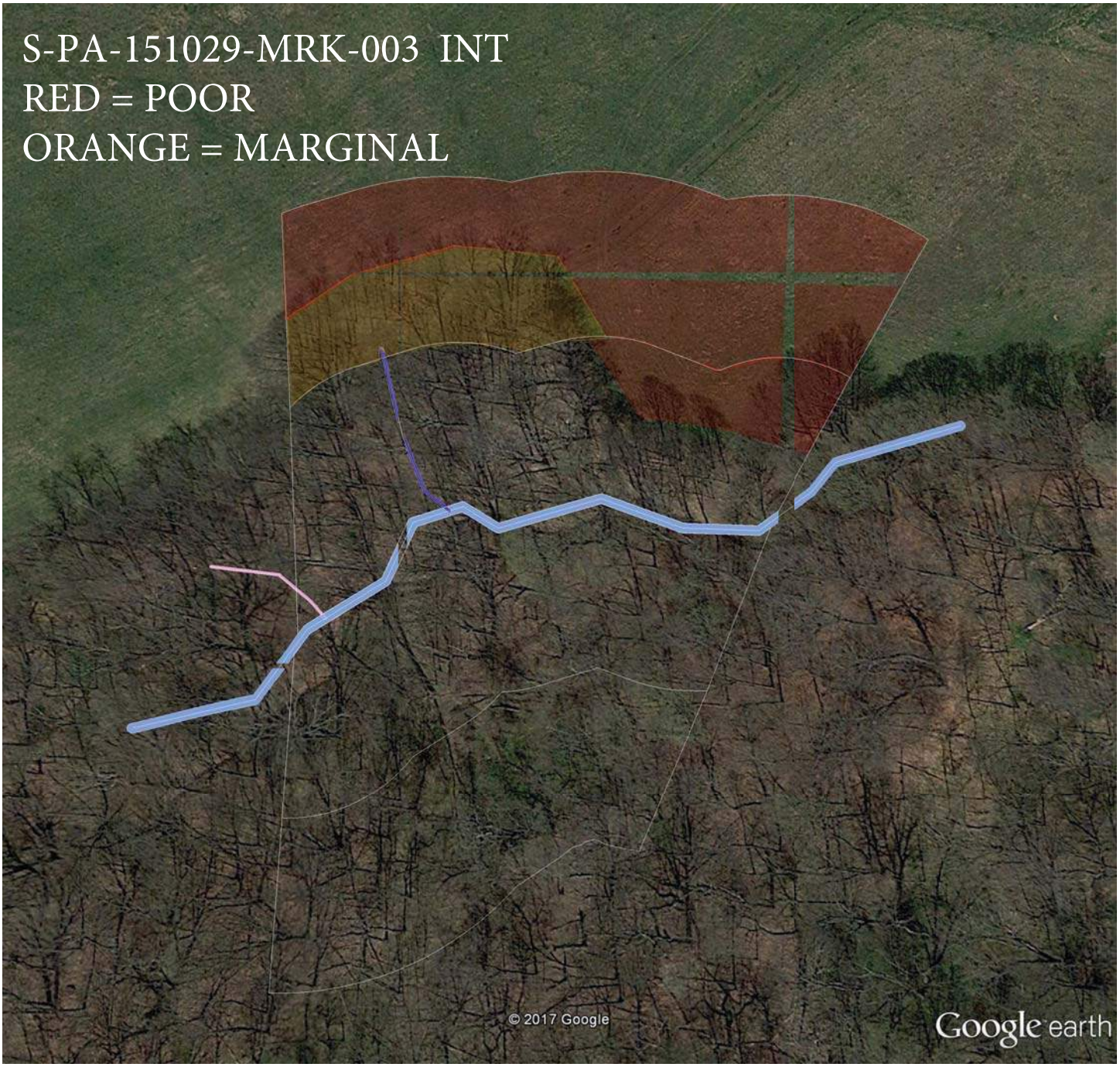

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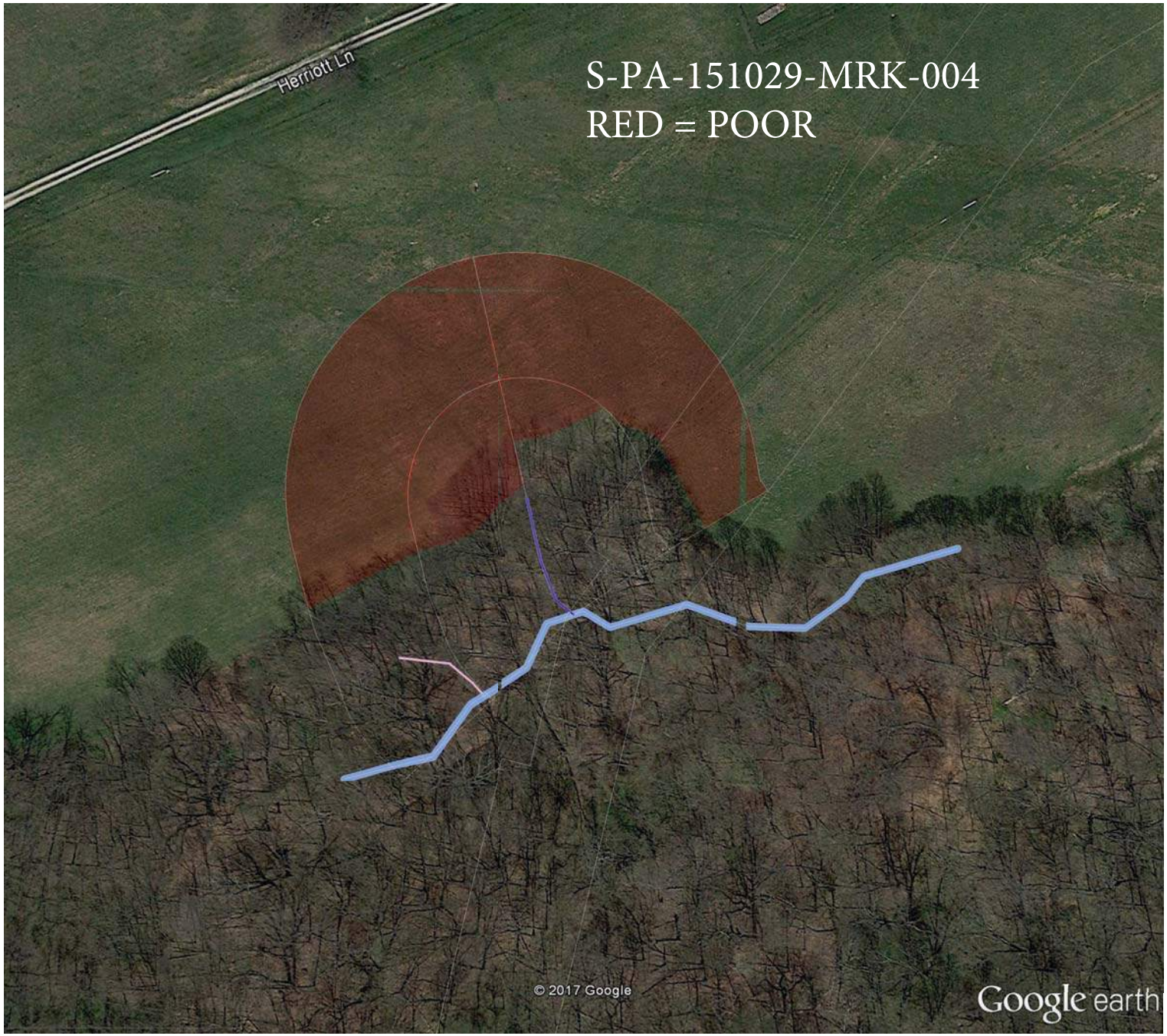
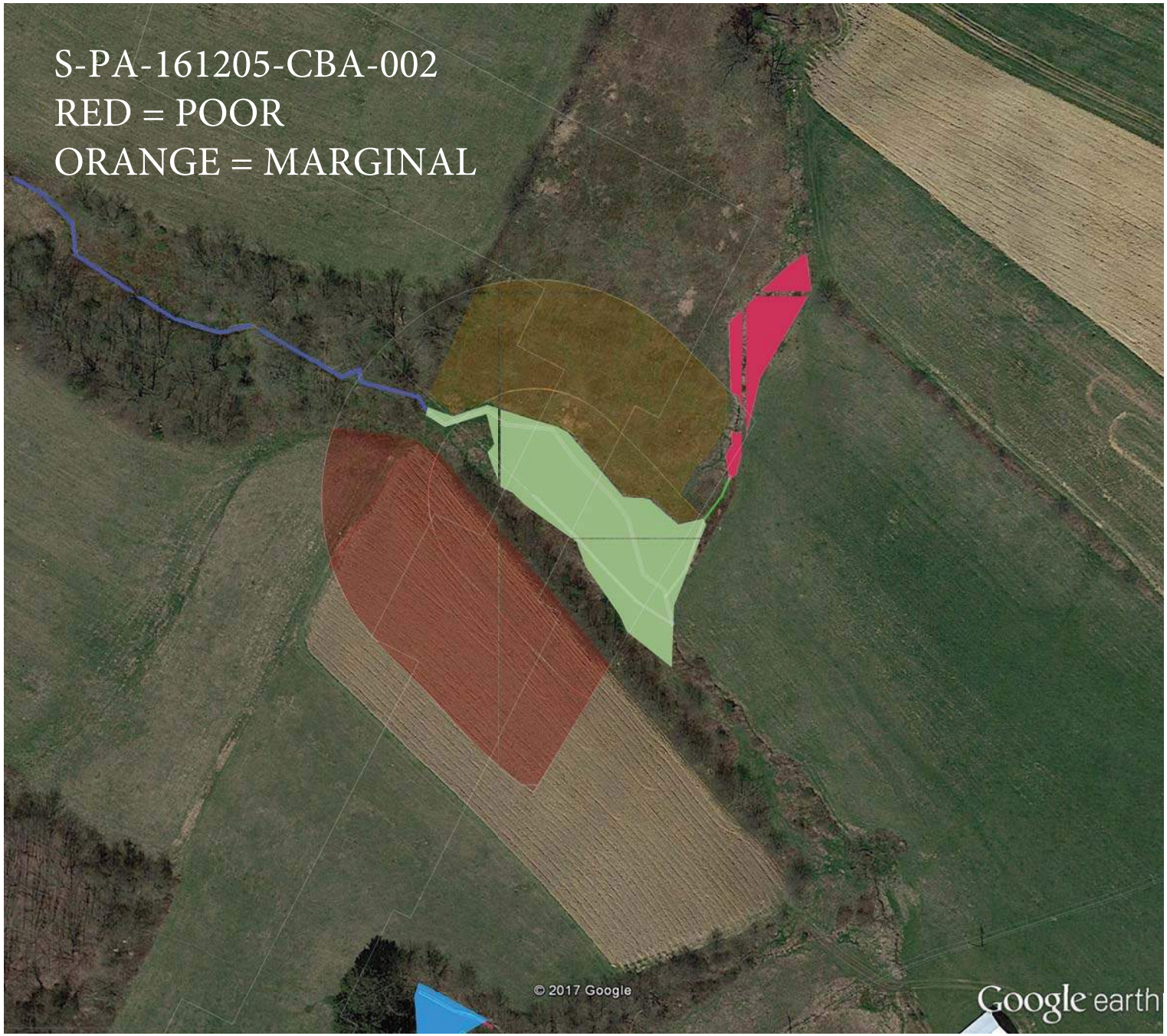


Google Earth Pro

feet 1000
meters 400

Google Earth Pro

feet 1000
meters 400



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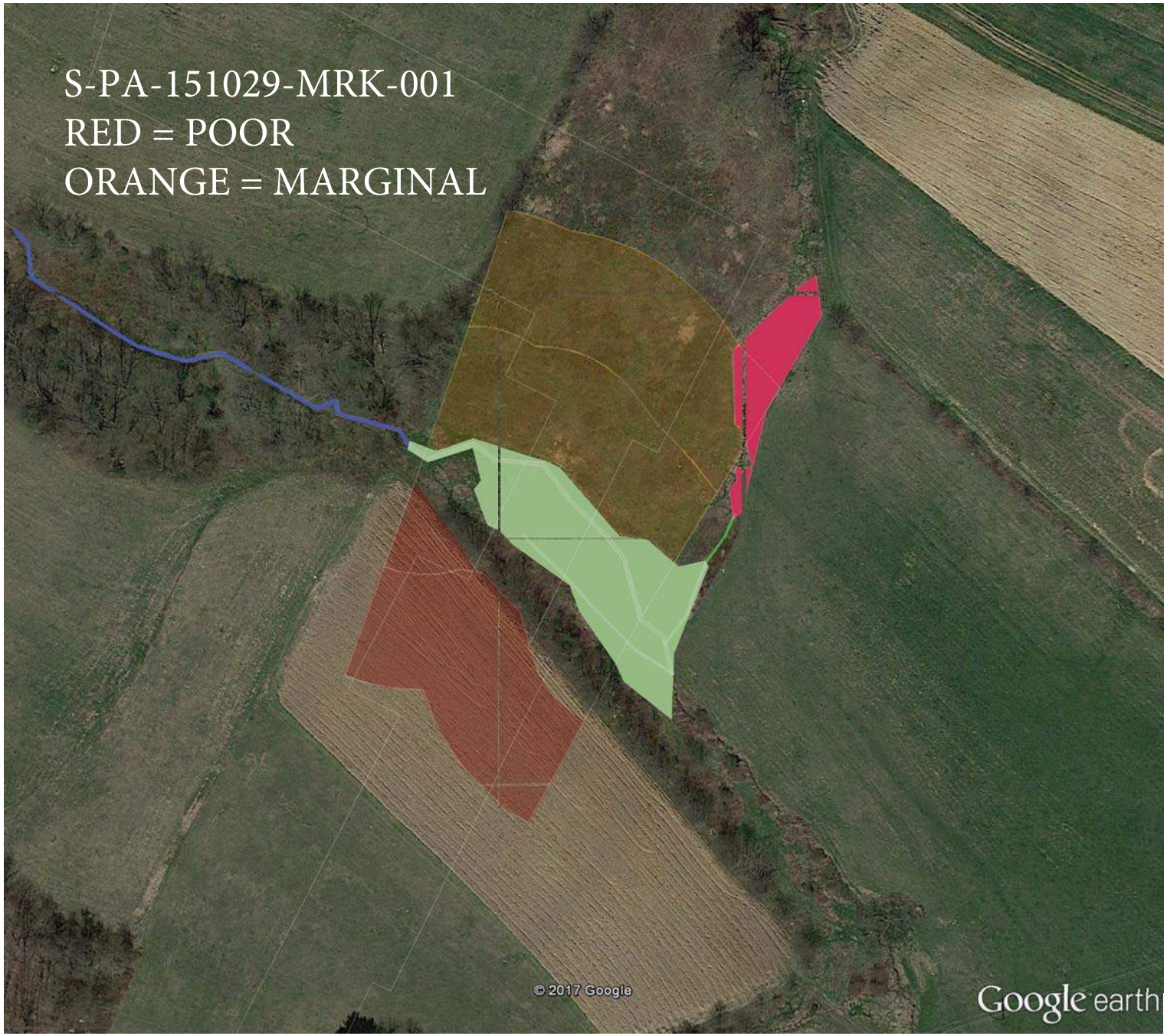


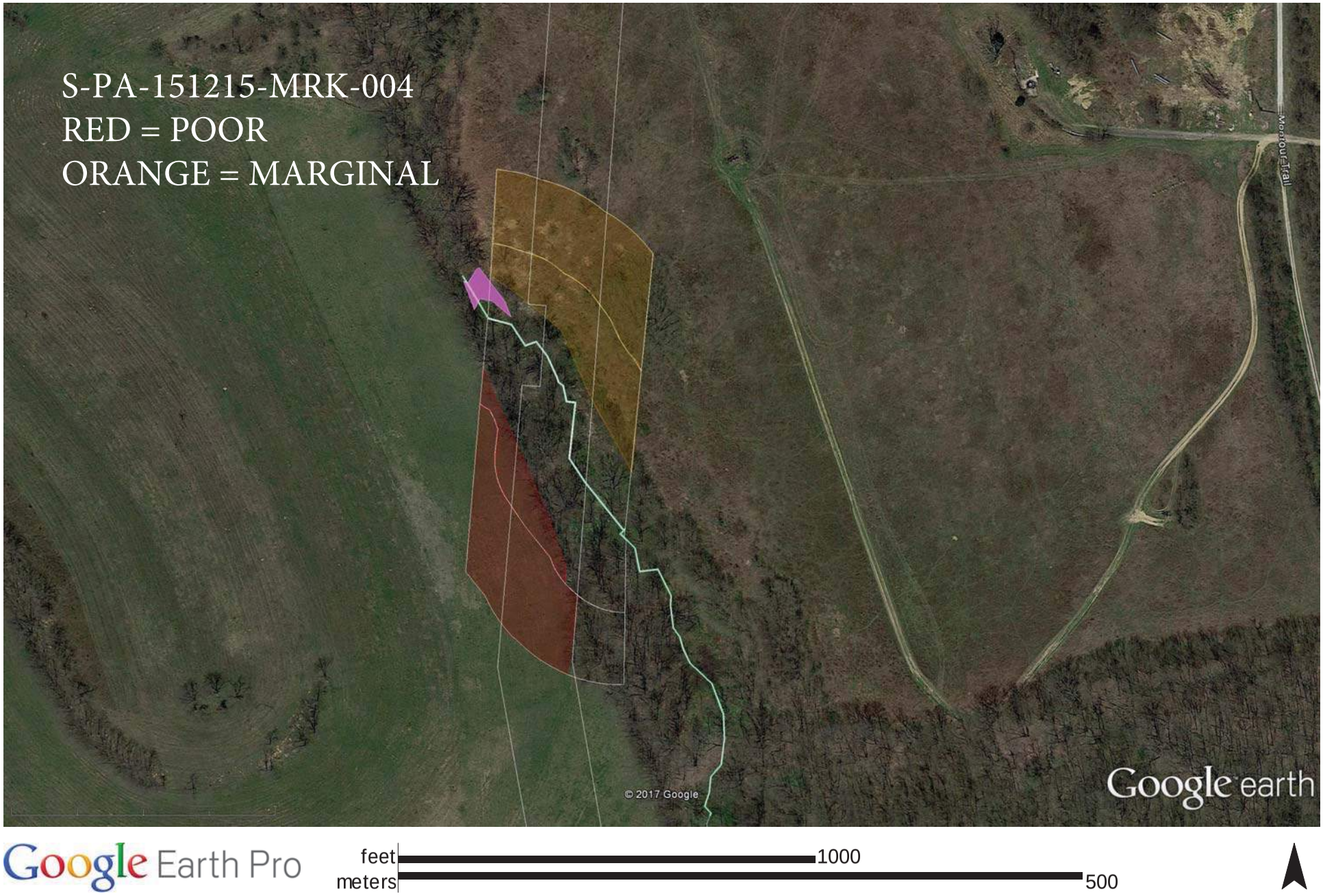
Google Earth Pro

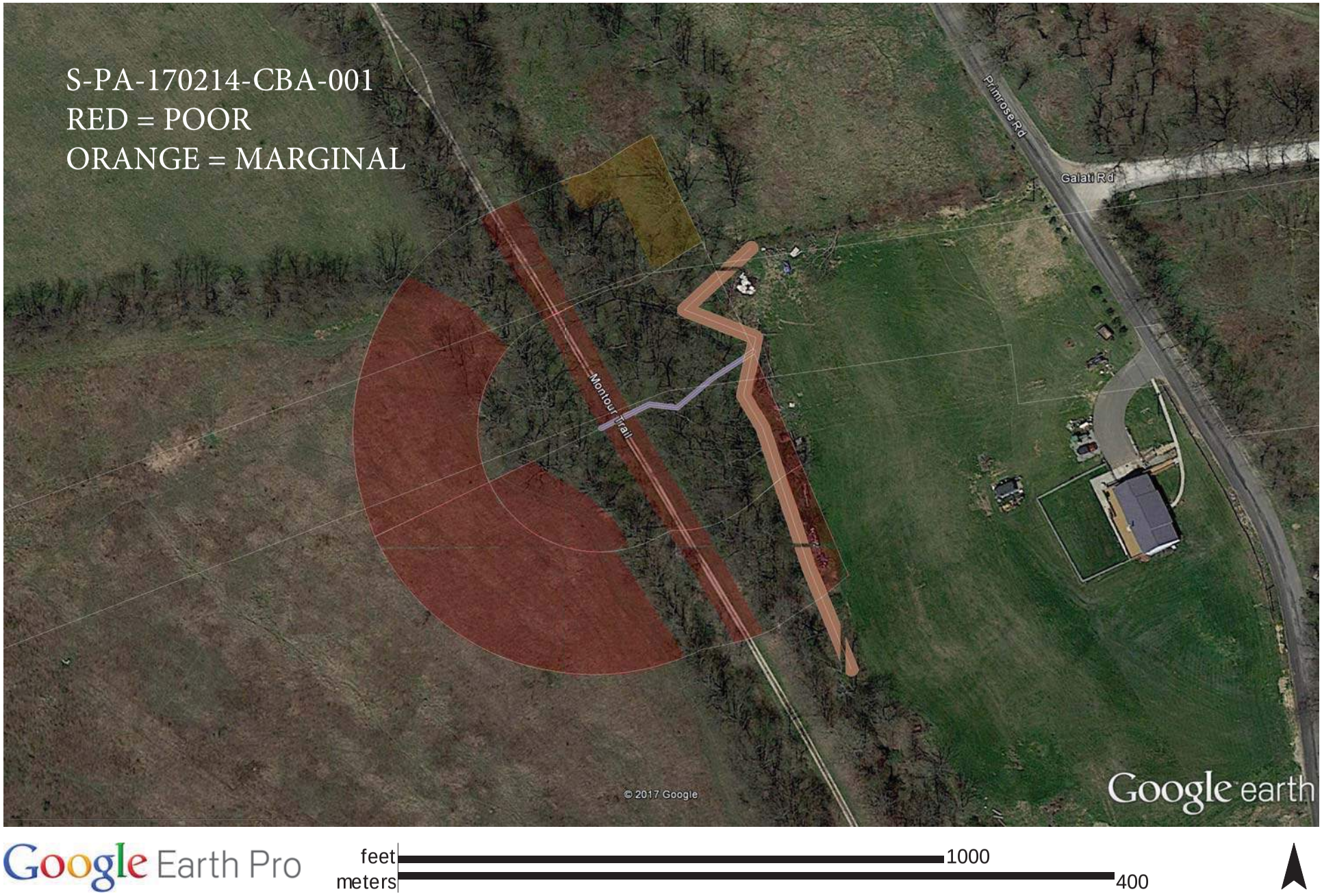
feet 1000

meters 400

Google Earth Pro

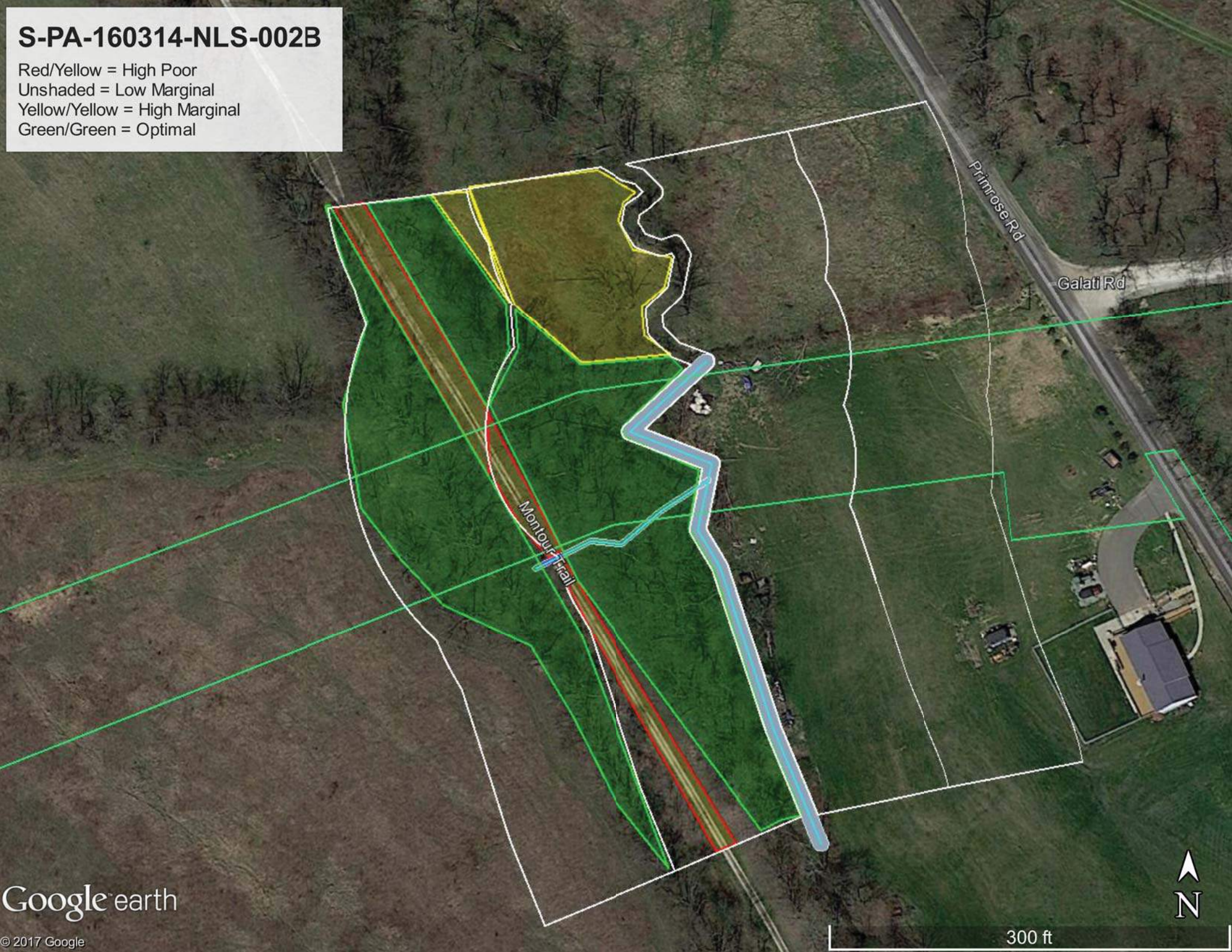
feet 1000
meters 400

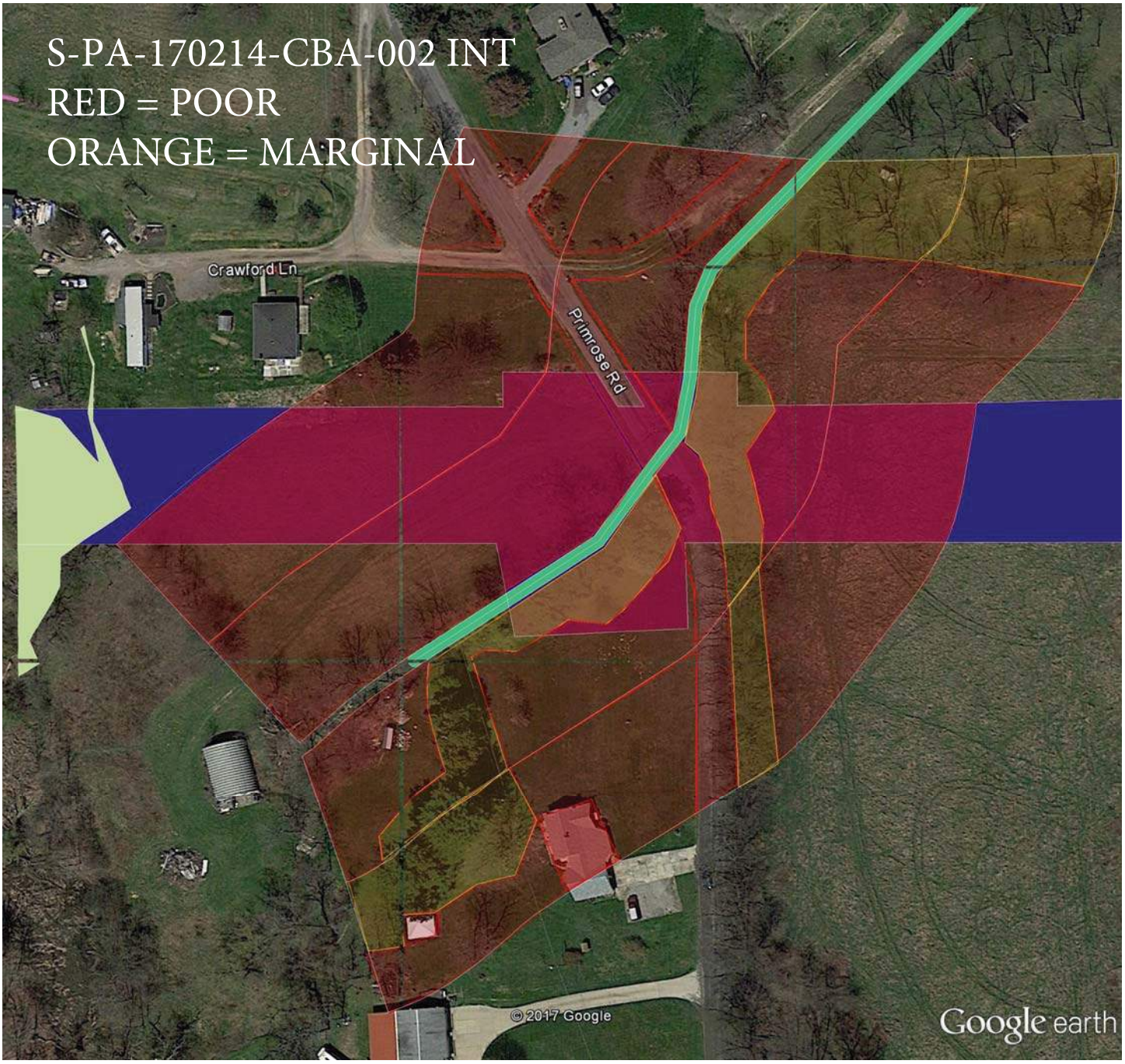

S-PA-151215-MRK-004
RED = POOR
ORANGE = MARGINAL
Mercout Trail
© 2017 Google
Google earth
Google Earth Pro
feet
meters
1000
500


S-PA-170214-CBA-001
RED = POOR
ORANGE = MARGINAL
Primrose Rd
Galati Rd
Montour Trail
© 2017 Google
Google earth
Google Earth Pro
feet
meters
1000
400

S-PA-160314-NLS-002B

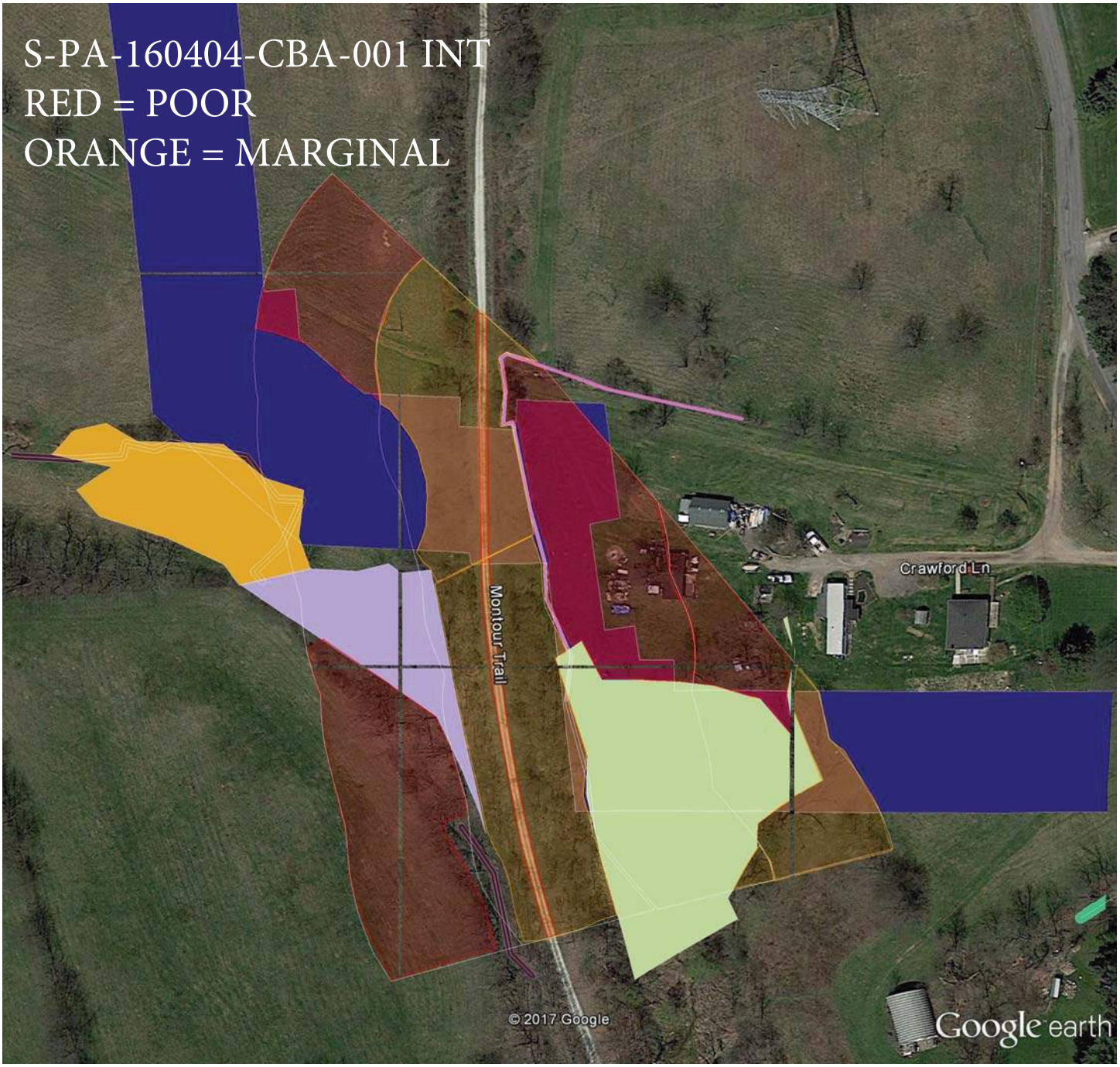
Red/Yellow = High Poor
Unshaded = Low Marginal
Yellow/Yellow = High Marginal
Green/Green = Optimal





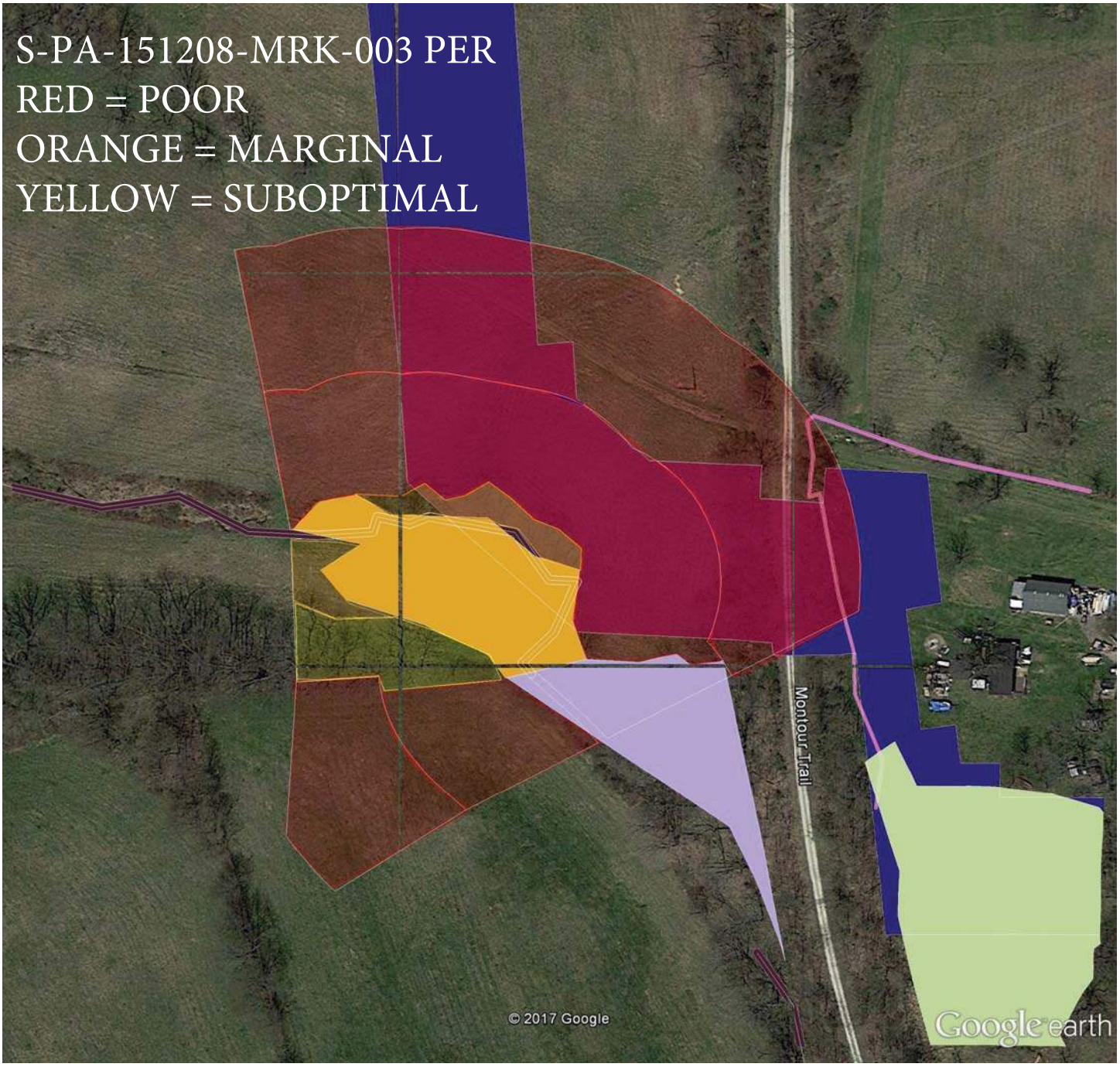
Google Earth Pro

feet 900
meters 200



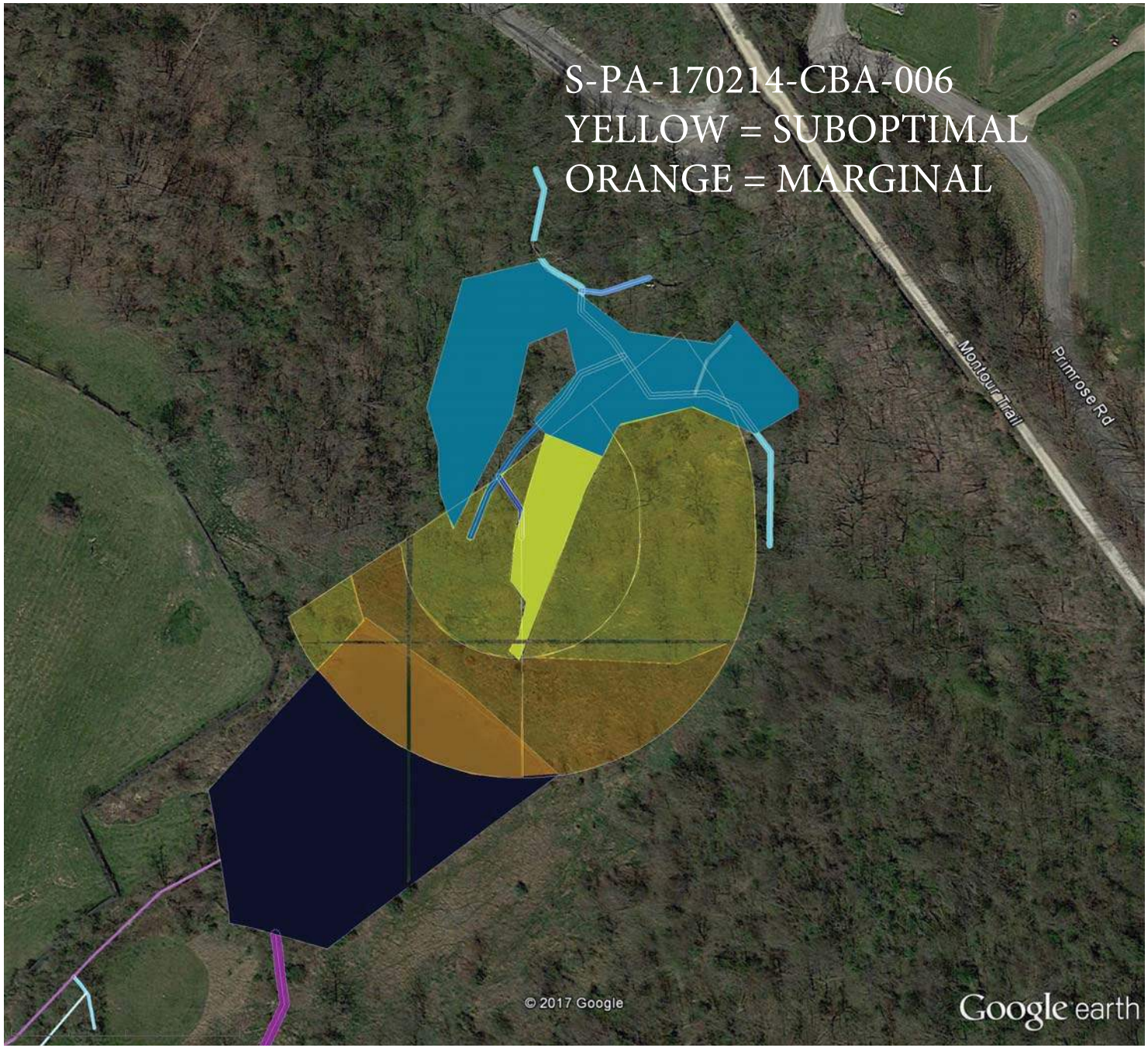
Google Earth Pro

feet 1000
meters 300



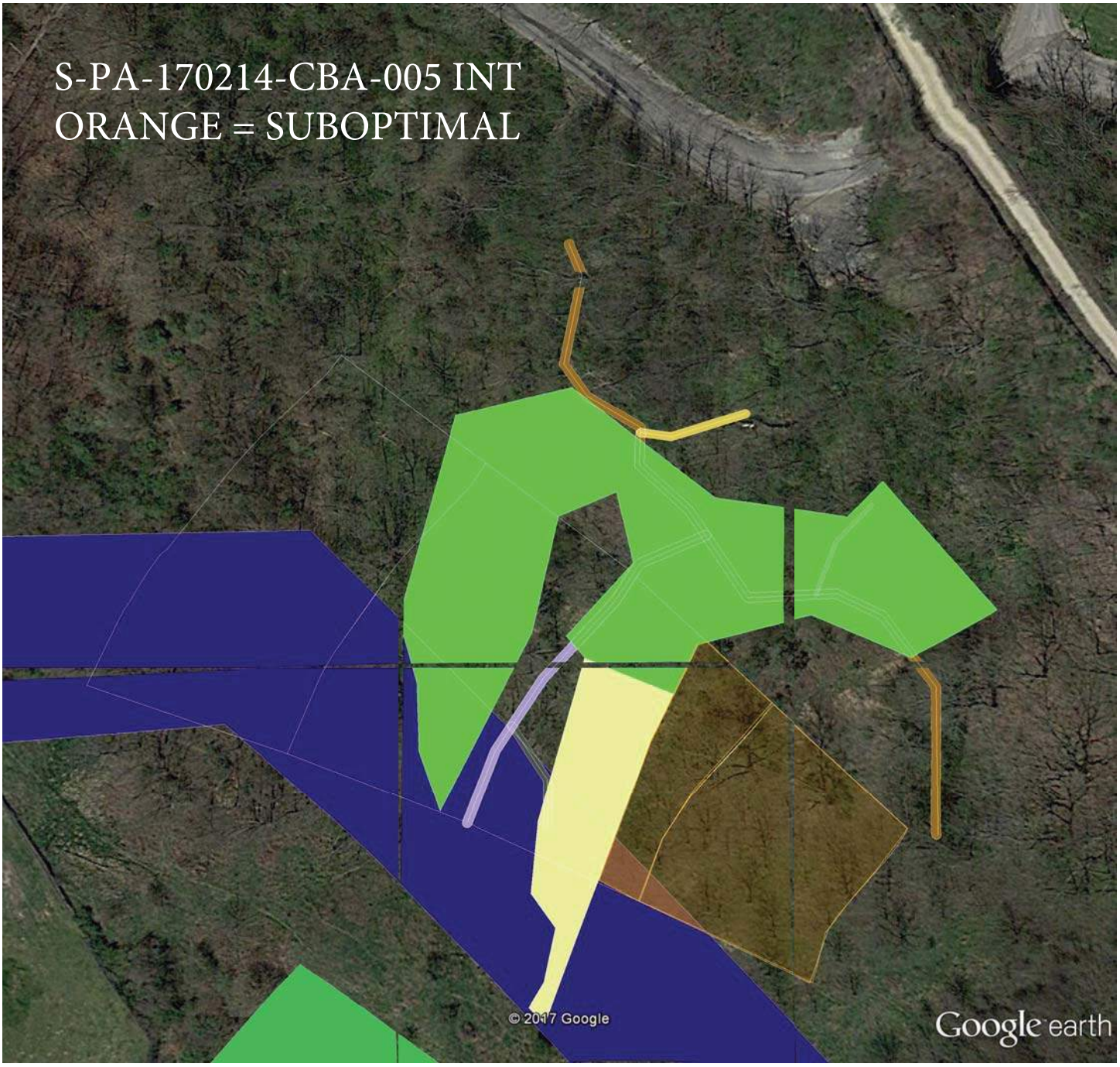
Google Earth Pro

feet 900
meters 200



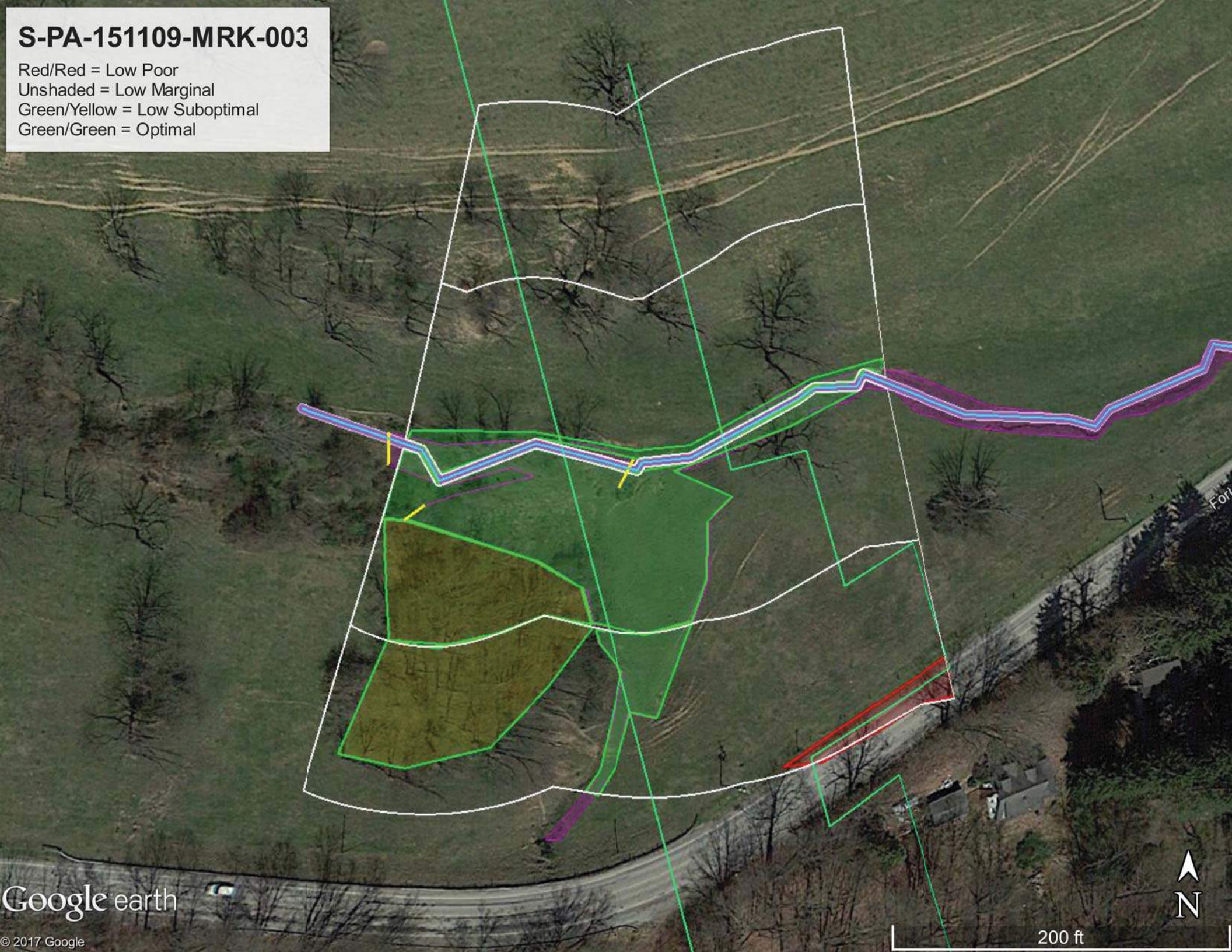
Google Earth Pro

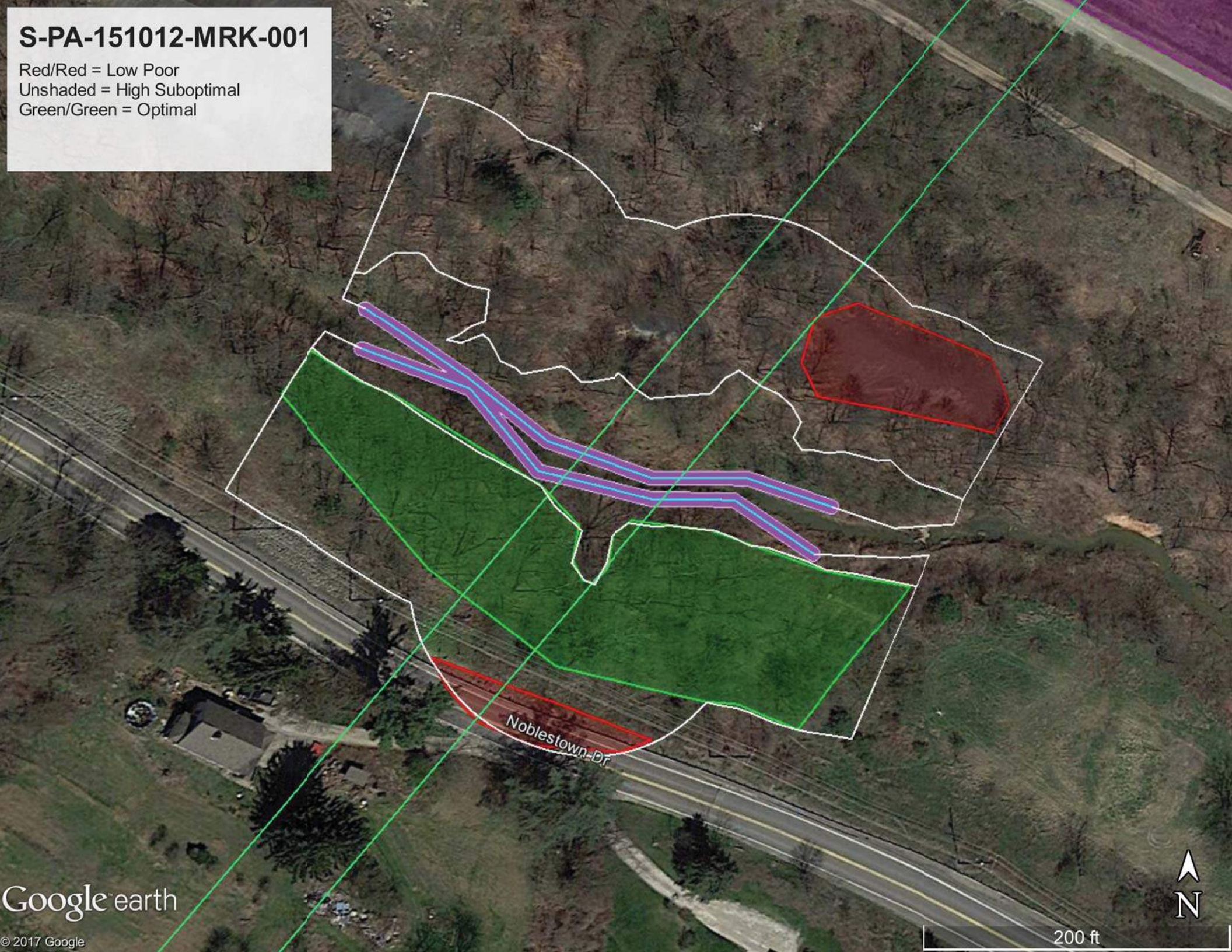
feet 1000
meters 400

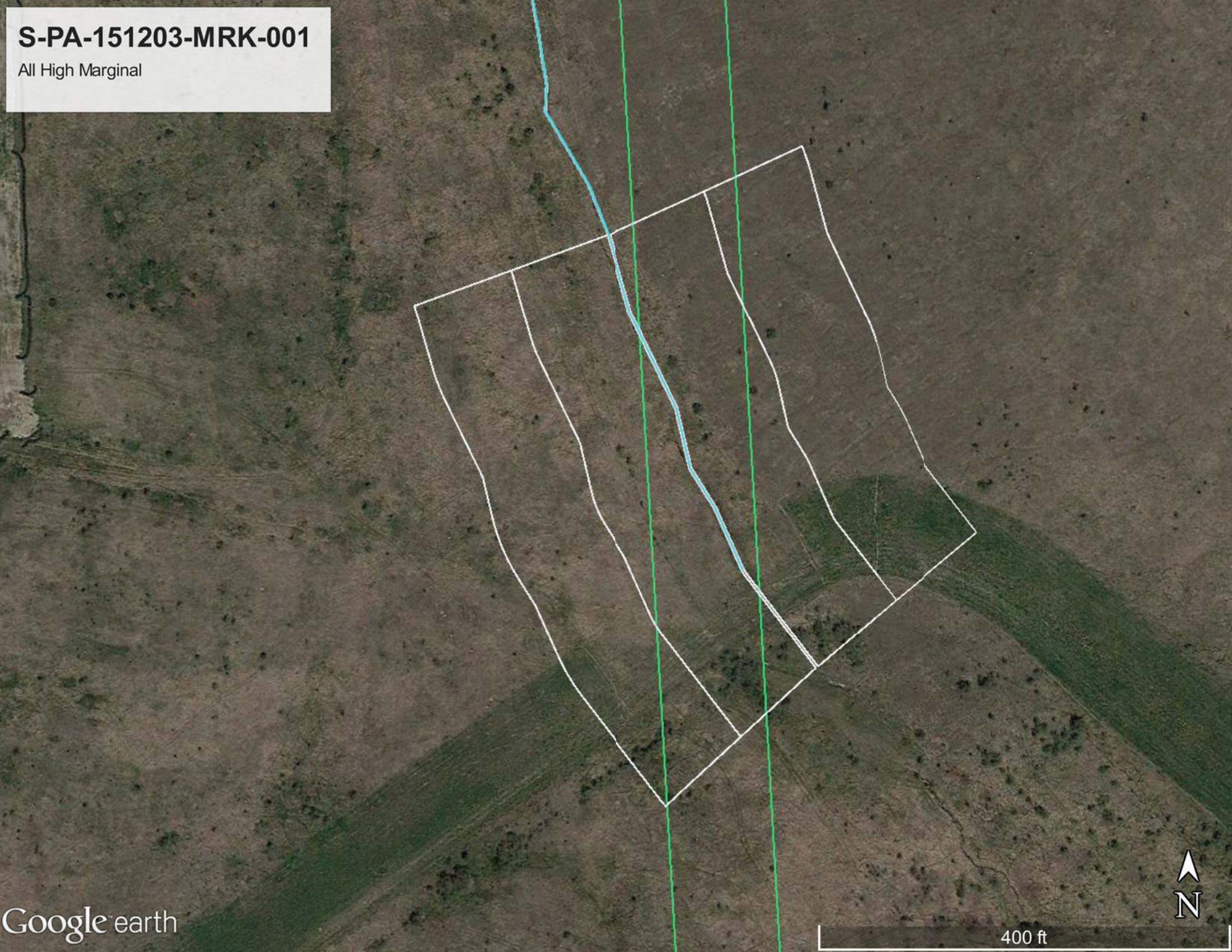


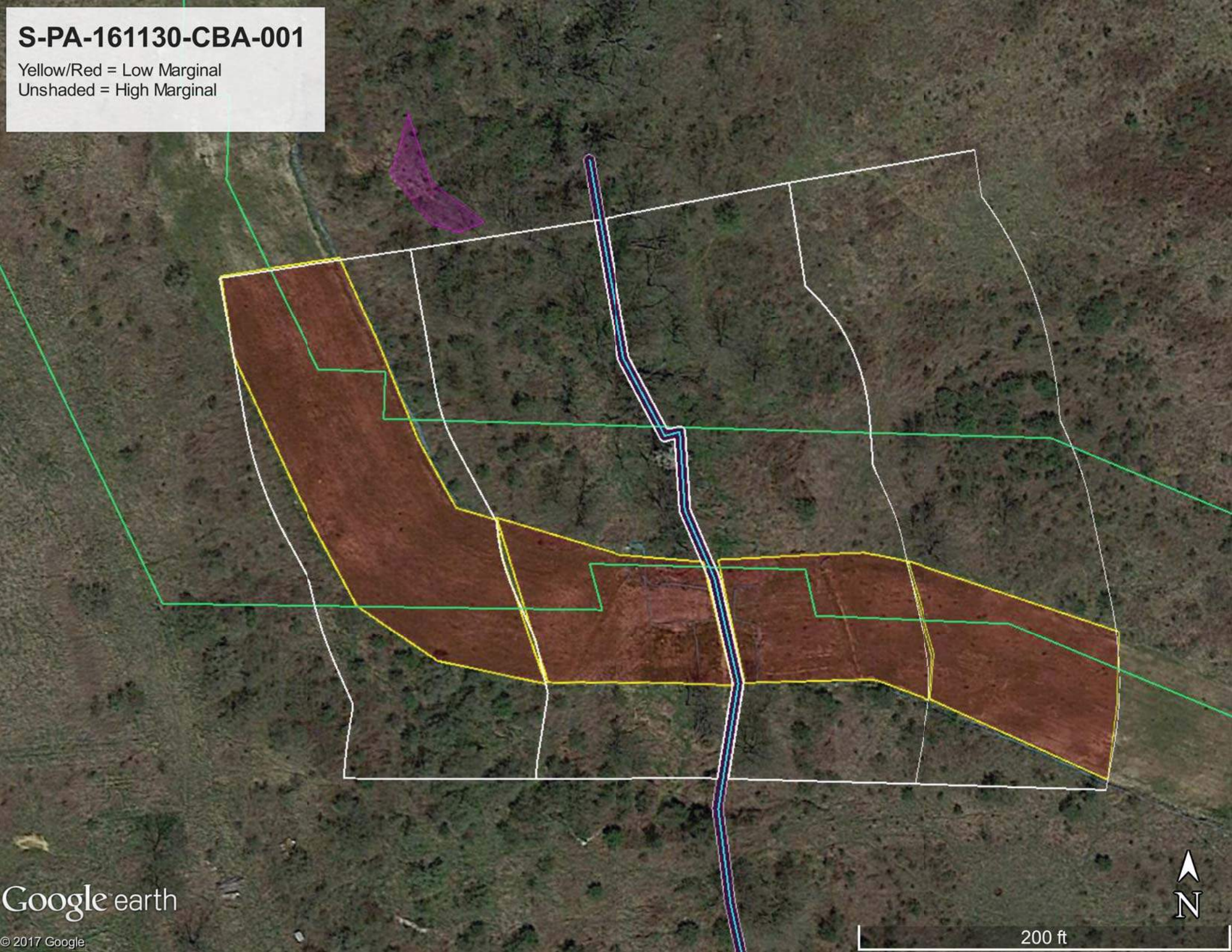
Google Earth Pro

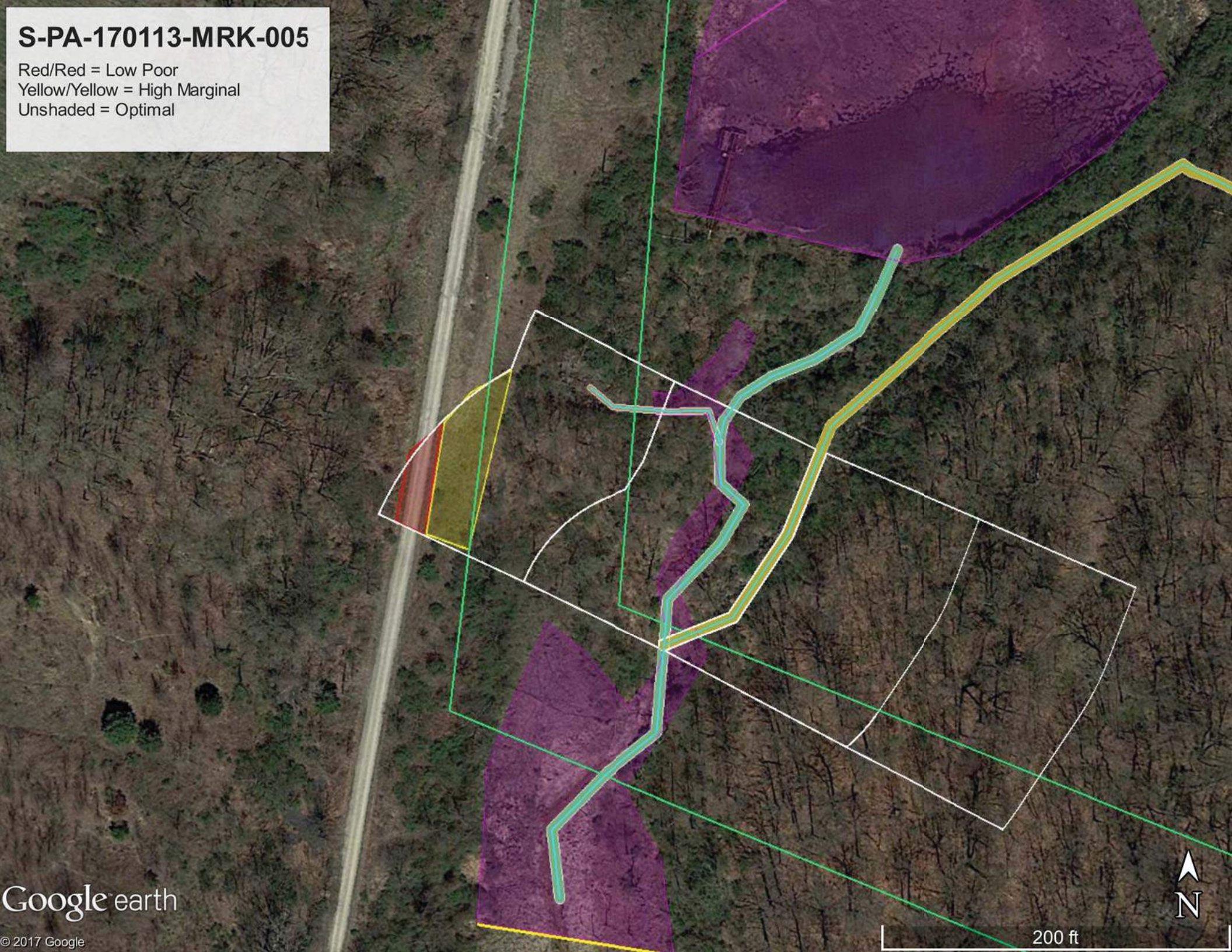
feet 800
meters 200

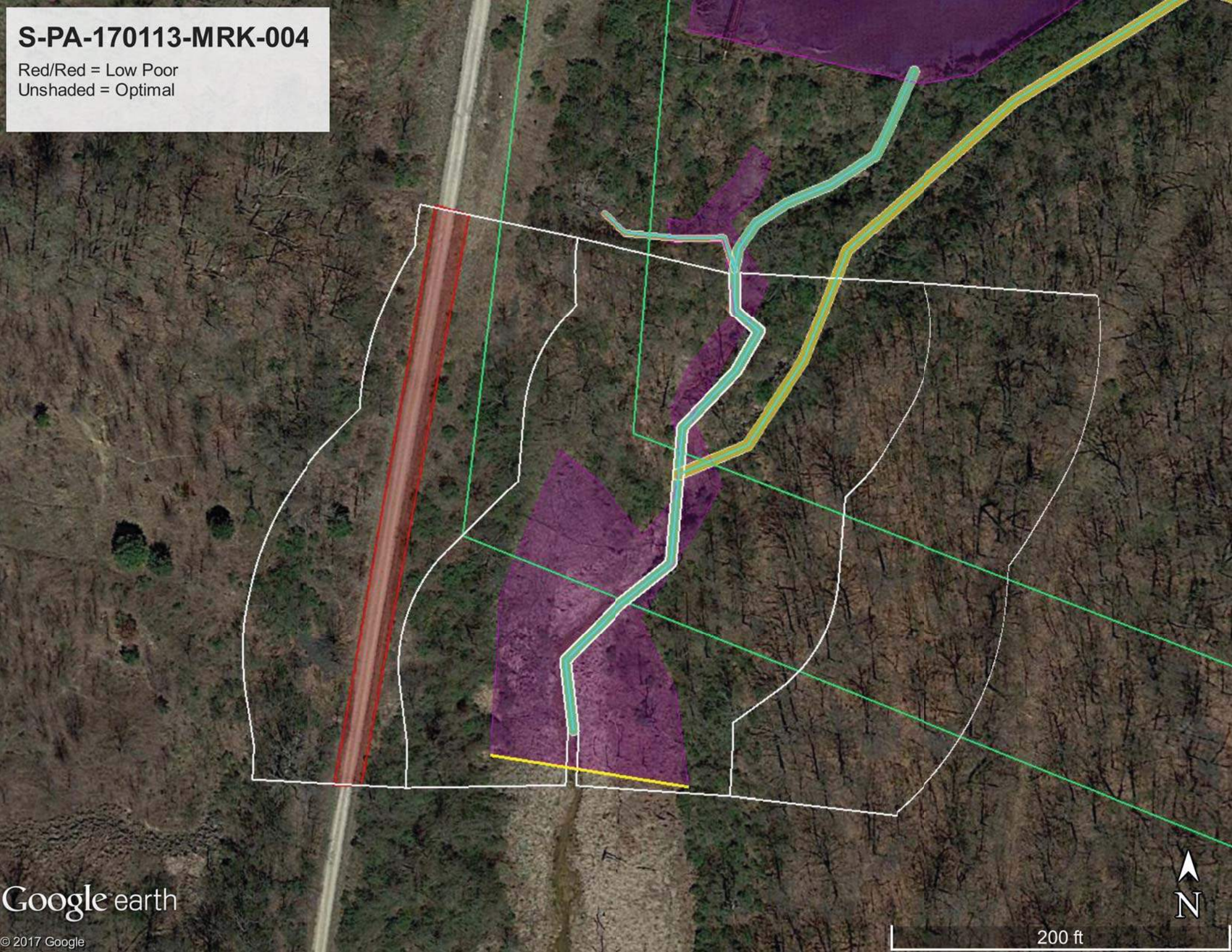

S-PA-151109-MRK-003
Red/Red = Low Poor
Unshaded = Low Marginal
Green/Yellow = Low Suboptimal
Green/Green = Optimal
Google earth
© 2017 Google
N
200 ft

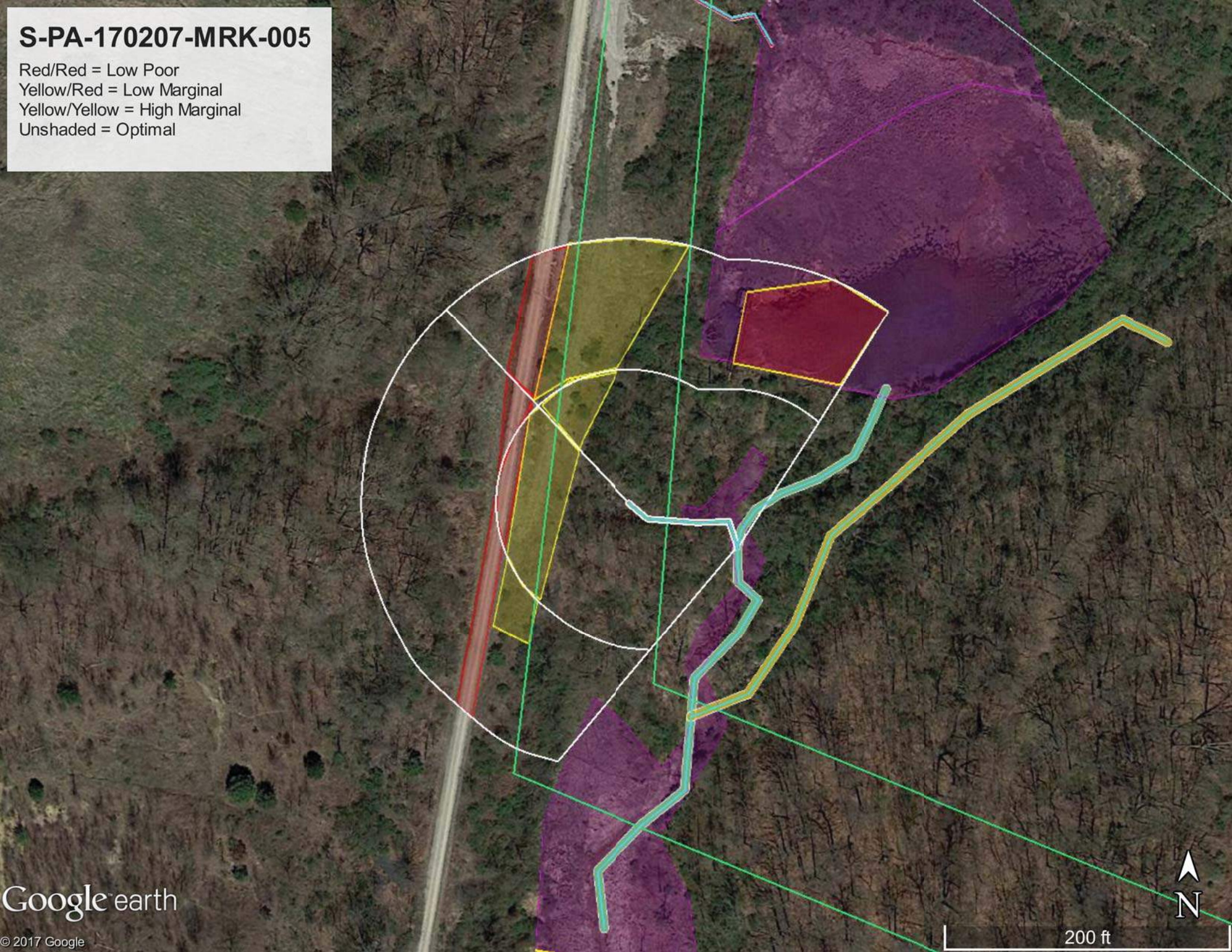

S-PA-151012-MRK-001
Red/Red = Low Poor
Unshaded = High Suboptimal
Green/Green = Optimal
Noblestown Dr
Google earth
© 2017 Google
200 ft
N

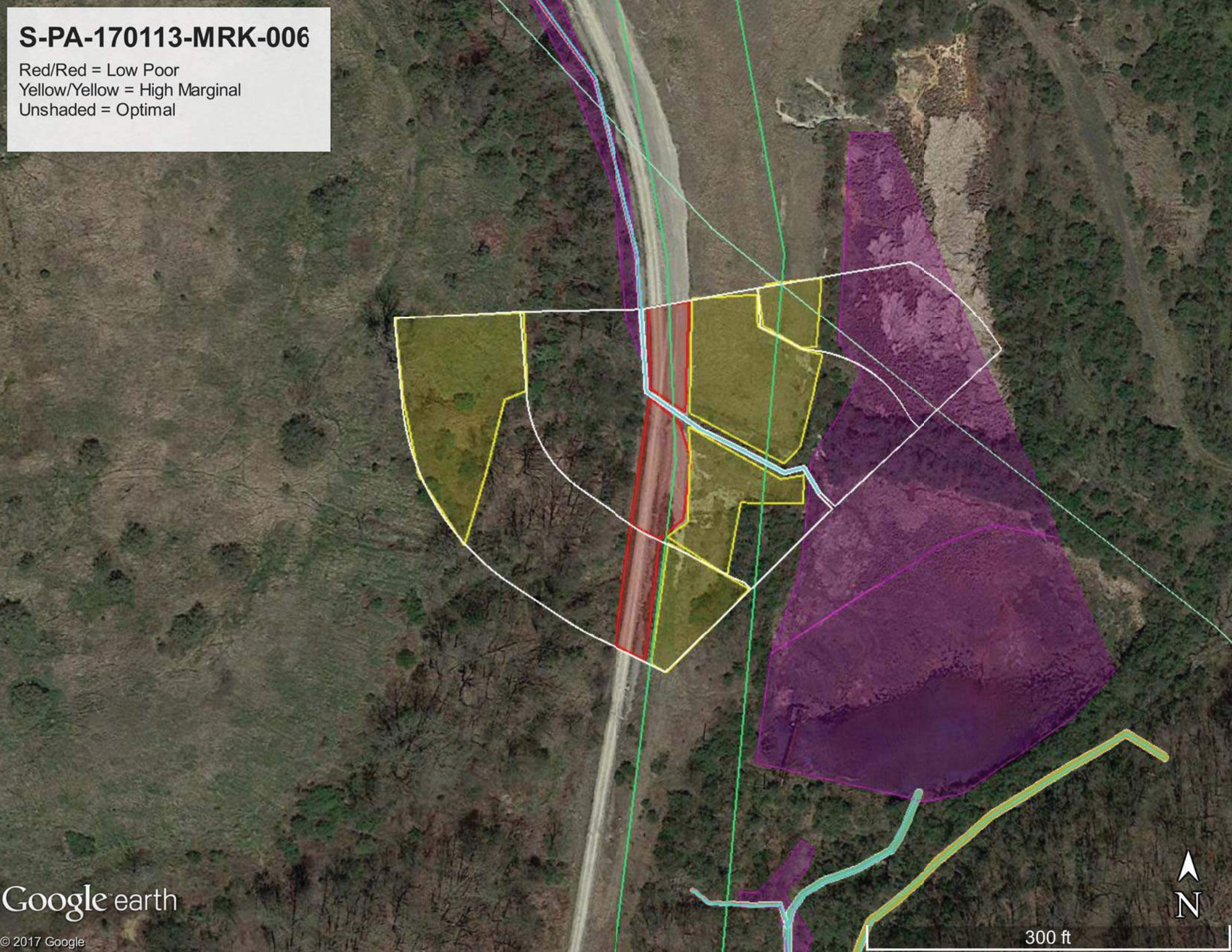

S-PA-151203-MRK-001
All High Marginal
Google earth
N
400 ft


S-PA-161130-CBA-001
Yellow/Red = Low Marginal
Unshaded = High Marginal
Google earth
© 2017 Google
N
200 ft


S-PA-170113-MRK-005
Red/Red = Low Poor
Yellow/Yellow = High Marginal
Unshaded = Optimal
Google earth
© 2017 Google
N
200 ft


S-PA-170113-MRK-004
Red/Red = Low Poor
Unshaded = Optimal
Google earth
© 2017 Google
N
200 ft


S-PA-170207-MRK-005
Red/Red = Low Poor
Yellow/Red = Low Marginal
Yellow/Yellow = High Marginal
Unshaded = Optimal
Google earth
© 2017 Google
N
200 ft


S-PA-170113-MRK-006
Red/Red = Low Poor
Yellow/Yellow = High Marginal
Unshaded = Optimal
Google earth
© 2017 Google
N
300 ft

Attachment S2-5

PA Wetland L2RAP Data Sheets and Mapping

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
60536988	Falcon Ethane Pipeline Project	6/26/2017	0.0198	W-PA-160407-JLK-003	0.02

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Resource Identifier:			
Matt Kline, Elliot Dillon	40.263520	-80.264046	Classification:	PEM	Delineated Area (acres):	0.0198

General Comments:

1. Wetland Zone of Influence Condition Index

	Condition Category																				
	Optimal					Suboptimal					Marginal					Poor					
Wetland Zone of Influence (300 foot area around AA perimeter)	ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					**High Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					**High Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					**High Poor:** ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.					**Low Poor:** ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Total Score = SUM(%Areas*Scores)

	Condition Category:	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Total Score:	CI
Scoring:	% ZOI Area:	3%	0%	0%	0%	9%	50%	38%		
	Score:	16	0	0	0	6	4	1		
	Total Sub-score:	0.48	0.00	0.00	0.00	0.52	2.02	0.38	3.40	0.17

CI = Total Score/20

Comments:

2. Roadbed Presence Index

	Condition Categories																				
	Optimal					Suboptimal					Marginal					Poor					
a. Roadbed Presence (within 0 100 foot Wetland ZOI distance)	**High Optimal:** No roadbeds present within 100 feet of the AA boundary			**Low Optimal:** Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.		**High Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4.			**Low Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6.		**High Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8.			**Low Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10.		**High Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.					**Low Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: Roadbed 0-100 Total score is 1

	Condition Categories																				
	Optimal					Suboptimal					Marginal					Poor					
b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	**High Optimal:** No roadbeds present within 100 - 300 feet of the AA boundary			**Low Optimal:** Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.		**High Suboptimal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4.			**Low Suboptimal:** Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6.		**High Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8.			**Low Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10.		**High Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12.					**Low Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: Roadbed 100-300 Total score is 5

	Condition Score	Weighting	Sub-Scores
a. Roadbed 0-100:	17	* (0.67)	11
b. Roadbed 100-300:	12	* (0.33)	4
		Total Score:	**15**

0.77

CI = Total Score/20

Comments:

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category			
a. Invasive Species Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**
	High Optimal: No invasives present. **Low Optimal:** <5% of the total AA contains invasive species.	**High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species.	**High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species.	> 50% of the total AA contains invasive species.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total % relative cover of all invasives, collectively on site is 2

	Condition Category			
b. Vegetation Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**
	High Optimal: No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary.	**High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary.	**High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary.	Greater than five vegetation stressors present within the AA boundary.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total number of vegetation stressors present - 2

a. Invasive Sub-Score:	17	**Total Score:**	**CI = Total Score/40**
b. Vegetation Sub-Score:	14	**31**	**0.78**

4. Hydrologic Modification Index

	Condition Category			
Hydrologic Modification Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**
	High Optimal: No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary.	**High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary.	**High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary.	Greater than five hydrologic stressors present within the AA boundary.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total number of hydrologic modifications present - 1

Score:	17	**CI = Total Score/20**
		0.85

5. Sediment Stressor Index

	Condition Category			
Sediment Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**
	High Optimal: No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary.	**High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary.	**High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary.	Greater than five sediment stressors present within the AA boundary.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total number of sediment stressors present - 0

Score:	18	**CI = Total Score/20**
		0.90

6. Water Quality Stressor Index

	Condition Category			
a. Eutro- phication Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**
	No eutrophication stressors present within the AA boundary.	One eutrophication stressors present within the AA boundary.	Two eutrophication stressors present within the AA boundary.	Three eutrophication stressors present within the AA boundary.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total number of Eutrophication stressors present - 0

	Condition Category			
b. Contaminant / Toxicity Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**
	No contaminant / toxicity stressors present within the AA boundary.	One contaminant / toxicitystressors present within the AA boundary.	Two contaminant / toxicity stressors present within the AA boundary.	Three contaminant / toxicity stressors present within the AA boundary.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total number of Contaminant/Toxicity stressors present - 0

a. Eutrophication Score	16	**Total Score:**	**CI = Total Score/40**
b. Contaminant Score	16	**32**	**0.80**

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	**Overall Condition Index:**	**0.71**

Wetland ZOI Worksheet					
Desktop Review			**Field View**		
Condition Category	Size (Ac)	Percentage	Condition Category	Size (Ac)	Percentage
Optimal	0.19	3%	Optimal	0.19	3%
High Suboptimal	0.00	0%	High Suboptimal	0.00	0%
Low Suboptimal	0.00	0%	Low Suboptimal	0.00	0%
High Marginal	0.00	0%	High Marginal	0.00	0%
Low Marginal	0.66	9%	Low Marginal	0.66	9%
High Poor	3.85	50%	High Poor	3.85	50%
Low Poor	2.94	38%	Low Poor	2.94	38%
Calculated total area	7.64	100%	Calculated total area	7.64	100%

Enter Total Area 7.64 From ZOI shapefile

Calculated total area and Entered Total Area must be equal

Optimal

ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor

ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor

ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier		Date	Name(s) of Evaluator(s)
Falcon Ethane Pipeline Project		6/26/2017	Matt Kline, Elliot Dillon
Resource Identifier / AA #	**Lat (dd)**	**Long (dd)**	**Notes:**
W-PA-160407-JLK-003	40.263520	-80.264046	#VALUE!

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.	0	4	0	100-300 ft.	0	4	0
2 Lane Paved	0-100 ft.	0	2	0	100-300 ft.	1	2	2
1 Lane Paved	0-100 ft.	0	1	0	100-300 ft.	1	1	1
Gravel Road	0-100 ft.	1	1	1	100-300 ft.	2	1	2
Dirt Road	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Railroad	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Other Roadbeds	0-100 ft.	0	1, 2 or 4	0	100-300 ft.	0	1, 2 or 4	0
Total Scores:	0-100 ft.	1			100-300 ft.	5		

Road Comments:

Pennsylvania Wetland Condition Level 2 Rapid Assessment
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **YES**

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	*Species Code*	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%
phar	2								

Total % relative cover of all invasives, collectively on site: 2 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	*Scientific*	Status	Code	Common Name	*Scientific*	Status
aggi2	Redtop	*Agrostis gigantea*	FACW	luhe	Water primrose	*Ludwigia hexapetala*	OBLW
algl2	European Alder	*Alnus glutinosa*	FACW	lyvu	Garden loosestrife	*Lysimachia vulgaris*	OBLW
arhi3	Carpetgrass	*Arthraxon hispidus*	FAC-	lysa2	Purple loosestrife	*Lythrum salicaria*	FACW
beth	Japanese barberry	*Berberis thunbergii*	FACW	maqu	European waterclover	*Marsilea quadrifolia*	OBLW
bevu	European barberry	*Berberis vulgaris*	FACW	mivi	Japanese stiltgrass	*Microstegium vimineum*	FAC
butom	Flowering Rush	*Butomus umbellatus*	OBLW	nami2	Water cress	*Nasturtium officinale*	OBLW
calli6	Pond water-starwort	*Callitriche stagnalis*	OBLW	pelo	Low smartweed	*Persicaria longiseta*	FACW
egde	Brazilian waterweed	*Egeria densa*	OBLW	phar	Reed canary grass	*Phalaris arundinacea*	FACW
elan	Russian olive	*Elaeagnus angustifolia*	FACU	phau7	Common Reed	*Phragmites australis*	OBLW
elum	Autumn olive	*Elaeagnus umbellata*	FACU	potr	Rough bluegrass	*Poa trivialis*	FACW
ephi	Hairy willow-herb	*Epilobium hirsutum*	FACW	pocu6	Japanese knotweed	*Polygonum (Faloia) cuspidatum*	FAC-
eppa5	Willow-herb	*Epilobium parviflorum*	FACW	pgpf	Mile-a-minute	*Polygonum perfoliatum*	FAC-
fasa	Giant knotweed	*Fallopia sachalinensis*	OBLW	puera	Kudzu-vine	*Pueraria lobata*	FAC-
gldi	Mudmats	*Glossostigma diandrum*	OBLW	pysp1	Apple/crabapple/pear	*Pyrus sp.*	FAC?
hola	Velvetgrass	*Holcus lanatus*	FAC	rhfr	Glossy Buckthorn	*Rhamnus frangula*	FAC-
huja	Japanese Hops	*Humulus japonicus*	FACU	romu	Multiflora rose	*Rosa multiflora*	FACU
loja	Japanese honeysuckle	*Lonicera japonica*	FAC-	tyan	Cattail (hybrid)	*Typha angustifolia*	OBLW
lomo	Morrow's honeysuckle	*Lonicera morrowii*	NI	tygl	Hybrid cattail	*Typha x glauca*	OBLW
lota	Tartarian honeysuckle	*Lonicera tatarica*					

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

STRESSOR WORKSHEET

2/4/2017

	Occurrence in AA		
	Y	#'s	N
Vegetation Alteration			
Mowing	1		
Moderate livestock grazing (within one year)			
Crops (annual row crops, within one year)			
Selective tree harvesting/cutting (>50% removal, within 5 years)			
Right-of-way clearing (mechanical or chemical)	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)			
Removal of woody debris			
Aquatic weed control (mechanical or herbicide)			
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)			
Plantation (conversion from typical natural tree species, including orchards)			
Other:			
Total Number:	**2**		
Hydrologic Modification			
Ditching, tile draining, or other dewatering methods			
Dike/weir/dam			
Filling/grading	1		
Dredging/excavation			
Stormwater inputs (culvert or similar concentrated urban runoff)			
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)			
Dead or dying trees (trunks still standing) *			
Stream alteration (channelization or incision)			
Other:			
Total Number:	**1**		
Sedimentation			
Sediment deposits/plumes			
Eroding banks/slopes			
Active construction (earth disturbance for development)			
Active plowing (plowing for crop planting in past year)			
Intensive livestock grazing (in one year, ground is >50% bare)			
Active selective forestry harvesting (within one year)			
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)			
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)			
Other:			
Total Number:	**0**		
Eutrophication			
Direct discharges from agricultural feedlots, manure pits, etc.			
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.			
Heavy or moderately heavy formation of algal mats			
Other:			
Total Number:	**0**		
Contaminant/Toxicity			
Severe vegetation stress (source unknown or suspected)			
Obvious spills, discharges, plumes, odors, etc.			
Acidic drainages (mined sites, quarries, road cuts)			
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites			
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)			
Fish or wildlife kills or obvious disease or abnormalities observed			
Excessive garbage/dumping			
Other:			
Total Number:	**0**		

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
60536988	Falcon Ethane Pipeline Project	6/1/2617	0.0073	W-PA-160407-JLK-002	0.12

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Resource Identifier:			
Matt Kline, Elliot Dillon	40.263438	-80.264434	Classification:	PEM	Delineated Area (acres):	0.1239

General Comments:

1. Wetland Zone of Influence Condition Index

	Condition Category																				
	Optimal					Suboptimal					Marginal					Poor					
Wetland Zone of Influence (300 foot area around AA perimeter)	ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					**High Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				**Low Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				**Low Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				**Low Poor:** ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	**CI = Total Score/20**
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Total Score = SUM(%Areas*Scores)

	Condition Category:	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Total Score:	CI
Scoring:	% ZOI Area:	3%	0%	0%	0%	26%	45%	26%		
	Score:	16	0	0	0	6	4	1		
	Total Sub-score:	0.47	0.00	0.00	0.00	1.59	1.79	0.26	4.10	0.21

Comments:

2. Roadbed Presence Index

	Condition Categories																				
	Optimal					Suboptimal					Marginal					Poor					
a. Roadbed Presence (within 0 100 foot Wetland ZOI distance)	**High Optimal:** No roadbeds present within 100 feet of the AA boundary			**Low Optimal:** Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.		**High Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4.				**Low Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6.	**High Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8.				**Low Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10.	**High Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.				**Low Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: Roadbed 0-100 Total score is 2

	Condition Categories																				
	Optimal					Suboptimal					Marginal					Poor					
b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	**High Optimal:** No roadbeds present within 100 - 300 feet of the AA boundary			**Low Optimal:** Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.		**High Suboptimal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4.				**Low Suboptimal:** Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6.	**High Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8.				**Low Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10.	**High Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12.				**Low Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.	**CI = Total Score/20**
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: Roadbed 100-300 Total score is 5

	Condition Score	Weighting	Sub-Scores	
a. Roadbed 0-100:	16	* (0.67)	11	
b. Roadbed 100-300:	12	* (0.33)	4	
		Total Score:	**15**	**0.73**

Comments:

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category			
a. Invasive Species Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**
	High Optimal: No invasives present. **Low Optimal:** <5% of the total AA contains invasive species.	**High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species.	**High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species.	> 50% of the total AA contains invasive species.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total % relative cover of all invasives, collectively on site is 5

	Condition Category				
b. Vegetation Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/40**
	High Optimal: No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary.	**High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary.	**High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary.	Greater than five vegetation stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of vegetation stressors present - 2

a. Invasive Sub-Score:	15	**Total Score:**	
b. Vegetation Sub-Score:	14	**29**	**0.73**

4. Hydrologic Modification Index

	Condition Category				
Hydrologic Modification Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/20**
	High Optimal: No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary.	**High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary.	**High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary.	Greater than five hydrologic stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	**0.80**

Comments: Total number of hydrologic modifications present - 1

Score:	16

5. Sediment Stressor Index

	Condition Category				
Sediment Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/20**
	High Optimal: No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary.	**High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary.	**High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary.	Greater than five sediment stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	**0.90**

Comments: Total number of sediment stressors present - 0

Score:	18

6. Water Quality Stressor Index

	Condition Category			
a. Eutro- phication Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**
	No eutrophication stressors present within the AA boundary.	One eutrophication stressors present within the AA boundary.	Two eutrophication stressors present within the AA boundary.	Three eutrophication stressors present within the AA boundary.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total number of Eutrophication stressors present - 0

	Condition Category				
b. Contaminant / Toxicity Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/40**
	No contaminant / toxicity stressors present within the AA boundary.	One contaminant / toxicitystressors present within the AA boundary.	Two contaminant / toxicity stressors present within the AA boundary.	Three contaminant / toxicity stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of Contaminant/Toxicity stressors present - 0

a. Eutrophication Score	16	**Total Score:**	
b. Contaminant Score	16	**32**	**0.80**

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	**Overall Condition Index:**	**0.69**

Wetland ZOI Worksheet					
Desktop Review			**Field View**		
Condition Category	Size (Ac)	Percentage	Condition Category	Size (Ac)	Percentage
Optimal	0.26	3%	Optimal	0.26	3%
High Suboptimal	0.00	0%	High Suboptimal	0.00	0%
Low Suboptimal	0.00	0%	Low Suboptimal	0.00	0%
High Marginal	0.00	0%	High Marginal	0.00	0%
Low Marginal	2.35	26%	Low Marginal	2.35	26%
High Poor	3.97	45%	High Poor	3.97	45%
Low Poor	2.31	26%	Low Poor	2.31	26%
Calculated total area	8.89	100%	Calculated total area	8.89	100%

Enter Total Area 8.89 From ZOI shapefile

Calculated total area and Entered Total Area must be equal

Optimal

ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor

ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor

ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

2/4/2017

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier		Date	Name(s) of Evaluator(s)
Falcon Ethane Pipeline Project		6/1/2617	Matt Kline, Elliot Dillon
Resource Identifier / AA #	**Lat (dd)**	**Long (dd)**	**Notes:**
W-PA-160407-JLK-002	40.263438	-80.264434	#VALUE!

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.	0	4	0	100-300 ft.	0	4	0
2 Lane Paved	0-100 ft.	0	2	0	100-300 ft.	1	2	2
1 Lane Paved	0-100 ft.	0	1	0	100-300 ft.	1	1	1
Gravel Road	0-100 ft.	2	1	2	100-300 ft.	2	1	2
Dirt Road	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Railroad	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Other Roadbeds	0-100 ft.	0	1, 2 or 4	0	100-300 ft.	0	1, 2 or 4	0
Total Scores:	0-100 ft.	2			100-300 ft.	5		

Road Comments:

Pennsylvania Wetland Condition Level 2 Rapid Assessment
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **YES**

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	*Species Code*	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%
elum		5							

Total % relative cover of all invasives, collectively on site: 5 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	*Scientific*	Status	Code	Common Name	*Scientific*	Status
aggi2	Redtop	*Agrostis gigantea*	FACW	luhe	Water primrose	*Ludwigia hexapetala*	OBLW
algl2	European Alder	*Alnus glutinosa*	FACW	lyvu	Garden loosestrife	*Lysimachia vulgaris*	OBLW
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beth	Japanese barberry	*Berberis thunbergii*	FACW	maqu	European waterclover	*Marsilea quadrifolia*	OBLW
bevu	European barberry	*Berberis vulgaris*	FACW	mivi	Japanese stiltgrass	*Microstegium vimineum*	FAC
butom	Flowering Rush	*Butomus umbellatus*	OBLW	nami2	Water cress	*Nasturtium officinale*	OBLW
calli6	Pond water-starwort	*Callitriche stagnalis*	OBLW	pelo	Low smartweed	*Persicaria longiseta*	FACW
egde	Brazilian waterweed	*Egeria densa*	OBLW	phar	Reed canary grass	*Phalaris arundinacea*	FACW
elan	Russian olive	*Elaeagnus angustifolia*	FACU	phau7	Common Reed	*Phragmites australis*	OBLW
elum	Autumn olive	*Elaeagnus umbellata*	FACU	potr	Rough bluegrass	*Poa trivialis*	FACW
ephi	Hairy willow-herb	*Epilobium hirsutum*	FACW	pocu6	Japanese knotweed	*Polygonum (Faloia) cuspidatum*	FAC-
eppa5	Willow-herb	*Epilobium parviflorum*	FACW	pgpf	Mile-a-minute	*Polygonum perfoliatum*	FAC-
fasa	Giant knotweed	*Fallopia sachalinensis*	OBLW	puera	Kudzu-vine	*Pueraria lobata*	FAC-
gldi	Mudmats	*Glossostigma diandrum*	OBLW	pysp1	Apple/crabapple/pear	*Pyrus sp.*	FAC?
hola	Velvetgrass	*Holcus lanatus*	FAC	rhfr	Glossy Buckthorn	*Rhamnus frangula*	FAC-
huja	Japanese Hops	*Humulus japonicus*	FACU	romu	Multiflora rose	*Rosa multiflora*	FACU
loja	Japanese honeysuckle	*Lonicera japonica*	FAC-	tyan	Cattail (hybrid)	*Typha angustifolia*	OBLW
lomo	Morrow's honeysuckle	*Lonicera morrowii*	NI	tygl	Hybrid cattail	*Typha x glauca*	OBLW
lota	Tartarian honeysuckle	*Lonicera tatarica*					

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

STRESSOR WORKSHEET

2/4/2017

	Occurrence in AA		
	Y	#'s	N
Vegetation Alteration			
Mowing	1		
Moderate livestock grazing (within one year)			
Crops (annual row crops, within one year)			
Selective tree harvesting/cutting (>50% removal, within 5 years)			
Right-of-way clearing (mechanical or chemical)	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)			
Removal of woody debris			
Aquatic weed control (mechanical or herbicide)			
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)			
Plantation (conversion from typical natural tree species, including orchards)			
Other:			
Total Number:	**2**		
Hydrologic Modification			
Ditching, tile draining, or other dewatering methods			
Dike/weir/dam			
Filling/grading	1		
Dredging/excavation			
Stormwater inputs (culvert or similar concentrated urban runoff)			
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)			
Dead or dying trees (trunks still standing) *			
Stream alteration (channelization or incision)			
Other:			
Total Number:	**1**		
Sedimentation			
Sediment deposits/plumes			
Eroding banks/slopes			
Active construction (earth disturbance for development)			
Active plowing (plowing for crop planting in past year)			
Intensive livestock grazing (in one year, ground is >50% bare)			
Active selective forestry harvesting (within one year)			
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)			
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)			
Other:			
Total Number:	**0**		
Eutrophication			
Direct discharges from agricultural feedlots, manure pits, etc.			
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.			
Heavy or moderately heavy formation of algal mats			
Other:			
Total Number:	**0**		
Contaminant/Toxicity			
Severe vegetation stress (source unknown or suspected)			
Obvious spills, discharges, plumes, odors, etc.			
Acidic drainages (mined sites, quarries, road cuts)			
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites			
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)			
Fish or wildlife kills or obvious disease or abnormalities observed			
Excessive garbage/dumping			
Other:			
Total Number:	**0**		

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
60536988	Falcon Ethane Pipeline Project	6/26/2017	0.0071	W-PA-160406-MRK-003	0.01

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Resource Identifier:			
Matt Kline, Elliot Dillon	40.263949	-80.266829	Classification:	POW	Delineated Area (acres):	0.0071

General Comments: Wetland has been destroyed by current pipeline construction.

1. Wetland Zone of Influence Condition Index

	Condition Category				
	Optimal	Suboptimal	Marginal		Poor
Wetland Zone of Influence (300 foot area around AA perimeter)	ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	**Low Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	**Low Poor:** ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6		5 4 3 2 1

CI = Total Score/20

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Total Score = SUM(%Areas*Scores)

	Condition Category:	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Total Score:	CI
Scoring:	% ZOI Area:	20%	0%	0%	0%	15%	52%	13%		
	Score:	16	0	0	0	6	4	1		
	Total Sub-score:	3.20	0.00	0.00	0.00	0.87	2.08	0.13	6.28	0.31

Comments:

2. Roadbed Presence Index

	Condition Categories				
	Optimal	Suboptimal	Marginal		Poor
a. Roadbed Presence (within 0 100 foot Wetland ZOI distance)	**High Optimal:** No roadbeds present within 100 feet of the AA boundary / **Low Optimal:** Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.	**High Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4.	**Low Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6.	**High Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8.	**Low Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10.	**High Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.	**Low Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6		5 4 3 2 1		

Comments: Roadbed 0-100 Total score is 0

	Condition Categories				
	Optimal	Suboptimal	Marginal		Poor
b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	**High Optimal:** No roadbeds present within 100 - 300 feet of the AA boundary / **Low Optimal:** Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.	**High Suboptimal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4.	**Low Suboptimal:** Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6.	**High Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8.	**Low Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10.	**High Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12.	**Low Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6		5 4 3 2 1		

CI = Total Score/20

Comments: Roadbed 100-300 Total score is 0

	Condition Score	Weighting	Sub-Scores
a. Roadbed 0-100:	19	* (0.67)	13
b. Roadbed 100-300:	19	* (0.33)	6
		Total Score:	**19**

0.95

Comments:

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category			
a. Invasive Species Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**
	High Optimal: No invasives present. **Low Optimal:** <5% of the total AA contains invasive species.	**High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species.	**High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species.	> 50% of the total AA contains invasive species.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total % relative cover of all invasives, collectively on site is 0

	Condition Category				
b. Vegetation Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/40**
	High Optimal: No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary.	**High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary.	**High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary.	Greater than five vegetation stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of vegetation stressors present - 4

a. Invasive Sub-Score:	19	**Total Score:**	
b. Vegetation Sub-Score:	8	**27**	**0.68**

4. Hydrologic Modification Index

	Condition Category				
Hydrologic Modification Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/20**
	High Optimal: No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary.	**High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary.	**High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary.	Greater than five hydrologic stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	**0.20**

Comments: Total number of hydrologic modifications present - 4

Score:	4

5. Sediment Stressor Index

	Condition Category				
Sediment Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/20**
	High Optimal: No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary.	**High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary.	**High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary.	Greater than five sediment stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	**0.30**

Comments: Total number of sediment stressors present - 5

Score:	6

6. Water Quality Stressor Index

	Condition Category			
a. Eutro- phication Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**
	No eutrophication stressors present within the AA boundary.	One eutrophication stressors present within the AA boundary.	Two eutrophication stressors present within the AA boundary.	Three eutrophication stressors present within the AA boundary.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total number of Eutrophication stressors present - 0

	Condition Category				
b. Contaminant / Toxicity Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/40**
	No contaminant / toxicity stressors present within the AA boundary.	One contaminant / toxicitystressors present within the AA boundary.	Two contaminant / toxicity stressors present within the AA boundary.	Three contaminant / toxicity stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of Contaminant/Toxicity stressors present - 1

a. Eutrophication Score	16	**Total Score:**	
b. Contaminant Score	11	**27**	**0.68**

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	**Overall Condition Index:**	**0.52**

Wetland ZOI Worksheet

Desktop Review		
Condition Category	Size (Ac)	Percentage
Optimal	5.13	72%
High Suboptimal	0.00	0%
Low Suboptimal	0.00	0%
High Marginal	0.00	0%
Low Marginal	1.03	15%
High Poor	0.00	0%
Low Poor	0.94	13%
Calculated total area	7.10	100%

Field View		
Condition Category	Size (Ac)	Percentage
Optimal	1.42	20%
High Suboptimal	0.00	0%
Low Suboptimal	0.00	0%
High Marginal	0.00	0%
Low Marginal	1.03	15%
High Poor	3.71	52%
Low Poor	0.94	13%
Calculated total area	7.10	100%

Enter Total Area 7.10 From ZOI shapefile

Calculated total area and Entered Total Area must be equal

Optimal

ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor

ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor

ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier		Date	Name(s) of Evaluator(s)
Falcon Ethane Pipeline Project		6/26/2017	Matt Kline, Elliot Dillon
Resource Identifier / AA #	**Lat (dd)**	**Long (dd)**	**Notes:**
W-PA-160406-MRK-003	40.263949	-80.266829	#VALUE!

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.	0	4	0	100-300 ft.	0	4	0
2 Lane Paved	0-100 ft.	0	2	0	100-300 ft.	0	2	0
1 Lane Paved	0-100 ft.	0	1	0	100-300 ft.	0	1	0
Gravel Road	0-100 ft.	0	1	0	100-300 ft.	0	1	0
Dirt Road	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Railroad	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Other Roadbeds	0-100 ft.	0	1, 2 or 4	0	100-300 ft.	0	1, 2 or 4	0
Total Scores:	0-100 ft.	0			100-300 ft.	0		

Road Comments:

Pennsylvania Wetland Condition Level 2 Rapid Assessment
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **NO**

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	*Species Code*	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%

Total % relative cover of all invasives, collectively on site: 0 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	*Scientific*	Status	Code	Common Name	*Scientific*	Status
aggi2	Redtop	*Agrostis gigantea*	FACW	luhe	Water primrose	*Ludwigia hexapetala*	OBLW
algl2	European Alder	*Alnus glutinosa*	FACW	lyvu	Garden loosestrife	*Lysimachia vulgaris*	OBLW
arhi3	Carpetgrass	*Arthraxon hispidus*	FAC-	lysa2	Purple loosestrife	*Lythrum salicaria*	FACW
beth	Japanese barberry	*Berberis thunbergii*	FACW	maqu	European waterclover	*Marsilea quadrifolia*	OBLW
bevu	European barberry	*Berberis vulgaris*	FACW	mivi	Japanese stiltgrass	*Microstegium vimineum*	FAC
butom	Flowering Rush	*Butomus umbellatus*	OBLW	nami2	Water cress	*Nasturtium officinale*	OBLW
calli6	Pond water-starwort	*Callitriche stagnalis*	OBLW	pelo	Low smartweed	*Persicaria longiseta*	FACW
egde	Brazilian waterweed	*Egeria densa*	OBLW	phar	Reed canary grass	*Phalaris arundinacea*	FACW
elan	Russian olive	*Elaeagnus angustifolia*	FACU	phau7	Common Reed	*Phragmites australis*	OBLW
elum	Autumn olive	*Elaeagnus umbellata*	FACU	potr	Rough bluegrass	*Poa trivialis*	FACW
ephi	Hairy willow-herb	*Epilobium hirsutum*	FACW	pocu6	Japanese knotweed	*Polygonum (Faloia) cuspidatum*	FAC-
eppa5	Willow-herb	*Epilobium parviflorum*	FACW	pgpf	Mile-a-minute	*Polygonum perfoliatum*	FAC-
fasa	Giant knotweed	*Fallopia sachalinensis*	OBLW	puera	Kudzu-vine	*Pueraria lobata*	FAC-
gldi	Mudmats	*Glossostigma diandrum*	OBLW	pysp1	Apple/crabapple/pear	*Pyrus sp.*	FAC?
hola	Velvetgrass	*Holcus lanatus*	FAC	rhfr	Glossy Buckthorn	*Rhamnus frangula*	FAC-
huja	Japanese Hops	*Humulus japonicus*	FACU	romu	Multiflora rose	*Rosa multiflora*	FACU
loja	Japanese honeysuckle	*Lonicera japonica*	FAC-	tyan	Cattail (hybrid)	*Typha angustifolia*	OBLW
lomo	Morrow's honeysuckle	*Lonicera morrowii*	NI	tygl	Hybrid cattail	*Typha x glauca*	OBLW
lota	Tartarian honeysuckle	*Lonicera tatarica*					

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

STRESSOR WORKSHEET

2/4/2017

	Occurrence in AA		
	Y	#'s	N
Vegetation Alteration			
Mowing			
Moderate livestock grazing (within one year)			
Crops (annual row crops, within one year)			
Selective tree harvesting/cutting (>50% removal, within 5 years)	1		
Right-of-way clearing (mechanical or chemical)	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	1		
Removal of woody debris	1		
Aquatic weed control (mechanical or herbicide)			
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)			
Plantation (conversion from typical natural tree species, including orchards)			
Other:			
Total Number:	**4**		
Hydrologic Modification			
Ditching, tile draining, or other dewatering methods	1		
Dike/weir/dam			
Filling/grading	1		
Dredging/excavation	1		
Stormwater inputs (culvert or similar concentrated urban runoff)			
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	1		
Dead or dying trees (trunks still standing) *			
Stream alteration (channelization or incision)			
Other:			
Total Number:	**4**		
Sedimentation			
Sediment deposits/plumes	1		
Eroding banks/slopes	1		
Active construction (earth disturbance for development)	1		
Active plowing (plowing for crop planting in past year)			
Intensive livestock grazing (in one year, ground is >50% bare)			
Active selective forestry harvesting (within one year)	1		
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)	1		
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)			
Other:			
Total Number:	**5**		
Eutrophication			
Direct discharges from agricultural feedlots, manure pits, etc.			
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.			
Heavy or moderately heavy formation of algal mats			
Other:			
Total Number:	**0**		
Contaminant/Toxicity			
Severe vegetation stress (source unknown or suspected)	1		
Obvious spills, discharges, plumes, odors, etc.			
Acidic drainages (mined sites, quarries, road cuts)			
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites			
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)			
Fish or wildlife kills or obvious disease or abnormalities observed			
Excessive garbage/dumping			
Other:			
Total Number:	**1**		

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
60536988	Falcon Ethane Pipeline Project	6/26/2017	0.0167	W-PA-160406-MRK-004	0.02

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Resource Identifier:			
Matt Kline, Elliot Dillon	40.264271	-80.266812	Classification:	POW	Delineated Area (acres):	0.0167

General Comments: Wetland has been destroyed by current pipeline construction.

1. Wetland Zone of Influence Condition Index

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
Wetland Zone of Influence (300 foot area around AA perimeter)	ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	**High Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. **Low Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. **Low Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. **Low Poor:** ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	CI = Total Score/20
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Total Score = SUM(%Areas*Scores)

	Condition Category:	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Total Score:	CI
Scoring:	% ZOI Area:	20%	0%	0%	0%	18%	43%	19%		
	Score:	16	0	0	0	6	3	1		
	Total Sub-score:	3.20	0.00	0.00	0.00	1.08	1.29	0.19	5.76	0.29

Comments:

2. Roadbed Presence Index

	Condition Categories				
	Optimal	Suboptimal	Marginal	Poor	
a. Roadbed Presence (within 0 100 foot Wetland ZOI distance)	**High Optimal:** No roadbeds present within 100 feet of the AA boundary **Low Optimal:** Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.	**High Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4. **Low Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6.	**High Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8. **Low Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10.	**High Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12. **Low Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Roadbed 0-100 Total score is 0

	Condition Categories				
	Optimal	Suboptimal	Marginal	Poor	
b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	**High Optimal:** No roadbeds present within 100 - 300 feet of the AA boundary **Low Optimal:** Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.	**High Suboptimal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4. **Low Suboptimal:** Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6.	**High Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8. **Low Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10.	**High Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12. **Low Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.	CI = Total Score/20
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Roadbed 100-300 Total score is 0

	Condition Score	Weighting	Sub-Scores	
a. Roadbed 0-100:	16	* (0.67)	11	
b. Roadbed 100-300:	16	* (0.33)	5	
		Total Score:	16	0.80

Comments:

Wetland Condition Assessment Form

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Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category			
a. Invasive Species Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**
	High Optimal: No invasives present. **Low Optimal:** <5% of the total AA contains invasive species.	**High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species.	**High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species.	> 50% of the total AA contains invasive species.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total % relative cover of all invasives, collectively on site is 0

	Condition Category				
b. Vegetation Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/40**
	High Optimal: No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary.	**High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary.	**High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary.	Greater than five vegetation stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of vegetation stressors present - 5

a. Invasive Sub-Score:	18	**Total Score:**	
b. Vegetation Sub-Score:	6	**24**	**0.60**

4. Hydrologic Modification Index

	Condition Category				
Hydrologic Modification Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/20**
	High Optimal: No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary.	**High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary.	**High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary.	Greater than five hydrologic stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	**0.40**

Comments: Total number of hydrologic modifications present - 4

Score:	8

5. Sediment Stressor Index

	Condition Category				
Sediment Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/20**
	High Optimal: No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary.	**High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary.	**High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary.	Greater than five sediment stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	**0.30**

Comments: Total number of sediment stressors present - 5

Score:	6

6. Water Quality Stressor Index

	Condition Category			
a. Eutro- phication Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**
	No eutrophication stressors present within the AA boundary.	One eutrophication stressors present within the AA boundary.	Two eutrophication stressors present within the AA boundary.	Three eutrophication stressors present within the AA boundary.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total number of Eutrophication stressors present - 0

	Condition Category				
b. Contaminant / Toxicity Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/40**
	No contaminant / toxicity stressors present within the AA boundary.	One contaminant / toxicitystressors present within the AA boundary.	Two contaminant / toxicity stressors present within the AA boundary.	Three contaminant / toxicity stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of Contaminant/Toxicity stressors present - 1

a. Eutrophication Score	16	**Total Score:**	
b. Contaminant Score	11	**27**	**0.68**

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	**Overall Condition Index:**	**0.51**

Wetland ZOI Worksheet

Desktop Review		
Condition Category	Size (Ac)	Percentage
Optimal	4.57	63%
High Suboptimal	0.00	0%
Low Suboptimal	0.00	0%
High Marginal	0.00	0%
Low Marginal	1.31	18%
High Poor	0.00	0%
Low Poor	1.39	19%
Calculated total area	7.27	100%

Field View		
Condition Category	Size (Ac)	Percentage
Optimal	1.44	20%
High Suboptimal	0.00	0%
Low Suboptimal	0.00	0%
High Marginal	0.00	0%
Low Marginal	1.31	18%
High Poor	3.13	43%
Low Poor	1.39	19%
Calculated total area	7.27	100%

Enter Total Area 7.27 From ZOI shapefile

Calculated total area and Entered Total Area must be equal

Optimal

ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor

ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor

ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier		Date	Name(s) of Evaluator(s)
Falcon Ethane Pipeline Project		6/26/2017	Matt Kline, Elliot Dillon
Resource Identifier / AA #	**Lat (dd)**	**Long (dd)**	**Notes:**
W-PA-160406-MRK-004	40.264271	-80.266812	#VALUE!

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.	0	4	0	100-300 ft.	0	4	0
2 Lane Paved	0-100 ft.	0	2	0	100-300 ft.	0	2	0
1 Lane Paved	0-100 ft.	0	1	0	100-300 ft.	0	1	0
Gravel Road	0-100 ft.	0	1	0	100-300 ft.	0	1	0
Dirt Road	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Railroad	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Other Roadbeds	0-100 ft.	0	1, 2 or 4	0	100-300 ft.	0	1, 2 or 4	0
Total Scores:	0-100 ft.	0			100-300 ft.	0		

Road Comments:

Pennsylvania Wetland Condition Level 2 Rapid Assessment
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **NO**

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	*Species Code*	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%

Total % relative cover of all invasives, collectively on site: 0 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	*Scientific*	Status	Code	Common Name	*Scientific*	Status
aggi2	Redtop	*Agrostis gigantea*	FACW	luhe	Water primrose	*Ludwigia hexapetala*	OBLW
algl2	European Alder	*Alnus glutinosa*	FACW	lyvu	Garden loosestrife	*Lysimachia vulgaris*	OBLW
arhi3	Carpetgrass	*Arthraxon hispidus*	FAC-	lysa2	Purple loosestrife	*Lythrum salicaria*	FACW
beth	Japanese barberry	*Berberis thunbergii*	FACW	maqu	European waterclover	*Marsilea quadrifolia*	OBLW
bevu	European barberry	*Berberis vulgaris*	FACW	mivi	Japanese stiltgrass	*Microstegium vimineum*	FAC
butom	Flowering Rush	*Butomus umbellatus*	OBLW	nami2	Water cress	*Nasturtium officinale*	OBLW
calli6	Pond water-starwort	*Callitriche stagnalis*	OBLW	pelo	Low smartweed	*Persicaria longiseta*	FACW
egde	Brazilian waterweed	*Egeria densa*	OBLW	phar	Reed canary grass	*Phalaris arundinacea*	FACW
elan	Russian olive	*Elaeagnus angustifolia*	FACU	phau7	Common Reed	*Phragmites australis*	OBLW
elum	Autumn olive	*Elaeagnus umbellata*	FACU	potr	Rough bluegrass	*Poa trivialis*	FACW
ephi	Hairy willow-herb	*Epilobium hirsutum*	FACW	pocu6	Japanese knotweed	*Polygonum (Faloia) cuspidatum*	FAC-
eppa5	Willow-herb	*Epilobium parviflorum*	FACW	pgpf	Mile-a-minute	*Polygonum perfoliatum*	FAC-
fasa	Giant knotweed	*Fallopia sachalinensis*	OBLW	puera	Kudzu-vine	*Pueraria lobata*	FAC-
gldi	Mudmats	*Glossostigma diandrum*	OBLW	pysp1	Apple/crabapple/pear	*Pyrus sp.*	FAC?
hola	Velvetgrass	*Holcus lanatus*	FAC	rhfr	Glossy Buckthorn	*Rhamnus frangula*	FAC-
huja	Japanese Hops	*Humulus japonicus*	FACU	romu	Multiflora rose	*Rosa multiflora*	FACU
loja	Japanese honeysuckle	*Lonicera japonica*	FAC-	tyan	Cattail (hybrid)	*Typha angustifolia*	OBLW
lomo	Morrow's honeysuckle	*Lonicera morrowii*	NI	tygl	Hybrid cattail	*Typha x glauca*	OBLW
lota	Tartarian honeysuckle	*Lonicera tatarica*					

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

STRESSOR WORKSHEET

2/4/2017

	Occurrence in AA		
	Y	#'s	N
Vegetation Alteration			
Mowing	1		
Moderate livestock grazing (within one year)			
Crops (annual row crops, within one year)			
Selective tree harvesting/cutting (>50% removal, within 5 years)	1		
Right-of-way clearing (mechanical or chemical)	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	1		
Removal of woody debris	1		
Aquatic weed control (mechanical or herbicide)			
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)			
Plantation (conversion from typical natural tree species, including orchards)			
Other:			
Total Number:	5		
Hydrologic Modification			
Ditching, tile draining, or other dewatering methods	1		
Dike/weir/dam			
Filling/grading	1		
Dredging/excavation	1		
Stormwater inputs (culvert or similar concentrated urban runoff)			
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	1		
Dead or dying trees (trunks still standing) *			
Stream alteration (channelization or incision)			
Other:			
Total Number:	4		
Sedimentation			
Sediment deposits/plumes	1		
Eroding banks/slopes	1		
Active construction (earth disturbance for development)	1		
Active plowing (plowing for crop planting in past year)			
Intensive livestock grazing (in one year, ground is >50% bare)			
Active selective forestry harvesting (within one year)	1		
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)	1		
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)			
Other:			
Total Number:	5		
Eutrophication			
Direct discharges from agricultural feedlots, manure pits, etc.			
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.			
Heavy or moderately heavy formation of algal mats			
Other:			
Total Number:	0		
Contaminant/Toxicity			
Severe vegetation stress (source unknown or suspected)	1		
Obvious spills, discharges, plumes, odors, etc.			
Acidic drainages (mined sites, quarries, road cuts)			
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites			
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)			
Fish or wildlife kills or obvious disease or abnormalities observed			
Excessive garbage/dumping			
Other:			
Total Number:	1		

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
60536988	Falcon Ethane Pipeline Project	6/26/2017	0.1671	W-PA-160406-MRK-006	0.29

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Resource Identifier:			
Matt Kline, Elliot Dillon	40.265675	-80.266788	Classification:	PEM	Delineated Area (acres):	0.2851

1. Wetland Zone of Influence Condition Index

	Condition Category																				
	Optimal					Suboptimal					Marginal					Poor					
Wetland Zone of Influence (300 foot area around AA perimeter)	ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					**High Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					**High Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					**High Poor:** ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				
						Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					**Low Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.					**Low Poor:** ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	**CI = Total Score/20**

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Total Score = SUM(%Areas*Scores)

	Condition Category:	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor		
Scoring:	% ZOI Area:	10%	0%	0%	0%	30%	55%	5%	**Total Score:**	**CI**
	Score:	16	0	0	0	6	3	1		
	Total Sub-score:	1.60	0.00	0.00	0.00	1.78	1.65	0.05	**5.08**	**0.25**

Comments:

2. Roadbed Presence Index

	Condition Categories																				
	Optimal					Suboptimal					Marginal					Poor					
a. Roadbed Presence (within 0 100 foot Wetland ZOI distance)	**High Optimal:** No roadbeds present within 100 feet of the AA boundary			**Low Optimal:** Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.		**High Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4.			**Low Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6.		**High Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8.			**Low Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10.		**High Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.			**Low Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: Roadbed 0-100 Total score is 0

	Condition Categories																				
	Optimal					Suboptimal					Marginal					Poor					
b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	**High Optimal:** No roadbeds present within 100 - 300 feet of the AA boundary			**Low Optimal:** Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.		**High Suboptimal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4.			**Low Suboptimal:** Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6.		**High Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8.			**Low Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10.		**High Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12.			**Low Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.		**CI = Total Score/20**
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: Roadbed 100-300 Total score is 0

	Condition Score	Weighting	Sub-Scores	
a. Roadbed 0-100:	16	* (0.67)	11	
b. Roadbed 100-300:	16	* (0.33)	5	
		Total Score:	**16**	**0.80**

Comments:

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category			
a. Invasive Species Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**
	High Optimal: No invasives present. **Low Optimal:** <5% of the total AA contains invasive species.	**High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species.	**High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species.	> 50% of the total AA contains invasive species.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total % relative cover of all invasives, collectively on site is 0

	Condition Category				
b. Vegetation Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/40**
	High Optimal: No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary.	**High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary.	**High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary.	Greater than five vegetation stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of vegetation stressors present - 5

a. Invasive Sub-Score:	18	**Total Score:**	
b. Vegetation Sub-Score:	6	**24**	**0.60**

4. Hydrologic Modification Index

	Condition Category				
Hydrologic Modification Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/20**
	High Optimal: No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary.	**High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary.	**High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary.	Greater than five hydrologic stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	**0.45**

Comments: Total number of hydrologic modifications present - 4

Score:	9

5. Sediment Stressor Index

	Condition Category				
Sediment Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/20**
	High Optimal: No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary.	**High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary.	**High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary.	Greater than five sediment stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	**0.30**

Comments: Total number of sediment stressors present - 5

Score:	6

6. Water Quality Stressor Index

	Condition Category			
a. Eutro- phication Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**
	No eutrophication stressors present within the AA boundary.	One eutrophication stressors present within the AA boundary.	Two eutrophication stressors present within the AA boundary.	Three eutrophication stressors present within the AA boundary.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total number of Eutrophication stressors present - 0

	Condition Category				
b. Contaminant / Toxicity Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/40**
	No contaminant / toxicity stressors present within the AA boundary.	One contaminant / toxicitystressors present within the AA boundary.	Two contaminant / toxicity stressors present within the AA boundary.	Three contaminant / toxicity stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of Contaminant/Toxicity stressors present - 1

a. Eutrophication Score	16	**Total Score:**	
b. Contaminant Score	11	**27**	**0.68**

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	**Overall Condition Index:**	**0.51**

Wetland ZOI Worksheet

Desktop Review

Condition Category	Size (Ac)	Percentage
Optimal	9.00	65%
High Suboptimal	0.00	0%
Low Suboptimal	0.00	0%
High Marginal	0.00	0%
Low Marginal	4.09	30%
High Poor	0.00	0%
Low Poor	0.71	5%
Calculated total area	13.80	100%

Field View

Condition Category	Size (Ac)	Percentage
Optimal	1.38	10%
High Suboptimal	0.00	0%
Low Suboptimal	0.00	0%
High Marginal	0.00	0%
Low Marginal	4.09	30%
High Poor	7.62	55%
Low Poor	0.71	5%
Calculated total area	13.80	100%

Enter Total Area 13.80 From ZOI shapefile

Calculated total area and Entered Total Area must be equal

Optimal

ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor

ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor

ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier		Date	Name(s) of Evaluator(s)
Falcon Ethane Pipeline Project		6/26/2017	Matt Kline, Elliot Dillon
Resource Identifier / AA #	**Lat (dd)**	**Long (dd)**	**Notes:**
W-PA-160406-MRK-006	40.265675	-80.266788	#VALUE!

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.	0	4	0	100-300 ft.	0	4	0
2 Lane Paved	0-100 ft.	0	2	0	100-300 ft.	0	2	0
1 Lane Paved	0-100 ft.	0	1	0	100-300 ft.	0	1	0
Gravel Road	0-100 ft.	0	1	0	100-300 ft.	0	1	0
Dirt Road	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Railroad	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Other Roadbeds	0-100 ft.	0	1, 2 or 4	0	100-300 ft.	0	1, 2 or 4	0
Total Scores:	0-100 ft.	0			100-300 ft.	0		

Road Comments:

Pennsylvania Wetland Condition Level 2 Rapid Assessment
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **NO**

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	*Species Code*	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%

Total % relative cover of all invasives, collectively on site: 0 **%**

Comments:

Common Invasives/Aggressives List

Code	Common Name	*Scientific*	Status	Code	Common Name	*Scientific*	Status
aggi2	Redtop	*Agrostis gigantea*	FACW	luhe	Water primrose	*Ludwigia hexapetala*	OBLW
algl2	European Alder	*Alnus glutinosa*	FACW	lyvu	Garden loosestrife	*Lysimachia vulgaris*	OBLW
arhi3	Carpetgrass	*Arthraxon hispidus*	FAC-	lysa2	Purple loosestrife	*Lythrum salicaria*	FACW
beth	Japanese barberry	*Berberis thunbergii*	FACW	maqu	European waterclover	*Marsilea quadrifolia*	OBLW
bevu	European barberry	*Berberis vulgaris*	FACW	mivi	Japanese stiltgrass	*Microstegium vimineum*	FAC
butom	Flowering Rush	*Butomus umbellatus*	OBLW	nami2	Water cress	*Nasturtium officinale*	OBLW
calli6	Pond water-starwort	*Callitriche stagnalis*	OBLW	pelo	Low smartweed	*Persicaria longiseta*	FACW
egde	Brazilian waterweed	*Egeria densa*	OBLW	phar	Reed canary grass	*Phalaris arundinacea*	FACW
elan	Russian olive	*Elaeagnus angustifolia*	FACU	phau7	Common Reed	*Phragmites australis*	OBLW
elum	Autumn olive	*Elaeagnus umbellata*	FACU	potr	Rough bluegrass	*Poa trivialis*	FACW
ephi	Hairy willow-herb	*Epilobium hirsutum*	FACW	pocu6	Japanese knotweed	*Polygonum (Faloia) cuspidatum*	FAC-
eppa5	Willow-herb	*Epilobium parviflorum*	FACW	pgpf	Mile-a-minute	*Polygonum perfoliatum*	FAC-
fasa	Giant knotweed	*Fallopia sachalinensis*	OBLW	puera	Kudzu-vine	*Pueraria lobata*	FAC-
gldi	Mudmats	*Glossostigma diandrum*	OBLW	pysp1	Apple/crabapple/pear	*Pyrus sp.*	FAC?
hola	Velvetgrass	*Holcus lanatus*	FAC	rhfr	Glossy Buckthorn	*Rhamnus frangula*	FAC-
huja	Japanese Hops	*Humulus japonicus*	FACU	romu	Multiflora rose	*Rosa multiflora*	FACU
loja	Japanese honeysuckle	*Lonicera japonica*	FAC-	tyan	Cattail (hybrid)	*Typha angustifolia*	OBLW
lomo	Morrow's honeysuckle	*Lonicera morrowii*	NI	tygl	Hybrid cattail	*Typha x glauca*	OBLW
lota	Tartarian honeysuckle	*Lonicera tatarica*					

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

STRESSOR WORKSHEET

2/4/2017

	Occurrence in AA		
	Y	#'s	N
Vegetation Alteration			
Mowing	1		
Moderate livestock grazing (within one year)			
Crops (annual row crops, within one year)			
Selective tree harvesting/cutting (>50% removal, within 5 years)	1		
Right-of-way clearing (mechanical or chemical)	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	1		
Removal of woody debris	1		
Aquatic weed control (mechanical or herbicide)			
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)			
Plantation (conversion from typical natural tree species, including orchards)			
Other:			
Total Number:	**5**		
Hydrologic Modification			
Ditching, tile draining, or other dewatering methods	1		
Dike/weir/dam			
Filling/grading	1		
Dredging/excavation	1		
Stormwater inputs (culvert or similar concentrated urban runoff)			
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	1		
Dead or dying trees (trunks still standing) *			
Stream alteration (channelization or incision)			
Other:			
Total Number:	**4**		
Sedimentation			
Sediment deposits/plumes	1		
Eroding banks/slopes	1		
Active construction (earth disturbance for development)	1		
Active plowing (plowing for crop planting in past year)			
Intensive livestock grazing (in one year, ground is >50% bare)			
Active selective forestry harvesting (within one year)	1		
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)	1		
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)			
Other:			
Total Number:	**5**		
Eutrophication			
Direct discharges from agricultural feedlots, manure pits, etc.			
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.			
Heavy or moderately heavy formation of algal mats			
Other:			
Total Number:	**0**		
Contaminant/Toxicity			
Severe vegetation stress (source unknown or suspected)	1		
Obvious spills, discharges, plumes, odors, etc.			
Acidic drainages (mined sites, quarries, road cuts)			
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites			
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)			
Fish or wildlife kills or obvious disease or abnormalities observed			
Excessive garbage/dumping			
Other:			
Total Number:	**1**		

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
60536988	Falcon Ethane Pipeline Project	6/26/2017	0.0116	W-PA-170112-MRK-003	0.01

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Resource Identifier:			
Matt Kline, Elliot Dillon	40.267153	-80.267019	Classification:	PEM	Delineated Area (acres):	0.0116

General Comments: Wetland destroyed by current pipeline construction.

1. Wetland Zone of Influence Condition Index

	Condition Category																				
	Optimal					Suboptimal					Marginal					Poor					
Wetland Zone of Influence (300 foot area around AA perimeter)	ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.		High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		CI = Total Score/20
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Total Score = SUM(%Areas*Scores)

	Condition Category:	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Total Score:	CI
Scoring:	% ZOI Area:	15%	0%	0%	0%	15%	70%	0%		
	Score:	16	0	0	0	6	3	0		
	Total Sub-score:	2.40	0.00	0.00	0.00	0.90	2.10	0.00	5.40	0.27

Comments:

2. Roadbed Presence Index

	Condition Categories																				
	Optimal					Suboptimal					Marginal					Poor					
a. Roadbed Presence (within 0 100 foot Wetland ZOI distance)	High Optimal: No roadbeds present within 100 feet of the AA boundary		Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.			High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4.			Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6.		High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8.			Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10.		High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.			Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: Roadbed 0-100 Total score is 0

	Condition Categories																				
	Optimal					Suboptimal					Marginal					Poor					
b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary		Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.			High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4.			Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6.		High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8.			Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10.		High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12.			Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.		CI = Total Score/20
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: Roadbed 100-300 Total score is 0

	Condition Score	Weighting	Sub-Scores	
a. Roadbed 0-100:	18	* (0.67)	12	
b. Roadbed 100-300:	18	* (0.33)	6	
		Total Score:	18	0.90

Comments:

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

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3. Vegetation Condition Index

	Condition Category			
a. Invasive Species Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**
	High Optimal: No invasives present. **Low Optimal:** <5% of the total AA contains invasive species.	**High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species.	**High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species.	> 50% of the total AA contains invasive species.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total % relative cover of all invasives, collectively on site is 0

	Condition Category				
b. Vegetation Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/40**
	High Optimal: No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary.	**High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary.	**High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary.	Greater than five vegetation stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of vegetation stressors present - 5

a. Invasive Sub-Score:	18	**Total Score:**	
b. Vegetation Sub-Score:	6	**24**	**0.60**

4. Hydrologic Modification Index

	Condition Category				
Hydrologic Modification Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/20**
	High Optimal: No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary.	**High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary.	**High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary.	Greater than five hydrologic stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	**0.40**

Comments: Total number of hydrologic modifications present - 4

Score:	8

5. Sediment Stressor Index

	Condition Category				
Sediment Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/20**
	High Optimal: No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary.	**High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary.	**High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary.	Greater than five sediment stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	**0.30**

Comments: Total number of sediment stressors present - 5

Score:	6

6. Water Quality Stressor Index

	Condition Category			
a. Eutro- phication Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**
	No eutrophication stressors present within the AA boundary.	One eutrophication stressors present within the AA boundary.	Two eutrophication stressors present within the AA boundary.	Three eutrophication stressors present within the AA boundary.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total number of Eutrophication stressors present - 0

	Condition Category				
b. Contaminant / Toxicity Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/40**
	No contaminant / toxicity stressors present within the AA boundary.	One contaminant / toxicitystressors present within the AA boundary.	Two contaminant / toxicity stressors present within the AA boundary.	Three contaminant / toxicity stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of Contaminant/Toxicity stressors present - 1

a. Eutrophication Score	16	**Total Score:**	**0.68**
b. Contaminant Score	11	**27**	

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	**Overall Condition Index:**	**0.52**

Wetland ZOI Worksheet

Desktop Review		
Condition Category	Size (Ac)	Percentage
Optimal	6.54	85%
High Suboptimal	0.00	0%
Low Suboptimal	0.00	0%
High Marginal	0.00	0%
Low Marginal	1.16	15%
High Poor	0.00	0%
Low Poor	0.00	0%
Calculated total area	7.70	100%

Field View		
Condition Category	Size (Ac)	Percentage
Optimal	1.16	15%
High Suboptimal	0.00	0%
Low Suboptimal	0.00	0%
High Marginal	0.00	0%
Low Marginal	1.16	15%
High Poor	5.38	70%
Low Poor	0.00	0%
Calculated total area	7.70	100%

Enter Total Area 7.70 From ZOI shapefile

Calculated total area and Entered Total Area must be equal

Optimal

ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor

ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor

ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier		Date	Name(s) of Evaluator(s)
Falcon Ethane Pipeline Project		6/26/2017	Matt Kline, Elliot Dillon
Resource Identifier / AA #	**Lat (dd)**	**Long (dd)**	**Notes:**
W-PA-170112-MRK-003	40.267153	-80.267019	#VALUE!

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.	0	4	0	100-300 ft.	0	4	0
2 Lane Paved	0-100 ft.	0	2	0	100-300 ft.	0	2	0
1 Lane Paved	0-100 ft.	0	1	0	100-300 ft.	0	1	0
Gravel Road	0-100 ft.	0	1	0	100-300 ft.	0	1	0
Dirt Road	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Railroad	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Other Roadbeds	0-100 ft.	0	1, 2 or 4	0	100-300 ft.	0	1, 2 or 4	0
Total Scores:	0-100 ft.	0			100-300 ft.	0		

Road Comments:

Pennsylvania Wetland Condition Level 2 Rapid Assessment
(Document No. 310-2137-002)
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Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **NO**

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	*Species Code*	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%

Total % relative cover of all invasives, collectively on site: 0 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	*Scientific*	Status	Code	Common Name	*Scientific*	Status
aggi2	Redtop	*Agrostis gigantea*	FACW	luhe	Water primrose	*Ludwigia hexapetala*	OBLW
algl2	European Alder	*Alnus glutinosa*	FACW	lyvu	Garden loosestrife	*Lysimachia vulgaris*	OBLW
arhi3	Carpetgrass	*Arthraxon hispidus*	FAC-	lysa2	Purple loosestrife	*Lythrum salicaria*	FACW
beth	Japanese barberry	*Berberis thunbergii*	FACW	maqu	European waterclover	*Marsilea quadrifolia*	OBLW
bevu	European barberry	*Berberis vulgaris*	FACW	mivi	Japanese stiltgrass	*Microstegium vimineum*	FAC
butom	Flowering Rush	*Butomus umbellatus*	OBLW	nami2	Water cress	*Nasturtium officinale*	OBLW
calli6	Pond water-starwort	*Callitriche stagnalis*	OBLW	pelo	Low smartweed	*Persicaria longiseta*	FACW
egde	Brazilian waterweed	*Egeria densa*	OBLW	phar	Reed canary grass	*Phalaris arundinacea*	FACW
elan	Russian olive	*Elaeagnus angustifolia*	FACU	phau7	Common Reed	*Phragmites australis*	OBLW
elum	Autumn olive	*Elaeagnus umbellata*	FACU	potr	Rough bluegrass	*Poa trivialis*	FACW
ephi	Hairy willow-herb	*Epilobium hirsutum*	FACW	pocu6	Japanese knotweed	*Polygonum (Faloia) cuspidatum*	FAC-
eppa5	Willow-herb	*Epilobium parviflorum*	FACW	pgpf	Mile-a-minute	*Polygonum perfoliatum*	FAC-
fasa	Giant knotweed	*Fallopia sachalinensis*	OBLW	puera	Kudzu-vine	*Pueraria lobata*	FAC-
gldi	Mudmats	*Glossostigma diandrum*	OBLW	pysp1	Apple/crabapple/pear	*Pyrus sp.*	FAC?
hola	Velvetgrass	*Holcus lanatus*	FAC	rhfr	Glossy Buckthorn	*Rhamnus frangula*	FAC-
huja	Japanese Hops	*Humulus japonicus*	FACU	romu	Multiflora rose	*Rosa multiflora*	FACU
loja	Japanese honeysuckle	*Lonicera japonica*	FAC-	tyan	Cattail (hybrid)	*Typha angustifolia*	OBLW
lomo	Morrow's honeysuckle	*Lonicera morrowii*	NI	tygl	Hybrid cattail	*Typha x glauca*	OBLW
lota	Tartarian honeysuckle	*Lonicera tatarica*					

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

STRESSOR WORKSHEET

2/4/2017

	Occurrence in AA		
	Y	#'s	N
Vegetation Alteration			
Mowing	1		
Moderate livestock grazing (within one year)			
Crops (annual row crops, within one year)			
Selective tree harvesting/cutting (>50% removal, within 5 years)	1		
Right-of-way clearing (mechanical or chemical)	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	1		
Removal of woody debris	1		
Aquatic weed control (mechanical or herbicide)			
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)			
Plantation (conversion from typical natural tree species, including orchards)			
Other:			
Total Number:	5		
Hydrologic Modification			
Ditching, tile draining, or other dewatering methods	1		
Dike/weir/dam			
Filling/grading	1		
Dredging/excavation	1		
Stormwater inputs (culvert or similar concentrated urban runoff)			
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	1		
Dead or dying trees (trunks still standing) *			
Stream alteration (channelization or incision)			
Other:			
Total Number:	4		
Sedimentation			
Sediment deposits/plumes	1		
Eroding banks/slopes	1		
Active construction (earth disturbance for development)	1		
Active plowing (plowing for crop planting in past year)			
Intensive livestock grazing (in one year, ground is >50% bare)			
Active selective forestry harvesting (within one year)	1		
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)	1		
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)			
Other:			
Total Number:	5		
Eutrophication			
Direct discharges from agricultural feedlots, manure pits, etc.			
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.			
Heavy or moderately heavy formation of algal mats			
Other:			
Total Number:	0		
Contaminant/Toxicity			
Severe vegetation stress (source unknown or suspected)	1		
Obvious spills, discharges, plumes, odors, etc.			
Acidic drainages (mined sites, quarries, road cuts)			
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites			
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)			
Fish or wildlife kills or obvious disease or abnormalities observed			
Excessive garbage/dumping			
Other:			
Total Number:	1		

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

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For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
60536988	Falcon Ethane Pipeline Project	6/26/2017	0.0190	W-PA-170112-MRK-002	0.02

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Resource Identifier:			
Matt Kline, Elliot Dillon	40.268140	-80.267617	Classification:	PEM	Delineated Area (acres):	0.0193

General Comments: Wetland has been destroyed by current construction.

1. Wetland Zone of Influence Condition Index

	Condition Category																				
	Optimal					Suboptimal					Marginal					Poor					
Wetland Zone of Influence (300 foot area around AA perimeter)	ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.		High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.			Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		CI = Total Score/20
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Total Score = SUM(%Areas*Scores)

	Condition Category:	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Total Score:	CI
Scoring:	% ZOI Area:	15%	0%	0%	0%	16%	69%	0%		
	Score:	16	0	0	0	6	3	0		
	Total Sub-score:	2.40	0.00	0.00	0.00	0.96	2.07	0.00	5.43	0.27

2. Roadbed Presence Index

	Condition Categories																				
	Optimal					Suboptimal					Marginal					Poor					
a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	High Optimal: No roadbeds present within 100 feet of the AA boundary			Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.		High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6.	High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10.	High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.				Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: Roadbed 0-100 Total score is 0

	Condition Categories																				
	Optimal					Suboptimal					Marginal					Poor					
b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary			Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.		High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6.	High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10.	High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12.				Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.	CI = Total Score/20
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: Roadbed 100-300 Total score is 0

	Condition Score	Weighting	Sub-Scores	
a. Roadbed 0-100:	16	* (0.67)	11	
b. Roadbed 100-300:	16	* (0.33)	5	
		Total Score:	16	0.80

Comments:

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category			
a. Invasive Species Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**
	High Optimal: No invasives present. **Low Optimal:** <5% of the total AA contains invasive species.	**High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species.	**High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species.	> 50% of the total AA contains invasive species.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total % relative cover of all invasives, collectively on site is 0
0

	Condition Category			
b. Vegetation Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**
	High Optimal: No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary.	**High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary.	**High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary.	Greater than five vegetation stressors present within the AA boundary.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total number of vegetation stressors present - 4

a. Invasive Sub-Score:	16	**Total Score:**	**CI = Total Score/40**
b. Vegetation Sub-Score:	8	**24**	**0.60**

4. Hydrologic Modification Index

	Condition Category			
Hydrologic Modification Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**
	High Optimal: No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary.	**High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary.	**High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary.	Greater than five hydrologic stressors present within the AA boundary.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total number of hydrologic modifications present - 4

Score:	8	**CI = Total Score/20**
		0.40

5. Sediment Stressor Index

	Condition Category			
Sediment Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**
	High Optimal: No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary.	**High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary.	**High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary.	Greater than five sediment stressors present within the AA boundary.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total number of sediment stressors present - 4

Score:	8	**CI = Total Score/20**
		0.40

6. Water Quality Stressor Index

	Condition Category			
a. Eutro- phication Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**
	No eutrophication stressors present within the AA boundary.	One eutrophication stressors present within the AA boundary.	Two eutrophication stressors present within the AA boundary.	Three eutrophication stressors present within the AA boundary.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total number of Eutrophication stressors present - 0

	Condition Category			
b. Contaminant / Toxicity Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**
	No contaminant / toxicity stressors present within the AA boundary.	One contaminant / toxicitystressors present within the AA boundary.	Two contaminant / toxicity stressors present within the AA boundary.	Three contaminant / toxicity stressors present within the AA boundary.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total number of Contaminant/Toxicity stressors present - 1

a. Eutrophication Score	18	**Total Score:**	**CI = Total Score/40**
b. Contaminant Score	13	**31**	**0.78**

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	**Overall Condition Index:**	**0.54**

Wetland ZOI Worksheet

Desktop Review		
Condition Category	Size (Ac)	Percentage
Optimal	6.34	84%
High Suboptimal	0.00	0%
Low Suboptimal	0.00	0%
High Marginal	0.00	0%
Low Marginal	1.21	16%
High Poor	0.00	0%
Low Poor	0.00	0%
Calculated total area	7.55	100%

Field View		
Condition Category	Size (Ac)	Percentage
Optimal	1.13	15%
High Suboptimal	0.00	0%
Low Suboptimal	0.00	0%
High Marginal	0.00	0%
Low Marginal	1.21	16%
High Poor	5.21	69%
Low Poor	0.00	0%
Calculated total area	7.55	100%

Enter Total Area 7.55 From ZOI shapefile

Calculated total area and Entered Total Area must be equal

Optimal

ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor

ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor

ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier		Date	Name(s) of Evaluator(s)
Falcon Ethane Pipeline Project		6/26/2017	Matt Kline, Elliot Dillon
Resource Identifier / AA #	**Lat (dd)**	**Long (dd)**	**Notes:**
W-PA-170112-MRK-002	40.268140	-80.267617	#VALUE!

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.	0	4	0	100-300 ft.	0	4	0
2 Lane Paved	0-100 ft.	0	2	0	100-300 ft.	0	2	0
1 Lane Paved	0-100 ft.	0	1	0	100-300 ft.	0	1	0
Gravel Road	0-100 ft.	0	1	0	100-300 ft.	0	1	0
Dirt Road	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Railroad	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Other Roadbeds	0-100 ft.	0	1, 2 or 4	0	100-300 ft.	0	1, 2 or 4	0
Total Scores:	0-100 ft.	0			100-300 ft.	0		

Road Comments:

Pennsylvania Wetland Condition Level 2 Rapid Assessment
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **NO**

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	*Species Code*	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%

Total % relative cover of all invasives, collectively on site: 0 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	*Scientific*	Status	Code	Common Name	*Scientific*	Status
aggi2	Redtop	*Agrostis gigantea*	FACW	luhe	Water primrose	*Ludwigia hexapetala*	OBLW
algl2	European Alder	*Alnus glutinosa*	FACW	lyvu	Garden loosestrife	*Lysimachia vulgaris*	OBLW
arhi3	Carpetgrass	*Arthraxon hispidus*	FAC-	lysa2	Purple loosestrife	*Lythrum salicaria*	FACW
beth	Japanese barberry	*Berberis thunbergii*	FACW	maqu	European waterclover	*Marsilea quadrifolia*	OBLW
bevu	European barberry	*Berberis vulgaris*	FACW	mivi	Japanese stiltgrass	*Microstegium vimineum*	FAC
butom	Flowering Rush	*Butomus umbellatus*	OBLW	nami2	Water cress	*Nasturtium officinale*	OBLW
calli6	Pond water-starwort	*Callitriche stagnalis*	OBLW	pelo	Low smartweed	*Persicaria longiseta*	FACW
egde	Brazilian waterweed	*Egeria densa*	OBLW	phar	Reed canary grass	*Phalaris arundinacea*	FACW
elan	Russian olive	*Elaeagnus angustifolia*	FACU	phau7	Common Reed	*Phragmites australis*	OBLW
elum	Autumn olive	*Elaeagnus umbellata*	FACU	potr	Rough bluegrass	*Poa trivialis*	FACW
ephi	Hairy willow-herb	*Epilobium hirsutum*	FACW	pocu6	Japanese knotweed	*Polygonum (Faloia) cuspidatum*	FAC-
eppa5	Willow-herb	*Epilobium parviflorum*	FACW	pgpf	Mile-a-minute	*Polygonum perfoliatum*	FAC-
fasa	Giant knotweed	*Fallopia sachalinensis*	OBLW	puera	Kudzu-vine	*Pueraria lobata*	FAC-
gldi	Mudmats	*Glossostigma diandrum*	OBLW	pysp1	Apple/crabapple/pear	*Pyrus sp.*	FAC?
hola	Velvetgrass	*Holcus lanatus*	FAC	rhfr	Glossy Buckthorn	*Rhamnus frangula*	FAC-
huja	Japanese Hops	*Humulus japonicus*	FACU	romu	Multiflora rose	*Rosa multiflora*	FACU
loja	Japanese honeysuckle	*Lonicera japonica*	FAC-	tyan	Cattail (hybrid)	*Typha angustifolia*	OBLW
lomo	Morrow's honeysuckle	*Lonicera morrowii*	NI	tygl	Hybrid cattail	*Typha x glauca*	OBLW
lota	Tartarian honeysuckle	*Lonicera tatarica*					

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

STRESSOR WORKSHEET

2/4/2017

	Occurrence in AA		
	Y	#'s	N
Vegetation Alteration			
Mowing			
Moderate livestock grazing (within one year)			
Crops (annual row crops, within one year)			
Selective tree harvesting/cutting (>50% removal, within 5 years)	1		
Right-of-way clearing (mechanical or chemical)	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	1		
Removal of woody debris	1		
Aquatic weed control (mechanical or herbicide)			
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)			
Plantation (conversion from typical natural tree species, including orchards)			
Other:			
Total Number:	**4**		
Hydrologic Modification			
Ditching, tile draining, or other dewatering methods	1		
Dike/weir/dam			
Filling/grading	1		
Dredging/excavation	1		
Stormwater inputs (culvert or similar concentrated urban runoff)			
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	1		
Dead or dying trees (trunks still standing) *			
Stream alteration (channelization or incision)			
Other:			
Total Number:	**4**		
Sedimentation			
Sediment deposits/plumes	1		
Eroding banks/slopes	1		
Active construction (earth disturbance for development)	1		
Active plowing (plowing for crop planting in past year)			
Intensive livestock grazing (in one year, ground is >50% bare)			
Active selective forestry harvesting (within one year)			
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)	1		
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)			
Other:			
Total Number:	**4**		
Eutrophication			
Direct discharges from agricultural feedlots, manure pits, etc.			
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.			
Heavy or moderately heavy formation of algal mats			
Other:			
Total Number:	**0**		
Contaminant/Toxicity			
Severe vegetation stress (source unknown or suspected)	1		
Obvious spills, discharges, plumes, odors, etc.			
Acidic drainages (mined sites, quarries, road cuts)			
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites			
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)			
Fish or wildlife kills or obvious disease or abnormalities observed			
Excessive garbage/dumping			
Other:			
Total Number:	**1**		

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
60536988	Falcon Ethane Pipeline Project	6/26/2017	0.0091	W-PA-160406-MRK-001	0.03

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Resource Identifier:			
Matt Kline, Elliot Dillon	40.272398	-80.269054	Classification:	PSS	Delineated Area (acres):	0.0286

General Comments:

1. Wetland Zone of Influence Condition Index

	Condition Category																				
	Optimal					Suboptimal					Marginal					Poor					
Wetland Zone of Influence (300 foot area around AA perimeter)	ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	CI = Total Score/20
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Total Score = SUM(%Areas*Scores)

	Condition Category:	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Total Score:	CI
Scoring:	% ZOI Area:	50%	12%	8%	0%	0%	15%	15%		
	Score:	16	13	11	0	0	4	2		
	Total Sub-score:	8.00	1.56	0.88	0.00	0.00	0.60	0.30	11.34	0.57

Comments:

2. Roadbed Presence Index

	Condition Categories																				
	Optimal					Suboptimal					Marginal					Poor					
a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	High Optimal: No roadbeds present within 100 feet of the AA boundary			Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.		High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6.	High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10.	High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.				Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: Roadbed 0-100 Total score is 2

	Condition Categories																				
	Optimal					Suboptimal					Marginal					Poor					
b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary			Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.		High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6.	High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10.	High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12.				Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.	CI = Total Score/20
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: Roadbed 100-300 Total score is 4

	Condition Score	Weighting	Sub-Scores	
a. Roadbed 0-100:	17	* (0.67)	11	
b. Roadbed 100-300:	14	* (0.33)	5	
		Total Score:	16	0.80

Comments:

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category			
a. Invasive Species Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**
	High Optimal: No invasives present. **Low Optimal:** <5% of the total AA contains invasive species.	**High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species.	**High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species.	> 50% of the total AA contains invasive species.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total % relative cover of all invasives, collectively on site is 27

	Condition Category			
b. Vegetation Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**
	High Optimal: No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary.	**High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary.	**High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary.	Greater than five vegetation stressors present within the AA boundary.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total number of vegetation stressors present - 2

a. Invasive Sub-Score:	9	**Total Score:**	**CI = Total Score/40**
b. Vegetation Sub-Score:	14	**23**	**0.58**

4. Hydrologic Modification Index

	Condition Category			
Hydrologic Modification Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**
	High Optimal: No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary.	**High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary.	**High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary.	Greater than five hydrologic stressors present within the AA boundary.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total number of hydrologic modifications present - 1

Score:	17	**CI = Total Score/20**
		0.85

5. Sediment Stressor Index

	Condition Category			
Sediment Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**
	High Optimal: No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary.	**High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary.	**High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary.	Greater than five sediment stressors present within the AA boundary.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total number of sediment stressors present - 1

Score:	17	**CI = Total Score/20**
		0.85

6. Water Quality Stressor Index

	Condition Category			
a. Eutro- phication Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**
	No eutrophication stressors present within the AA boundary.	One eutrophication stressors present within the AA boundary.	Two eutrophication stressors present within the AA boundary.	Three eutrophication stressors present within the AA boundary.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total number of Eutrophication stressors present - 0

	Condition Category			
b. Contaminant / Toxicity Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**
	No contaminant / toxicity stressors present within the AA boundary.	One contaminant / toxicitystressors present within the AA boundary.	Two contaminant / toxicity stressors present within the AA boundary.	Three contaminant / toxicity stressors present within the AA boundary.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total number of Contaminant/Toxicity stressors present - 0

a. Eutrophication Score	19	**Total Score:**	**CI = Total Score/40**
b. Contaminant Score	19	**38**	**0.95**

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	**Overall Condition Index:**	**0.77**

Wetland ZOI Worksheet					
Desktop Review			**Field View**		
Condition Category	Size (Ac)	Percentage	Condition Category	Size (Ac)	Percentage
Optimal	4.92	65%	Optimal	3.77	50%
High Suboptimal	1.36	18%	High Suboptimal	0.90	12%
Low Suboptimal	0.27	4%	Low Suboptimal	0.60	8%
High Marginal	0.00	0%	High Marginal	0.00	0%
Low Marginal	0.00	0%	Low Marginal	0.00	0%
High Poor	0.37	5%	High Poor	1.13	15%
Low Poor	0.61	8%	Low Poor	1.13	15%
Calculated total area	7.53	100%	Calculated total area	7.53	100%

Enter Total Area 7.53 From ZOI shapefile

Calculated total area and Entered Total Area must be equal

Optimal

ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor

ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor

ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier		Date	Name(s) of Evaluator(s)
Falcon Ethane Pipeline Project		6/26/2017	Matt Kline, Elliot Dillon
Resource Identifier / AA #	**Lat (dd)**	**Long (dd)**	**Notes:**
W-PA-160406-MRK-001	40.272398	-80.269054	#VALUE!

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.	0	4	0	100-300 ft.	0	4	0
2 Lane Paved	0-100 ft.	1	2	2	100-300 ft.	1	2	2
1 Lane Paved	0-100 ft.	0	1	0	100-300 ft.	0	1	0
Gravel Road	0-100 ft.	0	1	0	100-300 ft.	2	1	2
Dirt Road	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Railroad	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Other Roadbeds	0-100 ft.	0	1, 2 or 4	0	100-300 ft.	0	1, 2 or 4	0
Total Scores:	0-100 ft.	2			100-300 ft.	4		

Road Comments:

Pennsylvania Wetland Condition Level 2 Rapid Assessment
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **YES**

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	*Species Code*	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%
lota	**2**								
mivi			25						

Total % relative cover of all invasives, collectively on site: 27 **%**

Comments:

Common Invasives/Aggressives List

Code	Common Name	*Scientific*	Status	Code	Common Name	*Scientific*	Status
aggi2	Redtop	*Agrostis gigantea*	FACW	luhe	Water primrose	*Ludwigia hexapetala*	OBLW
algl2	European Alder	*Alnus glutinosa*	FACW	lyvu	Garden loosestrife	*Lysimachia vulgaris*	OBLW
arhi3	Carpetgrass	*Arthraxon hispidus*	FAC-	lysa2	Purple loosestrife	*Lythrum salicaria*	FACW
beth	Japanese barberry	*Berberis thunbergii*	FACW	maqu	European waterclover	*Marsilea quadrifolia*	OBLW
bevu	European barberry	*Berberis vulgaris*	FACW	mivi	Japanese stiltgrass	*Microstegium vimineum*	FAC
butom	Flowering Rush	*Butomus umbellatus*	OBLW	nami2	Water cress	*Nasturtium officinale*	OBLW
calli6	Pond water-starwort	*Callitriche stagnalis*	OBLW	pelo	Low smartweed	*Persicaria longiseta*	FACW
egde	Brazilian waterweed	*Egeria densa*	OBLW	phar	Reed canary grass	*Phalaris arundinacea*	FACW
elan	Russian olive	*Elaeagnus angustifolia*	FACU	phau7	Common Reed	*Phragmites australis*	OBLW
elum	Autumn olive	*Elaeagnus umbellata*	FACU	potr	Rough bluegrass	*Poa trivialis*	FACW
ephi	Hairy willow-herb	*Epilobium hirsutum*	FACW	pocu6	Japanese knotweed	*Polygonum (Faloia) cuspidatum*	FAC-
eppa5	Willow-herb	*Epilobium parviflorum*	FACW	pgpf	Mile-a-minute	*Polygonum perfoliatum*	FAC-
fasa	Giant knotweed	*Fallopia sachalinensis*	OBLW	puera	Kudzu-vine	*Pueraria lobata*	FAC-
gldi	Mudmats	*Glossostigma diandrum*	OBLW	pysp1	Apple/crabapple/pear	*Pyrus sp.*	FAC?
hola	Velvetgrass	*Holcus lanatus*	FAC	rhfr	Glossy Buckthorn	*Rhamnus frangula*	FAC-
huja	Japanese Hops	*Humulus japonicus*	FACU	romu	Multiflora rose	*Rosa multiflora*	FACU
loja	Japanese honeysuckle	*Lonicera japonica*	FAC-	tyan	Cattail (hybrid)	*Typha angustifolia*	OBLW
lomo	Morrow's honeysuckle	*Lonicera morrowii*	NI	tygl	Hybrid cattail	*Typha x glauca*	OBLW
lota	Tartarian honeysuckle	*Lonicera tatarica*					

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

STRESSOR WORKSHEET

2/4/2017

	Occurrence in AA		
	Y	#'s	N
Vegetation Alteration			
Mowing			
Moderate livestock grazing (within one year)			
Crops (annual row crops, within one year)			
Selective tree harvesting/cutting (>50% removal, within 5 years)	1		
Right-of-way clearing (mechanical or chemical)	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)			
Removal of woody debris			
Aquatic weed control (mechanical or herbicide)			
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)			
Plantation (conversion from typical natural tree species, including orchards)			
Other:			
Total Number:		**2**	
Hydrologic Modification			
Ditching, tile draining, or other dewatering methods			
Dike/weir/dam			
Filling/grading			
Dredging/excavation			
Stormwater inputs (culvert or similar concentrated urban runoff)			
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)			
Dead or dying trees (trunks still standing)*	1		
Stream alteration (channelization or incision)			
Other:			
Total Number:		**1**	
Sedimentation			
Sediment deposits/plumes			
Eroding banks/slopes			
Active construction (earth disturbance for development)			
Active plowing (plowing for crop planting in past year)			
Intensive livestock grazing (in one year, ground is >50% bare)			
Active selective forestry harvesting (within one year)	1		
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)			
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)			
Other:			
Total Number:		**1**	
Eutrophication			
Direct discharges from agricultural feedlots, manure pits, etc.			
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.			
Heavy or moderately heavy formation of algal mats			
Other:			
Total Number:		**0**	
Contaminant/Toxicity			
Severe vegetation stress (source unknown or suspected)			
Obvious spills, discharges, plumes, odors, etc.			
Acidic drainages (mined sites, quarries, road cuts)			
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites			
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)			
Fish or wildlife kills or obvious disease or abnormalities observed			
Excessive garbage/dumping			
Other:			
Total Number:		**0**	

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
60536988	Falcon Ethane Pipeline Project	6/26/2017	0.0007	W-PA-160406-MRK-002	0.01

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Resource Identifier:			
Matt Kline, Elliot Dillon	40.272129	-80.268682	Classification:	PEM	Delineated Area (acres):	0.0055

General Comments:

1. Wetland Zone of Influence Condition Index

	Condition Category																					
	Optimal					Suboptimal					Marginal					Poor						
Wetland Zone of Influence (300 foot area around AA perimeter)	ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					**High Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					**High Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			**Low Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.		**High Poor:** ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		**Low Poor:** ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		CI = Total Score/20
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Total Score = SUM(%Areas*Scores)

	Condition Category:	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Total Score:	CI
Scoring:	% ZOI Area:	50%	20%	10%	8%	0%	0%	12%		
	Score:	17	13	12	9	0	0	1		
	Total Sub-score:	8.50	2.60	1.20	0.72	0.00	0.00	0.12	13.14	0.66

Comments:

2. Roadbed Presence Index

	Condition Categories																				
	Optimal					Suboptimal					Marginal					Poor					
a. Roadbed Presence (within 0 100 foot Wetland ZOI distance)	**High Optimal:** No roadbeds present within 100 feet of the AA boundary		**Low Optimal:** Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.			**High Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4.			**Low Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6.		**High Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8.			**Low Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10.		**High Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.			**Low Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: Roadbed 0-100 Total score is 2

	Condition Categories																				
	Optimal					Suboptimal					Marginal					Poor					
b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	**High Optimal:** No roadbeds present within 100 - 300 feet of the AA boundary		**Low Optimal:** Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.			**High Suboptimal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4.			**Low Suboptimal:** Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6.		**High Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8.			**Low Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10.		**High Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12.			**Low Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.		CI = Total Score/20
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: Roadbed 100-300 Total score is 4

	Condition Score	Weighting	Sub-Scores
a. Roadbed 0-100:	17	* (0.67)	11
b. Roadbed 100-300:	14	* (0.33)	5
		Total Score:	**16**

0.80

Comments:

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
a. Invasive Species Presence	**High Optimal:** No invasives present. **Low Optimal:** <5% of the total AA contains invasive species.	**High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species.	**High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species.	> 50% of the total AA contains invasive species.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total % relative cover of all invasives, collectively on site is 10

	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
b. Vegetation Stressor Presence	**High Optimal:** No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary.	**High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary.	**High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary.	Greater than five vegetation stressors present within the AA boundary.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total number of vegetation stressors present - 0

a. Invasive Sub-Score:	14	**Total Score:**	**CI = Total Score/40**
b. Vegetation Sub-Score:	19	**33**	**0.83**

4. Hydrologic Modification Index

	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
Hydrologic Modification Stressor Presence	**High Optimal:** No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary.	**High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary.	**High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary.	Greater than five hydrologic stressors present within the AA boundary.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total number of hydrologic modifications present - 0

Score:	19	**CI = Total Score/20**
		0.95

5. Sediment Stressor Index

	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
Sediment Stressor Presence	**High Optimal:** No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary.	**High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary.	**High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary.	Greater than five sediment stressors present within the AA boundary.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total number of sediment stressors present - 0

Score:	19	**CI = Total Score/20**
		0.95

6. Water Quality Stressor Index

	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
a. Eutro- phication Stressor Presence	No eutrophication stressors present within the AA boundary.	One eutrophication stressors present within the AA boundary.	Two eutrophication stressors present within the AA boundary.	Three eutrophication stressors present within the AA boundary.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total number of Eutrophication stressors present - 0

	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
b. Contaminant / Toxicity Stressor Presence	No contaminant / toxicity stressors present within the AA boundary.	One contaminant / toxicitystressors present within the AA boundary.	Two contaminant / toxicity stressors present within the AA boundary.	Three contaminant / toxicity stressors present within the AA boundary.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total number of Contaminant/Toxicity stressors present - 0

a. Eutrophication Score	19	**Total Score:**	**CI = Total Score/40**
b. Contaminant Score	19	**38**	**0.95**

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	**Overall Condition Index:**	**0.86**

Wetland ZOI Worksheet

Desktop Review		
Condition Category	Size (Ac)	Percentage
Optimal	4.17	60%
High Suboptimal	1.67	24%
Low Suboptimal	0.36	5%
High Marginal	0.00	0%
Low Marginal	0.00	0%
High Poor	0.00	0%
Low Poor	0.79	11%
Calculated total area	6.99	100%

Field View		
Condition Category	Size (Ac)	Percentage
Optimal	3.50	50%
High Suboptimal	1.40	20%
Low Suboptimal	0.70	10%
High Marginal	0.56	8%
Low Marginal	0.00	0%
High Poor	0.00	0%
Low Poor	0.84	12%
Calculated total area	6.99	100%

Enter Total Area 6.99 From ZOI shapefile

Calculated total area and Entered Total Area must be equal

Optimal

ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor

ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor

ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier		Date	Name(s) of Evaluator(s)
Falcon Ethane Pipeline Project		6/26/2017	Matt Kline, Elliot Dillon
Resource Identifier / AA #	**Lat (dd)**	**Long (dd)**	**Notes:**
W-PA-160406-MRK-002	40.272129	-80.268682	#VALUE!

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.	0	4	0	100-300 ft.	0	4	0
2 Lane Paved	0-100 ft.	1	2	2	100-300 ft.	1	2	2
1 Lane Paved	0-100 ft.	0	1	0	100-300 ft.	0	1	0
Gravel Road	0-100 ft.	0	1	0	100-300 ft.	2	1	2
Dirt Road	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Railroad	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Other Roadbeds	0-100 ft.	0	1, 2 or 4	0	100-300 ft.	0	1, 2 or 4	0
Total Scores:	0-100 ft.	2			100-300 ft.	4		

Road Comments:

Pennsylvania Wetland Condition Level 2 Rapid Assessment
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **YES**

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	*Species Code*	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%
ROMU	10								

Total % relative cover of all invasives, collectively on site: 10 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	*Scientific*	Status	Code	Common Name	*Scientific*	Status
aggi2	Redtop	*Agrostis gigantea*	FACW	luhe	Water primrose	*Ludwigia hexapetala*	OBLW
algl2	European Alder	*Alnus glutinosa*	FACW	lyvu	Garden loosestrife	*Lysimachia vulgaris*	OBLW
arhi3	Carpetgrass	*Arthraxon hispidus*	FAC-	lysa2	Purple loosestrife	*Lythrum salicaria*	FACW
beth	Japanese barberry	*Berberis thunbergii*	FACW	maqu	European waterclover	*Marsilea quadrifolia*	OBLW
bevu	European barberry	*Berberis vulgaris*	FACW	mivi	Japanese stiltgrass	*Microstegium vimineum*	FAC
butom	Flowering Rush	*Butomus umbellatus*	OBLW	nami2	Water cress	*Nasturtium officinale*	OBLW
calli6	Pond water-starwort	*Callitriche stagnalis*	OBLW	pelo	Low smartweed	*Persicaria longiseta*	FACW
egde	Brazilian waterweed	*Egeria densa*	OBLW	phar	Reed canary grass	*Phalaris arundinacea*	FACW
elan	Russian olive	*Elaeagnus angustifolia*	FACU	phau7	Common Reed	*Phragmites australis*	OBLW
elum	Autumn olive	*Elaeagnus umbellata*	FACU	potr	Rough bluegrass	*Poa trivialis*	FACW
ephi	Hairy willow-herb	*Epilobium hirsutum*	FACW	pocu6	Japanese knotweed	*Polygonum (Faloia) cuspidatum*	FAC-
eppa5	Willow-herb	*Epilobium parviflorum*	FACW	pgpf	Mile-a-minute	*Polygonum perfoliatum*	FAC-
fasa	Giant knotweed	*Fallopia sachalinensis*	OBLW	puera	Kudzu-vine	*Pueraria lobata*	FAC-
gldi	Mudmats	*Glossostigma diandrum*	OBLW	pysp1	Apple/crabapple/pear	*Pyrus sp.*	FAC?
hola	Velvetgrass	*Holcus lanatus*	FAC	rhfr	Glossy Buckthorn	*Rhamnus frangula*	FAC-
huja	Japanese Hops	*Humulus japonicus*	FACU	romu	Multiflora rose	*Rosa multiflora*	FACU
loja	Japanese honeysuckle	*Lonicera japonica*	FAC-	tyan	Cattail (hybrid)	*Typha angustifolia*	OBLW
lomo	Morrow's honeysuckle	*Lonicera morrowii*	NI	tygl	Hybrid cattail	*Typha x glauca*	OBLW
lota	Tartarian honeysuckle	*Lonicera tatarica*					

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

STRESSOR WORKSHEET

2/4/2017

	Occurrence in AA		
	Y	#'s	N
Vegetation Alteration			
Mowing			
Moderate livestock grazing (within one year)			
Crops (annual row crops, within one year)			
Selective tree harvesting/cutting (>50% removal, within 5 years)			
Right-of-way clearing (mechanical or chemical)			
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)			
Removal of woody debris			
Aquatic weed control (mechanical or herbicide)			
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)			
Plantation (conversion from typical natural tree species, including orchards)			
Other:			
Total Number:		**0**	
Hydrologic Modification			
Ditching, tile draining, or other dewatering methods			
Dike/weir/dam			
Filling/grading			
Dredging/excavation			
Stormwater inputs (culvert or similar concentrated urban runoff)			
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)			
Dead or dying trees (trunks still standing) *			
Stream alteration (channelization or incision)			
Other:			
Total Number:		**0**	
Sedimentation			
Sediment deposits/plumes			
Eroding banks/slopes			
Active construction (earth disturbance for development)			
Active plowing (plowing for crop planting in past year)			
Intensive livestock grazing (in one year, ground is >50% bare)			
Active selective forestry harvesting (within one year)			
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)			
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)			
Other:			
Total Number:		**0**	
Eutrophication			
Direct discharges from agricultural feedlots, manure pits, etc.			
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.			
Heavy or moderately heavy formation of algal mats			
Other:			
Total Number:		**0**	
Contaminant/Toxicity			
Severe vegetation stress (source unknown or suspected)			
Obvious spills, discharges, plumes, odors, etc.			
Acidic drainages (mined sites, quarries, road cuts)			
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites			
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)			
Fish or wildlife kills or obvious disease or abnormalities observed			
Excessive garbage/dumping			
Other:			
Total Number:		**0**	

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
60536988	Falcon Ethane Pipeline Project	6/27/2017	0.0966	W-PA-151029-MRK-001	0.22

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Resource Identifier:			
Matt Kline, Elliot Dillon	40.312527	-80.263192	Classification:	PEM	Delineated Area (acres):	0.0129

General Comments:

1. Wetland Zone of Influence Condition Index

	Condition Category																					
	Optimal					Suboptimal					Marginal					Poor						
Wetland Zone of Influence (300 foot area around AA perimeter)	ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					**High Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				**Low Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				**Low Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				**Low Poor:** ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.					**CI = Total Score/20**
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Total Score = SUM(%Areas*Scores)

	Condition Category:	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Total Score:	CI
Scoring:	% ZOI Area:	66%	0%	0%	0%	0%	34%	0%		
	Score:	19	0	0	0	0	5	0		
	Total Sub-score:	12.54	0.00	0.00	0.00	0.00	1.70	0.00	14.24	0.71

Comments:

2. Roadbed Presence Index

	Condition Categories																					
	Optimal					Suboptimal					Marginal					Poor						
a. Roadbed Presence (within 0 100 foot Wetland ZOI distance)	**High Optimal:** No roadbeds present within 100 feet of the AA boundary			**Low Optimal:** Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.		**High Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4.				**Low Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6.	**High Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8.				**Low Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10.	**High Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.				**Low Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		

Comments: Roadbed 0-100 Total score is 0

	Condition Categories																					
	Optimal					Suboptimal					Marginal					Poor						
b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	**High Optimal:** No roadbeds present within 100 - 300 feet of the AA boundary			**Low Optimal:** Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.		**High Suboptimal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4.				**Low Suboptimal:** Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6.	**High Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8.				**Low Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10.	**High Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12.				**Low Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.			**CI = Total Score/20**
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		

Comments: Roadbed 100-300 Total score is 0

	Condition Score	Weighting	Sub-Scores	
a. Roadbed 0-100:	19	* (0.67)	13	
b. Roadbed 100-300:	19	* (0.33)	6	
		Total Score:	**19**	**0.95**

Comments:

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

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3. Vegetation Condition Index

	Condition Category			
a. Invasive Species Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**
	High Optimal: No invasives present. **Low Optimal:** <5% of the total AA contains invasive species.	**High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species.	**High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species.	> 50% of the total AA contains invasive species.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total % relative cover of all invasives, collectively on site is 0

	Condition Category				
b. Vegetation Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/40**
	High Optimal: No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary.	**High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary.	**High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary.	Greater than five vegetation stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of vegetation stressors present - 0

a. Invasive Sub-Score:	19	**Total Score:**	
b. Vegetation Sub-Score:	19	**38**	**0.95**

4. Hydrologic Modification Index

	Condition Category				
Hydrologic Modification Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/20**
	High Optimal: No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary.	**High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary.	**High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary.	Greater than five hydrologic stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	**0.95**

Comments: Total number of hydrologic modifications present - 0

Score:	19

5. Sediment Stressor Index

	Condition Category				
Sediment Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/20**
	High Optimal: No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary.	**High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary.	**High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary.	Greater than five sediment stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	**0.95**

Comments: Total number of sediment stressors present - 0

Score:	19

6. Water Quality Stressor Index

	Condition Category			
a. Eutro- phication Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**
	No eutrophication stressors present within the AA boundary.	One eutrophication stressors present within the AA boundary.	Two eutrophication stressors present within the AA boundary.	Three eutrophication stressors present within the AA boundary.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total number of Eutrophication stressors present - 0

	Condition Category				
b. Contaminant / Toxicity Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/40**
	No contaminant / toxicity stressors present within the AA boundary.	One contaminant / toxicitystressors present within the AA boundary.	Two contaminant / toxicity stressors present within the AA boundary.	Three contaminant / toxicity stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of Contaminant/Toxicity stressors present - 0

a. Eutrophication Score	19	**Total Score:**	
b. Contaminant Score	19	**38**	**0.95**

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	**Overall Condition Index:**	**0.91**

Wetland ZOI Worksheet

Desktop Review		
Condition Category	Size (Ac)	Percentage
Optimal	6.85	66%
High Suboptimal	0.00	0%
Low Suboptimal	0.00	0%
High Marginal	0.00	0%
Low Marginal	3.55	0%
High Poor	0.00	34%
Low Poor	0.00	0%
Calculated total area	10.40	100%

Field View		
Condition Category	Size (Ac)	Percentage
Optimal	6.86	66%
High Suboptimal	0.00	0%
Low Suboptimal	0.00	0%
High Marginal	0.00	0%
Low Marginal	0.00	0%
High Poor	3.54	34%
Low Poor	0.00	0%
Calculated total area	10.40	100%

Enter Total Area 10.40 From ZOI shapefile

Calculated total area and Entered Total Area must be equal

Optimal

ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor

ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor

ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier		Date	Name(s) of Evaluator(s)
Falcon Ethane Pipeline Project		6/27/2017	Matt Kline, Elliot Dillon
Resource Identifier / AA #	**Lat (dd)**	**Long (dd)**	**Notes:**
W-PA-151029-MRK-001	40.312527	-80.263192	#VALUE!

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.	0	4	0	100-300 ft.	0	4	0
2 Lane Paved	0-100 ft.	0	2	0	100-300 ft.	0	2	0
1 Lane Paved	0-100 ft.	0	1	0	100-300 ft.	0	1	0
Gravel Road	0-100 ft.	0	1	0	100-300 ft.	0	1	0
Dirt Road	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Railroad	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Other Roadbeds	0-100 ft.	0	1, 2 or 4	0	100-300 ft.	0	1, 2 or 4	0
Total Scores:	0-100 ft.	0			100-300 ft.	0		

Road Comments:

Pennsylvania Wetland Condition Level 2 Rapid Assessment
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **NO**

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	*Species Code*	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%

Total % relative cover of all invasives, collectively on site: 0 **%**

Comments:

Common Invasives/Aggressives List

Code	Common Name	*Scientific*	Status	Code	Common Name	*Scientific*	Status
aggi2	Redtop	*Agrostis gigantea*	FACW	luhe	Water primrose	*Ludwigia hexapetala*	OBLW
algl2	European Alder	*Alnus glutinosa*	FACW	lyvu	Garden loosestrife	*Lysimachia vulgaris*	OBLW
arhi3	Carpetgrass	*Arthraxon hispidus*	FAC-	lysa2	Purple loosestrife	*Lythrum salicaria*	FACW
beth	Japanese barberry	*Berberis thunbergii*	FACW	maqu	European waterclover	*Marsilea quadrifolia*	OBLW
bevu	European barberry	*Berberis vulgaris*	FACW	mivi	Japanese stiltgrass	*Microstegium vimineum*	FAC
butom	Flowering Rush	*Butomus umbellatus*	OBLW	nami2	Water cress	*Nasturtium officinale*	OBLW
calli6	Pond water-starwort	*Callitriche stagnalis*	OBLW	pelo	Low smartweed	*Persicaria longiseta*	FACW
egde	Brazilian waterweed	*Egeria densa*	OBLW	phar	Reed canary grass	*Phalaris arundinacea*	FACW
elan	Russian olive	*Elaeagnus angustifolia*	FACU	phau7	Common Reed	*Phragmites australis*	OBLW
elum	Autumn olive	*Elaeagnus umbellata*	FACU	potr	Rough bluegrass	*Poa trivialis*	FACW
ephi	Hairy willow-herb	*Epilobium hirsutum*	FACW	pocu6	Japanese knotweed	*Polygonum (Faloia) cuspidatum*	FAC-
eppa5	Willow-herb	*Epilobium parviflorum*	FACW	pgpf	Mile-a-minute	*Polygonum perfoliatum*	FAC-
fasa	Giant knotweed	*Fallopia sachalinensis*	OBLW	puera	Kudzu-vine	*Pueraria lobata*	FAC-
gldi	Mudmats	*Glossostigma diandrum*	OBLW	pysp1	Apple/crabapple/pear	*Pyrus sp.*	FAC?
hola	Velvetgrass	*Holcus lanatus*	FAC	rhfr	Glossy Buckthorn	*Rhamnus frangula*	FAC-
huja	Japanese Hops	*Humulus japonicus*	FACU	romu	Multiflora rose	*Rosa multiflora*	FACU
loja	Japanese honeysuckle	*Lonicera japonica*	FAC-	tyan	Cattail (hybrid)	*Typha angustifolia*	OBLW
lomo	Morrow's honeysuckle	*Lonicera morrowii*	NI	tygl	Hybrid cattail	*Typha x glauca*	OBLW
lota	Tartarian honeysuckle	*Lonicera tatarica*					

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

STRESSOR WORKSHEET

2/4/2017

	Occurrence in AA		
	Y	#'s	N
Vegetation Alteration			
Mowing			
Moderate livestock grazing (within one year)			
Crops (annual row crops, within one year)			
Selective tree harvesting/cutting (>50% removal, within 5 years)			
Right-of-way clearing (mechanical or chemical)			
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)			
Removal of woody debris			
Aquatic weed control (mechanical or herbicide)			
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)			
Plantation (conversion from typical natural tree species, including orchards)			
Other:			
Total Number:		**0**	
Hydrologic Modification			
Ditching, tile draining, or other dewatering methods			
Dike/weir/dam			
Filling/grading			
Dredging/excavation			
Stormwater inputs (culvert or similar concentrated urban runoff)			
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)			
Dead or dying trees (trunks still standing) *			
Stream alteration (channelization or incision)			
Other:			
Total Number:		**0**	
Sedimentation			
Sediment deposits/plumes			
Eroding banks/slopes			
Active construction (earth disturbance for development)			
Active plowing (plowing for crop planting in past year)			
Intensive livestock grazing (in one year, ground is >50% bare)			
Active selective forestry harvesting (within one year)			
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)			
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)			
Other:			
Total Number:		**0**	
Eutrophication			
Direct discharges from agricultural feedlots, manure pits, etc.			
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.			
Heavy or moderately heavy formation of algal mats			
Other:			
Total Number:		**0**	
Contaminant/Toxicity			
Severe vegetation stress (source unknown or suspected)			
Obvious spills, discharges, plumes, odors, etc.			
Acidic drainages (mined sites, quarries, road cuts)			
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites			
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)			
Fish or wildlife kills or obvious disease or abnormalities observed			
Excessive garbage/dumping			
Other:			
Total Number:		**0**	

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

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For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
60536988	Falcon Ethane Pipeline Project	6/27/2017	0.1309	W-PA-151210-MRK-001	0.47

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Resource Identifier:			
Matt Kline, Elliot Dillon	40.318325	-80.260927	Classification:	PEM	Delineated Area (acres):	0.4726

General Comments:

1. Wetland Zone of Influence Condition Index

	Condition Category																					
	Optimal					Suboptimal					Marginal					Poor						
Wetland Zone of Influence (300 foot area around AA perimeter)	ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					**High Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					**High Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					**High Poor:** ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.					CI = Total Score/20
						Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					**Low Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.					**Low Poor:** ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.					
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Total Score = SUM(%Areas*Scores)

	Condition Category:	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Total Score:	CI
Scoring:	% ZOI Area:	20%	0%	0%	0%	18%	44%	18%		
	Score:	18	0	0	0	7	4	2		
	Total Sub-score:	3.67	0.00	0.00	0.00	1.25	1.74	0.36	7.03	0.35

Comments:

2. Roadbed Presence Index

	Condition Categories																					
	Optimal					Suboptimal					Marginal					Poor						
a. Roadbed Presence (within 0 100 foot Wetland ZOI distance)	**High Optimal:** No roadbeds present within 100 feet of the AA boundary			**Low Optimal:** Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.		**High Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4.				**Low Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6.	**High Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8.				**Low Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10.	**High Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.				**Low Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		

Comments: Roadbed 0-100 Total score is 0

	Condition Categories																					
	Optimal					Suboptimal					Marginal					Poor						
b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	**High Optimal:** No roadbeds present within 100 - 300 feet of the AA boundary			**Low Optimal:** Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.		**High Suboptimal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4.				**Low Suboptimal:** Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6.	**High Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8.				**Low Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10.	**High Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12.				**Low Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.	CI = Total Score/20
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		

Comments: Roadbed 100-300 Total score is 0

	Condition Score	Weighting	Sub-Scores
a. Roadbed 0-100:	19	* (0.67)	13
b. Roadbed 100-300:	19	* (0.33)	6
		Total Score:	**19**

0.95

Comments:

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category			
a. Invasive Species Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**
	High Optimal: No invasives present. **Low Optimal:** <5% of the total AA contains invasive species.	**High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species.	**High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species.	> 50% of the total AA contains invasive species.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total % relative cover of all invasives, collectively on site is 0

	Condition Category				
b. Vegetation Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/40**
	High Optimal: No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary.	**High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary.	**High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary.	Greater than five vegetation stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of vegetation stressors present - 0

a. Invasive Sub-Score:	19	**Total Score:**	
b. Vegetation Sub-Score:	19	**38**	**0.95**

4. Hydrologic Modification Index

	Condition Category				
Hydrologic Modification Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/20**
	High Optimal: No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary.	**High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary.	**High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary.	Greater than five hydrologic stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	**0.70**

Comments: Total number of hydrologic modifications present - 2

Score:	14

5. Sediment Stressor Index

	Condition Category				
Sediment Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/20**
	High Optimal: No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary.	**High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary.	**High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary.	Greater than five sediment stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	**0.85**

Comments: Total number of sediment stressors present - 1

Score:	17

6. Water Quality Stressor Index

	Condition Category			
a. Eutro- phication Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**
	No eutrophication stressors present within the AA boundary.	One eutrophication stressors present within the AA boundary.	Two eutrophication stressors present within the AA boundary.	Three eutrophication stressors present within the AA boundary.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total number of Eutrophication stressors present - 0

	Condition Category				
b. Contaminant / Toxicity Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/40**
	No contaminant / toxicity stressors present within the AA boundary.	One contaminant / toxicitystressors present within the AA boundary.	Two contaminant / toxicity stressors present within the AA boundary.	Three contaminant / toxicity stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of Contaminant/Toxicity stressors present - 0

a. Eutrophication Score	19	**Total Score:**	
b. Contaminant Score	19	**38**	**0.95**

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	**Overall Condition Index:**	**0.79**

Wetland ZOI Worksheet					
Desktop Review			**Field View**		
Condition Category	Size (Ac)	Percentage	Condition Category	Size (Ac)	Percentage
Optimal	2.55	20%	Optimal	2.55	20%
High Suboptimal	0.00	0%	High Suboptimal	0.00	0%
Low Suboptimal	0.00	0%	Low Suboptimal	0.00	0%
High Marginal	0.00	0%	High Marginal	0.00	0%
Low Marginal	2.24	18%	Low Marginal	2.24	18%
High Poor	5.45	44%	High Poor	5.45	44%
Low Poor	2.26	18%	Low Poor	2.26	18%
Calculated total area	12.50	100%	Calculated total area	12.50	100%

Enter Total Area 12.50 From ZOI shapefile

Calculated total area and Entered Total Area must be equal

Optimal

ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor

ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor

ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier		Date	Name(s) of Evaluator(s)
Falcon Ethane Pipeline Project		6/27/2017	Matt Kline, Elliot Dillon
Resource Identifier / AA #	**Lat (dd)**	**Long (dd)**	**Notes:**
W-PA-151210-MRK-001	40.318325	-80.260927	#VALUE!

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.	0	4	0	100-300 ft.	0	4	0
2 Lane Paved	0-100 ft.	0	2	0	100-300 ft.	0	2	0
1 Lane Paved	0-100 ft.	0	1	0	100-300 ft.	0	1	0
Gravel Road	0-100 ft.	0	1	0	100-300 ft.	0	1	0
Dirt Road	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Railroad	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Other Roadbeds	0-100 ft.	0	1, 2 or 4	0	100-300 ft.	0	1, 2 or 4	0
Total Scores:	0-100 ft.	0			100-300 ft.	0		

Road Comments:

Pennsylvania Wetland Condition Level 2 Rapid Assessment
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **NO**

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	*Species Code*	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%

Total % relative cover of all invasives, collectively on site: 0 **%**

Comments:

Common Invasives/Aggressives List

Code	Common Name	*Scientific*	Status	Code	Common Name	*Scientific*	Status
aggi2	Redtop	*Agrostis gigantea*	FACW	luhe	Water primrose	*Ludwigia hexapetala*	OBLW
algl2	European Alder	*Alnus glutinosa*	FACW	lyvu	Garden loosestrife	*Lysimachia vulgaris*	OBLW
arhi3	Carpetgrass	*Arthraxon hispidus*	FAC-	lysa2	Purple loosestrife	*Lythrum salicaria*	FACW
beth	Japanese barberry	*Berberis thunbergii*	FACW	maqu	European waterclover	*Marsilea quadrifolia*	OBLW
bevu	European barberry	*Berberis vulgaris*	FACW	mivi	Japanese stiltgrass	*Microstegium vimineum*	FAC
butom	Flowering Rush	*Butomus umbellatus*	OBLW	nami2	Water cress	*Nasturtium officinale*	OBLW
calli6	Pond water-starwort	*Callitriche stagnalis*	OBLW	pelo	Low smartweed	*Persicaria longiseta*	FACW
egde	Brazilian waterweed	*Egeria densa*	OBLW	phar	Reed canary grass	*Phalaris arundinacea*	FACW
elan	Russian olive	*Elaeagnus angustifolia*	FACU	phau7	Common Reed	*Phragmites australis*	OBLW
elum	Autumn olive	*Elaeagnus umbellata*	FACU	potr	Rough bluegrass	*Poa trivialis*	FACW
ephi	Hairy willow-herb	*Epilobium hirsutum*	FACW	pocu6	Japanese knotweed	*Polygonum (Faloia) cuspidatum*	FAC-
eppa5	Willow-herb	*Epilobium parviflorum*	FACW	pgpf	Mile-a-minute	*Polygonum perfoliatum*	FAC-
fasa	Giant knotweed	*Fallopia sachalinensis*	OBLW	puera	Kudzu-vine	*Pueraria lobata*	FAC-
gldi	Mudmats	*Glossostigma diandrum*	OBLW	pysp1	Apple/crabapple/pear	*Pyrus sp.*	FAC?
hola	Velvetgrass	*Holcus lanatus*	FAC	rhfr	Glossy Buckthorn	*Rhamnus frangula*	FAC-
huja	Japanese Hops	*Humulus japonicus*	FACU	romu	Multiflora rose	*Rosa multiflora*	FACU
loja	Japanese honeysuckle	*Lonicera japonica*	FAC-	tyan	Cattail (hybrid)	*Typha angustifolia*	OBLW
lomo	Morrow's honeysuckle	*Lonicera morrowii*	NI	tygl	Hybrid cattail	*Typha x glauca*	OBLW
lota	Tartarian honeysuckle	*Lonicera tatarica*					

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

STRESSOR WORKSHEET

2/4/2017

	Occurrence in AA		
	Y	#'s	N
Vegetation Alteration			
Mowing			
Moderate livestock grazing (within one year)			
Crops (annual row crops, within one year)			
Selective tree harvesting/cutting (>50% removal, within 5 years)			
Right-of-way clearing (mechanical or chemical)			
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)			
Removal of woody debris			
Aquatic weed control (mechanical or herbicide)			
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)			
Plantation (conversion from typical natural tree species, including orchards)			
Other:			
Total Number:		**0**	
Hydrologic Modification			
Ditching, tile draining, or other dewatering methods			
Dike/weir/dam			
Filling/grading			
Dredging/excavation			
Stormwater inputs (culvert or similar concentrated urban runoff)			
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	1		
***Dead or dying trees (trunks still standing)* ***			
Stream alteration (channelization or incision)	1		
Other:			
Total Number:		**2**	
Sedimentation			
Sediment deposits/plumes			
Eroding banks/slopes			
Active construction (earth disturbance for development)			
Active plowing (plowing for crop planting in past year)	1		
Intensive livestock grazing (in one year, ground is >50% bare)			
Active selective forestry harvesting (within one year)			
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)			
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)			
Other:			
Total Number:		**1**	
Eutrophication			
Direct discharges from agricultural feedlots, manure pits, etc.			
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.			
Heavy or moderately heavy formation of algal mats			
Other:			
Total Number:		**0**	
Contaminant/Toxicity			
Severe vegetation stress (source unknown or suspected)			
Obvious spills, discharges, plumes, odors, etc.			
Acidic drainages (mined sites, quarries, road cuts)			
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites			
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)			
Fish or wildlife kills or obvious disease or abnormalities observed			
Excessive garbage/dumping			
Other:			
Total Number:		**0**	

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
60536988	Falcon Ethane Pipeline Project	6/27/2017	0.0218	W-PA-151215-MRK-003	0.07

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Resource Identifier:			
Matt Kline, Elliot Dillon	40.336381	-80.261485	Classification:	PEM	Delineated Area (acres):	0.0709

General Comments:

1. Wetland Zone of Influence Condition Index

	Condition Category																				
	Optimal					Suboptimal					Marginal					Poor					
Wetland Zone of Influence (300 foot area around AA perimeter)	ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					**High Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					**High Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			**Low Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.		**High Poor:** ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		**Low Poor:** ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		CI = Total Score/20
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Total Score = SUM(%Areas*Scores)

	Condition Category:	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Total Score:	CI
Scoring:	% ZOI Area:	1%	0%	0%	0%	99%	0%	0%		
	Score:	16	0	0	0	8	0	0		
	Total Sub-score:	0.13	0.00	0.00	0.00	7.92	0.00	0.00	8.05	0.40

Comments:

2. Roadbed Presence Index

	Condition Categories																				
	Optimal					Suboptimal					Marginal					Poor					
a. Roadbed Presence (within 0 100 foot Wetland ZOI distance)	**High Optimal:** No roadbeds present within 100 feet of the AA boundary			**Low Optimal:** Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.		**High Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4.			**Low Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6.		**High Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8.			**Low Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10.		**High Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.			**Low Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: Roadbed 0-100 Total score is 0

	Condition Categories																				
	Optimal					Suboptimal					Marginal					Poor					
b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	**High Optimal:** No roadbeds present within 100 - 300 feet of the AA boundary			**Low Optimal:** Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.		**High Suboptimal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4.			**Low Suboptimal:** Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6.		**High Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8.			**Low Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10.		**High Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12.			**Low Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.		CI = Total Score/20
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: Roadbed 100-300 Total score is 0

	Condition Score	Weighting	Sub-Scores	
a. Roadbed 0-100:	20	* (0.67)	13	
b. Roadbed 100-300:	20	* (0.33)	7	
		Total Score:	**20**	**1.00**

Comments:

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category			
a. Invasive Species Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**
	High Optimal: No invasives present. **Low Optimal:** <5% of the total AA contains invasive species.	**High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species.	**High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species.	> 50% of the total AA contains invasive species.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total % relative cover of all invasives, collectively on site is 5

	Condition Category				
b. Vegetation Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/40**
	High Optimal: No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary.	**High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary.	**High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary.	Greater than five vegetation stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of vegetation stressors present - 1

a. Invasive Sub-Score:	18	**Total Score:**	
b. Vegetation Sub-Score:	17	**35**	**0.88**

=I6919

4. Hydrologic Modification Index

	Condition Category				
Hydrologic Modification Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/20**
	High Optimal: No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary.	**High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary.	**High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary.	Greater than five hydrologic stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	**0.95**

Comments: Total number of hydrologic modifications present - 0

Score:	19

5. Sediment Stressor Index

	Condition Category				
Sediment Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/20**
	High Optimal: No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary.	**High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary.	**High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary.	Greater than five sediment stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	**0.95**

Comments: Total number of sediment stressors present - 0

Score:	19

6. Water Quality Stressor Index

	Condition Category			
a. Eutro- phication Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**
	No eutrophication stressors present within the AA boundary.	One eutrophication stressors present within the AA boundary.	Two eutrophication stressors present within the AA boundary.	Three eutrophication stressors present within the AA boundary.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total number of Eutrophication stressors present - 0

	Condition Category				
b. Contaminant / Toxicity Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/40**
	No contaminant / toxicity stressors present within the AA boundary.	One contaminant / toxicitystressors present within the AA boundary.	Two contaminant / toxicity stressors present within the AA boundary.	Three contaminant / toxicity stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of Contaminant/Toxicity stressors present - 0

a. Eutrophication Score	19	**Total Score:**	**0.95**
b. Contaminant Score	19	**38**	

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	**Overall Condition Index:**	**0.85**

Wetland ZOI Worksheet

Desktop Review			Field View		
Condition Category	Size (Ac)	Percentage	Condition Category	Size (Ac)	Percentage
Optimal	0.07	1%	Optimal	0.07	1%
High Suboptimal	0.00	0%	High Suboptimal	0.00	0%
Low Suboptimal	0.00	0%	Low Suboptimal	0.00	0%
High Marginal	8.31	99%	High Marginal	0.00	0%
Low Marginal	0.00	0%	Low Marginal	8.31	99%
High Poor	0.00	0%	High Poor	0.00	0%
Low Poor	0.00	0%	Low Poor	0.00	0%
Calculated total area	8.38	100%	Calculated total area	8.38	100%

Enter Total Area 8.38 From ZOI shapefile

Calculated total area and Entered Total Area must be equal

Optimal

ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor

ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor

ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier		Date	Name(s) of Evaluator(s)
Falcon Ethane Pipeline Project		6/27/2017	Matt Kline, Elliot Dillon
Resource Identifier / AA #	**Lat (dd)**	**Long (dd)**	**Notes:**
W-PA-151215-MRK-003	40.336381	-80.261485	#VALUE!

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.	0	4	0	100-300 ft.	0	4	0
2 Lane Paved	0-100 ft.	0	2	0	100-300 ft.	0	2	0
1 Lane Paved	0-100 ft.	0	1	0	100-300 ft.	0	1	0
Gravel Road	0-100 ft.	0	1	0	100-300 ft.	0	1	0
Dirt Road	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Railroad	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Other Roadbeds	0-100 ft.	0	1, 2 or 4	0	100-300 ft.	0	1, 2 or 4	0
Total Scores:	0-100 ft.	0			100-300 ft.	0		

0

Pennsylvania Wetland Condition Level 2 Rapid Assessment
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **YES**

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	*Species Code*	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%
ROMU	5								

Total % relative cover of all invasives, collectively on site: 5 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	*Scientific*	Status	Code	Common Name	*Scientific*	Status
aggi2	Redtop	*Agrostis gigantea*	FACW	luhe	Water primrose	*Ludwigia hexapetala*	OBLW
algl2	European Alder	*Alnus glutinosa*	FACW	lyvu	Garden loosestrife	*Lysimachia vulgaris*	OBLW
arhi3	Carpetgrass	*Arthraxon hispidus*	FAC-	lysa2	Purple loosestrife	*Lythrum salicaria*	FACW
beth	Japanese barberry	*Berberis thunbergii*	FACW	maqu	European waterclover	*Marsilea quadrifolia*	OBLW
bevu	European barberry	*Berberis vulgaris*	FACW	mivi	Japanese stiltgrass	*Microstegium vimineum*	FAC
butom	Flowering Rush	*Butomus umbellatus*	OBLW	nami2	Water cress	*Nasturtium officinale*	OBLW
calli6	Pond water-starwort	*Callitriche stagnalis*	OBLW	pelo	Low smartweed	*Persicaria longiseta*	FACW
egde	Brazilian waterweed	*Egeria densa*	OBLW	phar	Reed canary grass	*Phalaris arundinacea*	FACW
elan	Russian olive	*Elaeagnus angustifolia*	FACU	phau7	Common Reed	*Phragmites australis*	OBLW
elum	Autumn olive	*Elaeagnus umbellata*	FACU	potr	Rough bluegrass	*Poa trivialis*	FACW
ephi	Hairy willow-herb	*Epilobium hirsutum*	FACW	pocu6	Japanese knotweed	*Polygonum (Faloia) cuspidatum*	FAC-
eppa5	Willow-herb	*Epilobium parviflorum*	FACW	pgpf	Mile-a-minute	*Polygonum perfoliatum*	FAC-
fasa	Giant knotweed	*Fallopia sachalinensis*	OBLW	puera	Kudzu-vine	*Pueraria lobata*	FAC-
gldi	Mudmats	*Glossostigma diandrum*	OBLW	pysp1	Apple/crabapple/pear	*Pyrus sp.*	FAC?
hola	Velvetgrass	*Holcus lanatus*	FAC	rhfr	Glossy Buckthorn	*Rhamnus frangula*	FAC-
huja	Japanese Hops	*Humulus japonicus*	FACU	romu	Multiflora rose	*Rosa multiflora*	FACU
loja	Japanese honeysuckle	*Lonicera japonica*	FAC-	tyan	Cattail (hybrid)	*Typha angustifolia*	OBLW
lomo	Morrow's honeysuckle	*Lonicera morrowii*	NI	tygl	Hybrid cattail	*Typha x glauca*	OBLW
lota	Tartarian honeysuckle	*Lonicera tatarica*					

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

STRESSOR WORKSHEET

2/4/2017

	Occurrence in AA		
	Y	#'s	N
Vegetation Alteration			
Mowing	1		
Moderate livestock grazing (within one year)			
Crops (annual row crops, within one year)			
Selective tree harvesting/cutting (>50% removal, within 5 years)			
Right-of-way clearing (mechanical or chemical)			
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)			
Removal of woody debris			
Aquatic weed control (mechanical or herbicide)			
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)			
Plantation (conversion from typical natural tree species, including orchards)			
Other:			
Total Number:	1		
Hydrologic Modification			
Ditching, tile draining, or other dewatering methods			
Dike/weir/dam			
Filling/grading			
Dredging/excavation			
Stormwater inputs (culvert or similar concentrated urban runoff)			
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)			
Dead or dying trees (trunks still standing) *			
Stream alteration (channelization or incision)			
Other:			
Total Number:	0		
Sedimentation			
Sediment deposits/plumes			
Eroding banks/slopes			
Active construction (earth disturbance for development)			
Active plowing (plowing for crop planting in past year)			
Intensive livestock grazing (in one year, ground is >50% bare)			
Active selective forestry harvesting (within one year)			
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)			
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)			
Other:			
Total Number:	0		
Eutrophication			
Direct discharges from agricultural feedlots, manure pits, etc.			
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.			
Heavy or moderately heavy formation of algal mats			
Other:			
Total Number:	0		
Contaminant/Toxicity			
Severe vegetation stress (source unknown or suspected)			
Obvious spills, discharges, plumes, odors, etc.			
Acidic drainages (mined sites, quarries, road cuts)			
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites			
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)			
Fish or wildlife kills or obvious disease or abnormalities observed			
Excessive garbage/dumping			
Other:			
Total Number:	0		

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
60536988	Falcon Ethane Pipeline Project	6/27/2017	0.0207	W-PA-170214-CBA-003	0.10

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Resource Identifier:			
Matt Kline, Elliot Dillon	40.340840	-80.257173	Classification:	PEM	Delineated Area (acres):	0.0989

General Comments:

1. Wetland Zone of Influence Condition Index

	Condition Category																				
	Optimal					Suboptimal					Marginal					Poor					
Wetland Zone of Influence (300 foot area around AA perimeter)	ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					**High Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					**High Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			**Low Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.		**High Poor:** ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		**Low Poor:** ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		CI = Total Score/20
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Total Score = SUM(%Areas*Scores)

	Condition Category:	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Total Score:	CI
Scoring:	% ZOI Area:	2%	11%	0%	0%	47%	38%	2%		
	Score:	19	14	0	0	7	4	2		
	Total Sub-score:	0.37	1.50	0.00	0.00	3.29	1.51	0.04	6.70	0.34

Comments:

2. Roadbed Presence Index

	Condition Categories																				
	Optimal					Suboptimal					Marginal					Poor					
a. Roadbed Presence (within 0 100 foot Wetland ZOI distance)	**High Optimal:** No roadbeds present within 100 feet of the AA boundary		**Low Optimal:** Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.			**High Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4.			**Low Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6.		**High Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8.			**Low Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10.		**High Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.			**Low Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: Roadbed 0-100 Total score is 0

	Condition Categories																				
	Optimal					Suboptimal					Marginal					Poor					
b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	**High Optimal:** No roadbeds present within 100 - 300 feet of the AA boundary		**Low Optimal:** Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.			**High Suboptimal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4.			**Low Suboptimal:** Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6.		**High Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8.			**Low Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10.		**High Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12.			**Low Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.		CI = Total Score/20
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: Roadbed 100-300 Total score is 0

	Condition Score	Weighting	Sub-Scores	
a. Roadbed 0-100:	20	* (0.67)	13	
b. Roadbed 100-300:	2	* (0.33)	1	
		Total Score:	14	0.70

Comments:

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
a. Invasive Species Presence	**High Optimal:** No invasives present. **Low Optimal:** <5% of the total AA contains invasive species.	**High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species.	**High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species.	> 50% of the total AA contains invasive species.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total % relative cover of all invasives, collectively on site is 10

	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
b. Vegetation Stressor Presence	**High Optimal:** No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary.	**High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary.	**High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary.	Greater than five vegetation stressors present within the AA boundary.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total number of vegetation stressors present - 1

a. Invasive Sub-Score:	14	**Total Score:**	**CI = Total Score/40**
b. Vegetation Sub-Score:	17	**31**	**0.78**

4. Hydrologic Modification Index

	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
Hydrologic Modification Stressor Presence	**High Optimal:** No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary.	**High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary.	**High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary.	Greater than five hydrologic stressors present within the AA boundary.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total number of hydrologic modifications present - 1

Score:	17	**CI = Total Score/20**
		0.85

5. Sediment Stressor Index

	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
Sediment Stressor Presence	**High Optimal:** No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary.	**High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary.	**High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary.	Greater than five sediment stressors present within the AA boundary.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total number of sediment stressors present - 0

Score:	19	**CI = Total Score/20**
		0.95

6. Water Quality Stressor Index

	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
a. Eutro- phication Stressor Presence	No eutrophication stressors present within the AA boundary.	One eutrophication stressors present within the AA boundary.	Two eutrophication stressors present within the AA boundary.	Three eutrophication stressors present within the AA boundary.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total number of Eutrophication stressors present - 0

	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
b. Contaminant / Toxicity Stressor Presence	No contaminant / toxicity stressors present within the AA boundary.	One contaminant / toxicitystressors present within the AA boundary.	Two contaminant / toxicity stressors present within the AA boundary.	Three contaminant / toxicity stressors present within the AA boundary.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total number of Contaminant/Toxicity stressors present - 0

a. Eutrophication Score	19	**Total Score:**	**CI = Total Score/40**
b. Contaminant Score	19	**38**	**0.95**

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	**Overall Condition Index:**	**0.76**

Wetland ZOI Worksheet

Desktop Review			Field View		
Condition Category	Size (Ac)	Percentage	Condition Category	Size (Ac)	Percentage
Optimal	0.20	2%	Optimal	0.20	2%
High Suboptimal	1.10	11%	High Suboptimal	1.10	11%
Low Suboptimal	0.00	0%	Low Suboptimal	0.00	0%
High Marginal	0.00	0%	High Marginal	0.00	0%
Low Marginal	4.91	48%	Low Marginal	4.91	47%
High Poor	3.89	38%	High Poor	3.89	38%
Low Poor	0.20	2%	Low Poor	0.20	2%
Calculated total area	10.30	100%	Calculated total area	10.30	100%

Enter Total Area 10.30 From ZOI shapefile

Calculated total area and Entered Total Area must be equal

Optimal

ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor

ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor

ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier		Date	Name(s) of Evaluator(s)
Falcon Ethane Pipeline Project		6/27/2017	Matt Kline, Elliot Dillon
Resource Identifier / AA #	**Lat (dd)**	**Long (dd)**	**Notes:**
W-PA-170214-CBA-003	40.340840	-80.257173	#VALUE!

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.	0	4	0	100-300 ft.	0	4	0
2 Lane Paved	0-100 ft.	0	2	0	100-300 ft.	0	2	0
1 Lane Paved	0-100 ft.	0	1	0	100-300 ft.	0	1	0
Gravel Road	0-100 ft.	0	1	0	100-300 ft.	0	1	0
Dirt Road	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Railroad	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Other Roadbeds	0-100 ft.	0	1, 2 or 4	0	100-300 ft.	0	1, 2 or 4	0
Total Scores:	0-100 ft.	0			100-300 ft.	0		

Road Comments:

Pennsylvania Wetland Condition Level 2 Rapid Assessment
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **YES**

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	*Species Code*	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%
ROMU		10							

Total % relative cover of all invasives, collectively on site: 10 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	*Scientific*	Status	Code	Common Name	*Scientific*	Status
aggi2	Redtop	*Agrostis gigantea*	FACW	luhe	Water primrose	*Ludwigia hexapetala*	OBLW
algl2	European Alder	*Alnus glutinosa*	FACW	lyvu	Garden loosestrife	*Lysimachia vulgaris*	OBLW
arhi3	Carpetgrass	*Arthraxon hispidus*	FAC-	lysa2	Purple loosestrife	*Lythrum salicaria*	FACW
beth	Japanese barberry	*Berberis thunbergii*	FACW	maqu	European waterclover	*Marsilea quadrifolia*	OBLW
bevu	European barberry	*Berberis vulgaris*	FACW	mivi	Japanese stiltgrass	*Microstegium vimineum*	FAC
butom	Flowering Rush	*Butomus umbellatus*	OBLW	nami2	Water cress	*Nasturtium officinale*	OBLW
calli6	Pond water-starwort	*Callitriche stagnalis*	OBLW	pelo	Low smartweed	*Persicaria longiseta*	FACW
egde	Brazilian waterweed	*Egeria densa*	OBLW	phar	Reed canary grass	*Phalaris arundinacea*	FACW
elan	Russian olive	*Elaeagnus angustifolia*	FACU	phau7	Common Reed	*Phragmites australis*	OBLW
elum	Autumn olive	*Elaeagnus umbellata*	FACU	potr	Rough bluegrass	*Poa trivialis*	FACW
ephi	Hairy willow-herb	*Epilobium hirsutum*	FACW	pocu6	Japanese knotweed	*Polygonum (Faloia) cuspidatum*	FAC-
eppa5	Willow-herb	*Epilobium parviflorum*	FACW	pgpf	Mile-a-minute	*Polygonum perfoliatum*	FAC-
fasa	Giant knotweed	*Fallopia sachalinensis*	OBLW	puera	Kudzu-vine	*Pueraria lobata*	FAC-
gldi	Mudmats	*Glossostigma diandrum*	OBLW	pysp1	Apple/crabapple/pear	*Pyrus sp.*	FAC?
hola	Velvetgrass	*Holcus lanatus*	FAC	rhfr	Glossy Buckthorn	*Rhamnus frangula*	FAC-
huja	Japanese Hops	*Humulus japonicus*	FACU	romu	Multiflora rose	*Rosa multiflora*	FACU
loja	Japanese honeysuckle	*Lonicera japonica*	FAC-	tyan	Cattail (hybrid)	*Typha angustifolia*	OBLW
lomo	Morrow's honeysuckle	*Lonicera morrowii*	NI	tygl	Hybrid cattail	*Typha x glauca*	OBLW
lota	Tartarian honeysuckle	*Lonicera tatarica*					

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

STRESSOR WORKSHEET

2/4/2017

	Occurrence in AA		
	Y	#'s	N
Vegetation Alteration			
Mowing	1		
Moderate livestock grazing (within one year)			
Crops (annual row crops, within one year)			
Selective tree harvesting/cutting (>50% removal, within 5 years)			
Right-of-way clearing (mechanical or chemical)			
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)			
Removal of woody debris			
Aquatic weed control (mechanical or herbicide)			
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)			
Plantation (conversion from typical natural tree species, including orchards)			
Other:			
Total Number:	1		
Hydrologic Modification			
Ditching, tile draining, or other dewatering methods	1		
Dike/weir/dam			
Filling/grading			
Dredging/excavation			
Stormwater inputs (culvert or similar concentrated urban runoff)			
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)			
Dead or dying trees (trunks still standing) *			
Stream alteration (channelization or incision)			
Other:			
Total Number:	1		
Sedimentation			
Sediment deposits/plumes			
Eroding banks/slopes			
Active construction (earth disturbance for development)			
Active plowing (plowing for crop planting in past year)			
Intensive livestock grazing (in one year, ground is >50% bare)			
Active selective forestry harvesting (within one year)			
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)			
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)			
Other:			
Total Number:	0		
Eutrophication			
Direct discharges from agricultural feedlots, manure pits, etc.			
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.			
Heavy or moderately heavy formation of algal mats			
Other:			
Total Number:	0		
Contaminant/Toxicity			
Severe vegetation stress (source unknown or suspected)			
Obvious spills, discharges, plumes, odors, etc.			
Acidic drainages (mined sites, quarries, road cuts)			
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites			
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)			
Fish or wildlife kills or obvious disease or abnormalities observed			
Excessive garbage/dumping			
Other:			
Total Number:	0		

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
60536988	Falcon Ethane Pipeline Project	6/28/2017	0.4387	W-PA-170413-RCL-001	0.74

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Resource Identifier:			
Matt Kline, Janna Napoli	40.342224	-80.261782	Classification:	PEM	Delineated Area (acres):	0.7433

General Comments:

1. Wetland Zone of Influence Condition Index

	Condition Category																					
	Optimal					Suboptimal					Marginal					Poor						
Wetland Zone of Influence (300 foot area around AA perimeter)	ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					**High Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				**Low Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				**Low Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				**Low Poor:** ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	**CI = Total Score/20**
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Total Score = SUM(%Areas*Scores)

	Condition Category:	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Total Score:	CI
Scoring:	% ZOI Area:	**15%**	**0%**	**0%**	**0%**	**20%**	**53%**	**12%**		
	Score:	**16**	**0**	**0**	**0**	**7**	**4**	**1**		
	Total Sub-score:	2.33	0.00	0.00	0.00	1.43	2.14	0.12	**6.01**	**0.30**

Comments:

2. Roadbed Presence Index

	Condition Categories																				
	Optimal					Suboptimal					Marginal					Poor					
a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	**High Optimal:** No roadbeds present within 100 feet of the AA boundary			**Low Optimal:** Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.		**High Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4.				**Low Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6.	**High Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8.				**Low Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10.	**High Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.				**Low Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: Roadbed 0-100 Total score is 2

	Condition Categories																				
	Optimal					Suboptimal					Marginal					Poor					
b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	**High Optimal:** No roadbeds present within 100 - 300 feet of the AA boundary			**Low Optimal:** Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.		**High Suboptimal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4.				**Low Suboptimal:** Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6.	**High Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8.				**Low Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10.	**High Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12.				**Low Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.	**CI = Total Score/20**
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: Roadbed 100-300 Total score is 3

	Condition Score	Weighting	Sub-Scores
a. Roadbed 0-100:	16	*** (0.67)**	11
b. Roadbed 100-300:	14	*** (0.33)**	5
		Total Score:	**15**

0.77

Comments:

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
a. Invasive Species Presence	**High Optimal:** No invasives present. **Low Optimal:** <5% of the total AA contains invasive species.	**High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species.	**High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species.	> 50% of the total AA contains invasive species.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total % relative cover of all invasives, collectively on site is 40

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
b. Vegetation Stressor Presence	**High Optimal:** No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary.	**High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary.	**High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary.	Greater than five vegetation stressors present within the AA boundary.	**CI = Total Score/40**
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of vegetation stressors present - 0

a. Invasive Sub-Score:	7	**Total Score:**	
b. Vegetation Sub-Score:	16	**23**	**0.58**

4. Hydrologic Modification Index

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
Hydrologic Modification Stressor Presence	**High Optimal:** No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary.	**High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary.	**High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary.	Greater than five hydrologic stressors present within the AA boundary.	**CI = Total Score/20**
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	**0.80**

Comments: Total number of hydrologic modifications present - 1

Score:	16

5. Sediment Stressor Index

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
Sediment Stressor Presence	**High Optimal:** No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary.	**High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary.	**High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary.	Greater than five sediment stressors present within the AA boundary.	**CI = Total Score/20**
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	**0.90**

Comments: Total number of sediment stressors present - 0

Score:	18

6. Water Quality Stressor Index

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
a. Eutro- phication Stressor Presence	No eutrophication stressors present within the AA boundary.	One eutrophication stressors present within the AA boundary.	Two eutrophication stressors present within the AA boundary.	Three eutrophication stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of Eutrophication stressors present - 0

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
b. Contaminant / Toxicity Stressor Presence	No contaminant / toxicity stressors present within the AA boundary.	One contaminant / toxicitystressors present within the AA boundary.	Two contaminant / toxicity stressors present within the AA boundary.	Three contaminant / toxicity stressors present within the AA boundary.	**CI = Total Score/40**
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of Contaminant/Toxicity stressors present - 0

a. Eutrophication Score	16	**Total Score:**	**0.80**
b. Contaminant Score	16	**32**	

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	**Overall Condition Index:**	**0.69**

Wetland ZOI Worksheet					
Desktop Review			**Field View**		
Condition Category	Size (Ac)	Percentage	Condition Category	Size (Ac)	Percentage
Optimal	1.92	15%	Optimal	1.92	15%
High Suboptimal	0.00	0%	High Suboptimal	0.00	0%
Low Suboptimal	0.00	0%	Low Suboptimal	0.00	0%
High Marginal	0.00	0%	High Marginal	0.00	0%
Low Marginal	2.70	20%	Low Marginal	2.70	20%
High Poor	7.05	53%	High Poor	7.05	53%
Low Poor	1.53	12%	Low Poor	1.53	12%
Calculated total area	13.20	100%	Calculated total area	13.20	100%

Enter Total Area 13.20 From ZOI shapefile

Calculated total area and Entered Total Area must be equal

Optimal

ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor

ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor

ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier		Date	Name(s) of Evaluator(s)
Falcon Ethane Pipeline Project		6/28/2017	Matt Kline, Janna Napoli
Resource Identifier / AA #	**Lat (dd)**	**Long (dd)**	**Notes:**
W-PA-170413-RCL-001	40.342224	-80.261782	#VALUE!

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.	0	4	0	100-300 ft.	0	4	0
2 Lane Paved	0-100 ft.	0	2	0	100-300 ft.	0	2	0
1 Lane Paved	0-100 ft.	0	1	0	100-300 ft.	0	1	0
Gravel Road	0-100 ft.	2	1	2	100-300 ft.	3	1	3
Dirt Road	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Railroad	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Other Roadbeds	0-100 ft.	0	1, 2 or 4	0	100-300 ft.	0	1, 2 or 4	0
Total Scores:	0-100 ft.	2			100-300 ft.	3		

Road Comments:

Pennsylvania Wetland Condition Level 2 Rapid Assessment
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **YES**

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	*Species Code*	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%
tyan			40						

Total % relative cover of all invasives, collectively on site: 40 **%**

Comments:

Common Invasives/Aggressives List

Code	Common Name	*Scientific*	Status	Code	Common Name	*Scientific*	Status
aggi2	Redtop	*Agrostis gigantea*	FACW	luhe	Water primrose	*Ludwigia hexapetala*	OBLW
algl2	European Alder	*Alnus glutinosa*	FACW	lyvu	Garden loosestrife	*Lysimachia vulgaris*	OBLW
arhi3	Carpetgrass	*Arthraxon hispidus*	FAC-	lysa2	Purple loosestrife	*Lythrum salicaria*	FACW
beth	Japanese barberry	*Berberis thunbergii*	FACW	maqu	European waterclover	*Marsilea quadrifolia*	OBLW
bevu	European barberry	*Berberis vulgaris*	FACW	mivi	Japanese stiltgrass	*Microstegium vimineum*	FAC
butom	Flowering Rush	*Butomus umbellatus*	OBLW	nami2	Water cress	*Nasturtium officinale*	OBLW
calli6	Pond water-starwort	*Callitriche stagnalis*	OBLW	pelo	Low smartweed	*Persicaria longiseta*	FACW
egde	Brazilian waterweed	*Egeria densa*	OBLW	phar	Reed canary grass	*Phalaris arundinacea*	FACW
elan	Russian olive	*Elaeagnus angustifolia*	FACU	phau7	Common Reed	*Phragmites australis*	OBLW
elum	Autumn olive	*Elaeagnus umbellata*	FACU	potr	Rough bluegrass	*Poa trivialis*	FACW
ephi	Hairy willow-herb	*Epilobium hirsutum*	FACW	pocu6	Japanese knotweed	*Polygonum (Faloia) cuspidatum*	FAC-
eppa5	Willow-herb	*Epilobium parviflorum*	FACW	pgpf	Mile-a-minute	*Polygonum perfoliatum*	FAC-
fasa	Giant knotweed	*Fallopia sachalinensis*	OBLW	puera	Kudzu-vine	*Pueraria lobata*	FAC-
gldi	Mudmats	*Glossostigma diandrum*	OBLW	pysp1	Apple/crabapple/pear	*Pyrus sp.*	FAC?
hola	Velvetgrass	*Holcus lanatus*	FAC	rhfr	Glossy Buckthorn	*Rhamnus frangula*	FAC-
huja	Japanese Hops	*Humulus japonicus*	FACU	romu	Multiflora rose	*Rosa multiflora*	FACU
loja	Japanese honeysuckle	*Lonicera japonica*	FAC-	tyan	Cattail (hybrid)	*Typha angustifolia*	OBLW
lomo	Morrow's honeysuckle	*Lonicera morrowii*	NI	tygl	Hybrid cattail	*Typha x glauca*	OBLW
lota	Tartarian honeysuckle	*Lonicera tatarica*					

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

STRESSOR WORKSHEET

2/4/2017

	Occurrence in AA		
	Y	#'s	N
Vegetation Alteration			
Mowing			
Moderate livestock grazing (within one year)			
Crops (annual row crops, within one year)			
Selective tree harvesting/cutting (>50% removal, within 5 years)			
Right-of-way clearing (mechanical or chemical)			
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)			
Removal of woody debris			
Aquatic weed control (mechanical or herbicide)			
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)			
Plantation (conversion from typical natural tree species, including orchards)			
Other:			
Total Number:		**0**	
Hydrologic Modification			
Ditching, tile draining, or other dewatering methods			
Dike/weir/dam			
Filling/grading			
Dredging/excavation			
Stormwater inputs (culvert or similar concentrated urban runoff)	1		
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)			
Dead or dying trees (trunks still standing) *			
Stream alteration (channelization or incision)			
Other:			
Total Number:		**1**	
Sedimentation			
Sediment deposits/plumes			
Eroding banks/slopes			
Active construction (earth disturbance for development)			
Active plowing (plowing for crop planting in past year)			
Intensive livestock grazing (in one year, ground is >50% bare)			
Active selective forestry harvesting (within one year)			
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)			
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)			
Other:			
Total Number:		**0**	
Eutrophication			
Direct discharges from agricultural feedlots, manure pits, etc.			
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.			
Heavy or moderately heavy formation of algal mats			
Other:			
Total Number:		**0**	
Contaminant/Toxicity			
Severe vegetation stress (source unknown or suspected)			
Obvious spills, discharges, plumes, odors, etc.			
Acidic drainages (mined sites, quarries, road cuts)			
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites			
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)			
Fish or wildlife kills or obvious disease or abnormalities observed			
Excessive garbage/dumping			
Other:			
Total Number:		**0**	

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
60536988	Falcon Ethane Pipeline Project	6/28/2017	0.0539	W-PA-170413-RCL-005	0.34

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Resource Identifier:			
Matt Kline, Janna Napoli	40.342808	-80.263032	Classification:	PSS	Delineated Area (acres):	0.3406

General Comments:

1. Wetland Zone of Influence Condition Index

	Condition Category																				
	Optimal					Suboptimal					Marginal					Poor					
Wetland Zone of Influence (300 foot area around AA perimeter)	ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.					CI = Total Score/20
	Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.										Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.					Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.					
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Total Score = SUM(%Areas*Scores)

	Condition Category:	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Total Score:	CI
Scoring:	% ZOI Area:	27%	0%	0%	0%	0%	67%	8%		
	Score:	16	0	0	0	0	4	1		
	Total Sub-score:	4.24	0.00	0.00	0.00	0.00	2.68	0.08	7.00	0.35

Comments:

2. Roadbed Presence Index

	Condition Categories																				
	Optimal					Suboptimal					Marginal					Poor					
a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	High Optimal: No roadbeds present within 100 feet of the AA boundary				Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.	High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6.	High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10.	High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.				Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: Roadbed 0-100 Total score is 0

	Condition Categories																				
	Optimal					Suboptimal					Marginal					Poor					
b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary				Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.	High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6.	High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10.	High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12.				Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.	CI = Total Score/20
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: Roadbed 100-300 Total score is 4

	Condition Score	Weighting	Sub-Scores	
a. Roadbed 0-100:	19	* (0.67)	13	
b. Roadbed 100-300:	14	* (0.33)	5	
		Total Score:	17	0.87

Comments:

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
a. Invasive Species Presence	**High Optimal:** No invasives present. **Low Optimal:** <5% of the total AA contains invasive species.	**High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species.	**High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species.	> 50% of the total AA contains invasive species.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total % relative cover of all invasives, collectively on site is 0

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
b. Vegetation Stressor Presence	**High Optimal:** No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary.	**High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary.	**High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary.	Greater than five vegetation stressors present within the AA boundary.	CI = Total Score/40
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of vegetation stressors present - 3

a. Invasive Sub-Score:	19	**Total Score:**	
b. Vegetation Sub-Score:	11	**30**	**0.75**

4. Hydrologic Modification Index

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
Hydrologic Modification Stressor Presence	**High Optimal:** No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary.	**High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary.	**High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary.	Greater than five hydrologic stressors present within the AA boundary.	CI = Total Score/20
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of hydrologic modifications present - 5

Score:	6	**0.30**

5. Sediment Stressor Index

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
Sediment Stressor Presence	**High Optimal:** No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary.	**High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary.	**High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary.	Greater than five sediment stressors present within the AA boundary.	CI = Total Score/20
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of sediment stressors present - 2

Score:	14	**0.70**

6. Water Quality Stressor Index

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
a. Eutro- phication Stressor Presence	No eutrophication stressors present within the AA boundary.	One eutrophication stressors present within the AA boundary.	Two eutrophication stressors present within the AA boundary.	Three eutrophication stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of Eutrophication stressors present - 1

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
b. Contaminant / Toxicity Stressor Presence	No contaminant / toxicity stressors present within the AA boundary.	One contaminant / toxicitystressors present within the AA boundary.	Two contaminant / toxicity stressors present within the AA boundary.	Three contaminant / toxicity stressors present within the AA boundary.	CI = Total Score/40
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of Contaminant/Toxicity stressors present - 1

a. Eutrophication Score	11	**Total Score:**	**0.55**
b. Contaminant Score	11	**22**	

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	**Overall Condition Index:**	**0.59**

Wetland ZOI Worksheet					
Desktop Review			**Field View**		
Condition Category	Size (Ac)	Percentage	Condition Category	Size (Ac)	Percentage
Optimal	2.81	27%	Optimal	2.81	27%
High Suboptimal	0.00	0%	High Suboptimal	0.00	0%
Low Suboptimal	0.00	0%	Low Suboptimal	0.00	0%
High Marginal	0.00	0%	High Marginal	0.00	0%
Low Marginal	0.00	0%	Low Marginal	0.00	0%
High Poor	6.98	66%	High Poor	6.98	67%
Low Poor	0.81	8%	Low Poor	0.81	8%
Calculated total area	10.60	100%	Calculated total area	10.60	100%

Enter Total Area 10.60 From ZOI shapefile

Calculated total area and Entered Total Area must be equal

Optimal

ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor

ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor

ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier		Date	Name(s) of Evaluator(s)
Falcon Ethane Pipeline Project		6/28/2017	Matt Kline, Janna Napoli
Resource Identifier / AA #	**Lat (dd)**	**Long (dd)**	**Notes:**
W-PA-170413-RCL-005	40.342808	-80.263032	#VALUE!

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.	0	4	0	100-300 ft.	0	4	0
2 Lane Paved	0-100 ft.	0	2	0	100-300 ft.	0	2	0
1 Lane Paved	0-100 ft.	0	1	0	100-300 ft.	0	1	0
Gravel Road	0-100 ft.	0	1	0	100-300 ft.	0	1	0
Dirt Road	0-100 ft.	0	2	0	100-300 ft.	1	2	2
Railroad	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Other Roadbeds	0-100 ft.	0	1, 2 or 4	0	100-300 ft.	1	1, 2 or 4	2
Total Scores:	0-100 ft.	0			100-300 ft.	4		

3

Pennsylvania Wetland Condition Level 2 Rapid Assessment
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **NO**

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	*Species Code*	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%

Total % relative cover of all invasives, collectively on site: 0 **%**

Comments:

Common Invasives/Aggressives List

Code	Common Name	*Scientific*	Status	Code	Common Name	*Scientific*	Status
aggi2	Redtop	*Agrostis gigantea*	FACW	luhe	Water primrose	*Ludwigia hexapetala*	OBLW
algl2	European Alder	*Alnus glutinosa*	FACW	lyvu	Garden loosestrife	*Lysimachia vulgaris*	OBLW
arhi3	Carpetgrass	*Arthraxon hispidus*	FAC-	lysa2	Purple loosestrife	*Lythrum salicaria*	FACW
beth	Japanese barberry	*Berberis thunbergii*	FACW	maqu	European waterclover	*Marsilea quadrifolia*	OBLW
bevu	European barberry	*Berberis vulgaris*	FACW	mivi	Japanese stiltgrass	*Microstegium vimineum*	FAC
butom	Flowering Rush	*Butomus umbellatus*	OBLW	nami2	Water cress	*Nasturtium officinale*	OBLW
calli6	Pond water-starwort	*Callitriche stagnalis*	OBLW	pelo	Low smartweed	*Persicaria longiseta*	FACW
egde	Brazilian waterweed	*Egeria densa*	OBLW	phar	Reed canary grass	*Phalaris arundinacea*	FACW
elan	Russian olive	*Elaeagnus angustifolia*	FACU	phau7	Common Reed	*Phragmites australis*	OBLW
elum	Autumn olive	*Elaeagnus umbellata*	FACU	potr	Rough bluegrass	*Poa trivialis*	FACW
ephi	Hairy willow-herb	*Epilobium hirsutum*	FACW	pocu6	Japanese knotweed	*Polygonum (Faloia) cuspidatum*	FAC-
eppa5	Willow-herb	*Epilobium parviflorum*	FACW	pgpf	Mile-a-minute	*Polygonum perfoliatum*	FAC-
fasa	Giant knotweed	*Fallopia sachalinensis*	OBLW	puera	Kudzu-vine	*Pueraria lobata*	FAC-
gldi	Mudmats	*Glossostigma diandrum*	OBLW	pysp1	Apple/crabapple/pear	*Pyrus sp.*	FAC?
hola	Velvetgrass	*Holcus lanatus*	FAC	rhfr	Glossy Buckthorn	*Rhamnus frangula*	FAC-
huja	Japanese Hops	*Humulus japonicus*	FACU	romu	Multiflora rose	*Rosa multiflora*	FACU
loja	Japanese honeysuckle	*Lonicera japonica*	FAC-	tyan	Cattail (hybrid)	*Typha angustifolia*	OBLW
lomo	Morrow's honeysuckle	*Lonicera morrowii*	NI	tygl	Hybrid cattail	*Typha x glauca*	OBLW
lota	Tartarian honeysuckle	*Lonicera tatarica*					

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

STRESSOR WORKSHEET

2/4/2017

	Occurrence in AA		
	Y	#'s	N
Vegetation Alteration			
Mowing			
Moderate livestock grazing (within one year)			
Crops (annual row crops, within one year)			
Selective tree harvesting/cutting (>50% removal, within 5 years)			
Right-of-way clearing (mechanical or chemical)			
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	1		
Removal of woody debris	1		
Aquatic weed control (mechanical or herbicide)			
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)			
Plantation (conversion from typical natural tree species, including orchards)			
Other:	1		
Total Number:	**3**		
Hydrologic Modification			
Ditching, tile draining, or other dewatering methods	1		
Dike/weir/dam			
Filling/grading			
Dredging/excavation	1		
Stormwater inputs (culvert or similar concentrated urban runoff)	1		
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	1		
Dead or dying trees (trunks still standing)*			
Stream alteration (channelization or incision)	1		
Other:			
Total Number:	**5**		
Sedimentation			
Sediment deposits/plumes	1		
Eroding banks/slopes	1		
Active construction (earth disturbance for development)			
Active plowing (plowing for crop planting in past year)			
Intensive livestock grazing (in one year, ground is >50% bare)			
Active selective forestry harvesting (within one year)			
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)			
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)			
Other:			
Total Number:	**2**		
Eutrophication			
Direct discharges from agricultural feedlots, manure pits, etc.			
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.			
Heavy or moderately heavy formation of algal mats			
Other:	1		
Total Number:	**1**		
Contaminant/Toxicity			
Severe vegetation stress (source unknown or suspected)			
Obvious spills, discharges, plumes, odors, etc.			
Acidic drainages (mined sites, quarries, road cuts)			
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites			
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)			
Fish or wildlife kills or obvious disease or abnormalities observed			
Excessive garbage/dumping			
Other:	1		
Total Number:	**1**		

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
60536988	Falcon Ethane Pipeline Project	6/28/2017	0.0397	W-PA-170215-CBA-002	0.11

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Resource Identifier:			
Matt Kline, Janna Napoli	40.347012	-80.264078	Classification:	PEM	Delineated Area (acres):	0.1082

General Comments:

1. Wetland Zone of Influence Condition Index

	Condition Category																				
	Optimal					Suboptimal					Marginal					Poor					
Wetland Zone of Influence (300 foot area around AA perimeter)	ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	CI = Total Score/20
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Total Score = SUM(%Areas*Scores)

	Condition Category:	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Total Score:	CI
Scoring:	% ZOI Area:	1%	25%	0%	0%	0%	74%	0%		
	Score:	16	14	0	0	0	4	0		
	Total Sub-score:	0.13	3.56	0.00	0.00	0.00	2.95	0.00	6.63	0.33

Comments:

2. Roadbed Presence Index

	Condition Categories																				
	Optimal					Suboptimal					Marginal					Poor					
a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	High Optimal: No roadbeds present within 100 feet of the AA boundary			Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.		High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6.	High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10.	High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.				Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: Roadbed 0-100 Total score is 0

	Condition Categories																				
	Optimal					Suboptimal					Marginal					Poor					
b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary			Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.		High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6.	High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10.	High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12.				Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.	CI = Total Score/20
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: Roadbed 100-300 Total score is 2

	Condition Score	Weighting	Sub-Scores	
a. Roadbed 0-100:	19	* (0.67)	13	
b. Roadbed 100-300:	16	* (0.33)	5	
		Total Score:	18	0.90

Comments:

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
a. Invasive Species Presence	**High Optimal:** No invasives present. **Low Optimal:** <5% of the total AA contains invasive species.	**High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species.	**High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species.	> 50% of the total AA contains invasive species.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total % relative cover of all invasives, collectively on site is 20

	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
b. Vegetation Stressor Presence	**High Optimal:** No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary.	**High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary.	**High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary.	Greater than five vegetation stressors present within the AA boundary.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total number of vegetation stressors present - 1

			CI = Total Score/40
a. Invasive Sub-Score:	10	**Total Score:**	
b. Vegetation Sub-Score:	17	**27**	**0.68**

4. Hydrologic Modification Index

	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
Hydrologic Modification Stressor Presence	**High Optimal:** No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary.	**High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary.	**High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary.	Greater than five hydrologic stressors present within the AA boundary.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total number of hydrologic modifications present - 2

		CI = Total Score/20
Score:	14	**0.70**

5. Sediment Stressor Index

	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
Sediment Stressor Presence	**High Optimal:** No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary.	**High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary.	**High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary.	Greater than five sediment stressors present within the AA boundary.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total number of sediment stressors present - 0

		CI = Total Score/20
Score:	18	**0.90**

6. Water Quality Stressor Index

	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
a. Eutro- phication Stressor Presence	No eutrophication stressors present within the AA boundary.	One eutrophication stressors present within the AA boundary.	Two eutrophication stressors present within the AA boundary.	Three eutrophication stressors present within the AA boundary.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total number of Eutrophication stressors present - 0

	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
b. Contaminant / Toxicity Stressor Presence	No contaminant / toxicity stressors present within the AA boundary.	One contaminant / toxicitystressors present within the AA boundary.	Two contaminant / toxicity stressors present within the AA boundary.	Three contaminant / toxicity stressors present within the AA boundary.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total number of Contaminant/Toxicity stressors present - 0

			CI = Total Score/40
a. Eutrophication Score	16	**Total Score:**	
b. Contaminant Score	16	**32**	**0.80**

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	**Overall Condition Index:**	**0.72**

Wetland ZOI Worksheet					
Desktop Review			**Field View**		
Condition Category	Size (Ac)	Percentage	Condition Category	Size (Ac)	Percentage
Optimal	0.10	1%	Optimal	0.10	1%
High Suboptimal	3.20	25%	High Suboptimal	3.20	25%
Low Suboptimal	0.00	0%	Low Suboptimal	0.00	0%
High Marginal	0.00	0%	High Marginal	0.00	0%
Low Marginal	0.00	0%	Low Marginal	0.00	0%
High Poor	9.30	74%	High Poor	9.30	74%
Low Poor	0.00	0%	Low Poor	0.00	0%
Calculated total area	12.60	100%	Calculated total area	12.60	100%

Enter Total Area 12.60 From ZOI shapefile

Calculated total area and Entered Total Area must be equal

Optimal

ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor

ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor

ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier		Date	Name(s) of Evaluator(s)
Falcon Ethane Pipeline Project		6/28/2017	Matt Kline, Janna Napoli
Resource Identifier / AA #	**Lat (dd)**	**Long (dd)**	**Notes:**
W-PA-170215-CBA-002	40.347012	-80.264078	#VALUE!

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.	0	4	0	100-300 ft.	0	4	0
2 Lane Paved	0-100 ft.	0	2	0	100-300 ft.	0	2	0
1 Lane Paved	0-100 ft.	0	1	0	100-300 ft.	0	1	0
Gravel Road	0-100 ft.	0	1	0	100-300 ft.	0	1	0
Dirt Road	0-100 ft.	0	2	0	100-300 ft.	1	2	2
Railroad	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Other Roadbeds	0-100 ft.	0	1, 2 or 4	0	100-300 ft.	0	1, 2 or 4	0
Total Scores:	0-100 ft.	0			100-300 ft.	2		

Road Comments:

Pennsylvania Wetland Condition Level 2 Rapid Assessment
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **YES**

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	*Species Code*	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%
tyan			20						

Total % relative cover of all invasives, collectively on site: 20 **%**

Comments:

Common Invasives/Aggressives List

Code	Common Name	*Scientific*	Status	Code	Common Name	*Scientific*	Status
aggi2	Redtop	*Agrostis gigantea*	FACW	luhe	Water primrose	*Ludwigia hexapetala*	OBLW
algl2	European Alder	*Alnus glutinosa*	FACW	lyvu	Garden loosestrife	*Lysimachia vulgaris*	OBLW
arhi3	Carpetgrass	*Arthraxon hispidus*	FAC-	lysa2	Purple loosestrife	*Lythrum salicaria*	FACW
beth	Japanese barberry	*Berberis thunbergii*	FACW	maqu	European waterclover	*Marsilea quadrifolia*	OBLW
bevu	European barberry	*Berberis vulgaris*	FACW	mivi	Japanese stiltgrass	*Microstegium vimineum*	FAC
butom	Flowering Rush	*Butomus umbellatus*	OBLW	nami2	Water cress	*Nasturtium officinale*	OBLW
calli6	Pond water-starwort	*Callitriche stagnalis*	OBLW	pelo	Low smartweed	*Persicaria longiseta*	FACW
egde	Brazilian waterweed	*Egeria densa*	OBLW	phar	Reed canary grass	*Phalaris arundinacea*	FACW
elan	Russian olive	*Elaeagnus angustifolia*	FACU	phau7	Common Reed	*Phragmites australis*	OBLW
elum	Autumn olive	*Elaeagnus umbellata*	FACU	potr	Rough bluegrass	*Poa trivialis*	FACW
ephi	Hairy willow-herb	*Epilobium hirsutum*	FACW	pocu6	Japanese knotweed	*Polygonum (Faloia) cuspidatum*	FAC-
eppa5	Willow-herb	*Epilobium parviflorum*	FACW	pgpf	Mile-a-minute	*Polygonum perfoliatum*	FAC-
fasa	Giant knotweed	*Fallopia sachalinensis*	OBLW	puera	Kudzu-vine	*Pueraria lobata*	FAC-
gldi	Mudmats	*Glossostigma diandrum*	OBLW	pysp1	Apple/crabapple/pear	*Pyrus sp.*	FAC?
hola	Velvetgrass	*Holcus lanatus*	FAC	rhfr	Glossy Buckthorn	*Rhamnus frangula*	FAC-
huja	Japanese Hops	*Humulus japonicus*	FACU	romu	Multiflora rose	*Rosa multiflora*	FACU
loja	Japanese honeysuckle	*Lonicera japonica*	FAC-	tyan	Cattail (hybrid)	*Typha angustifolia*	OBLW
lomo	Morrow's honeysuckle	*Lonicera morrowii*	NI	tygl	Hybrid cattail	*Typha x glauca*	OBLW
lota	Tartarian honeysuckle	*Lonicera tatarica*					

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

STRESSOR WORKSHEET

2/4/2017

	Occurrence in AA		
	Y	#'s	N
Vegetation Alteration			
Mowing	1		
Moderate livestock grazing (within one year)			
Crops (annual row crops, within one year)			
Selective tree harvesting/cutting (>50% removal, within 5 years)			
Right-of-way clearing (mechanical or chemical)			
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)			
Removal of woody debris			
Aquatic weed control (mechanical or herbicide)			
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)			
Plantation (conversion from typical natural tree species, including orchards)			
Other:			
Total Number:	**1**		
Hydrologic Modification			
Ditching, tile draining, or other dewatering methods	1		
Dike/weir/dam			
Filling/grading	1		
Dredging/excavation			
Stormwater inputs (culvert or similar concentrated urban runoff)			
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)			
Dead or dying trees (trunks still standing) *			
Stream alteration (channelization or incision)			
Other:			
Total Number:	**2**		
Sedimentation			
Sediment deposits/plumes			
Eroding banks/slopes			
Active construction (earth disturbance for development)			
Active plowing (plowing for crop planting in past year)			
Intensive livestock grazing (in one year, ground is >50% bare)			
Active selective forestry harvesting (within one year)			
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)			
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)			
Other:			
Total Number:	**0**		
Eutrophication			
Direct discharges from agricultural feedlots, manure pits, etc.			
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.			
Heavy or moderately heavy formation of algal mats			
Other:			
Total Number:	**0**		
Contaminant/Toxicity			
Severe vegetation stress (source unknown or suspected)			
Obvious spills, discharges, plumes, odors, etc.			
Acidic drainages (mined sites, quarries, road cuts)			
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites			
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)			
Fish or wildlife kills or obvious disease or abnormalities observed			
Excessive garbage/dumping			
Other:			
Total Number:	**0**		

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
60536988	Falcon Ethane Pipeline Project	6/28/2017	0.1156	W-PA-170214-CBA-005	0.86

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Resource Identifier:			
Matt Kline, Janna Napoli	40.34917 / 4	-80.265951 /	Classification:	PEM/PFO	Delineated Area (acres):	0.8619

General Comments:

1. Wetland Zone of Influence Condition Index

	Condition Category																					
	Optimal					Suboptimal					Marginal					Poor						
Wetland Zone of Influence (300 foot area around AA perimeter)	ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.					CI = Total Score/20
	Low Optimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.										Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.					Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.					
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Total Score = SUM(%Areas*Scores)

	Condition Category:	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Total Score:	CI
Scoring:	% ZOI Area:	27%	13%	40%	0%	0%	9%	11%		
	Score:	16	14	11	0	0	4	1		
	Total Sub-score:	4.32	1.81	4.40	0.00	0.00	0.35	0.11	10.99	0.55

Comments:

2. Roadbed Presence Index

	Condition Categories																				
	Optimal					Suboptimal					Marginal					Poor					
a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	High Optimal: No roadbeds present within 100 feet of the AA boundary				Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.	High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6.	High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10.	High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.				Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: Roadbed 0-100 Total score is 0

	Condition Categories																				
	Optimal					Suboptimal					Marginal					Poor					
b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary				Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.	High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6.	High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10.	High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12.				Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.	CI = Total Score/20
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: Roadbed 100-300 Total score is 2

	Condition Score	Weighting	Sub-Scores	
a. Roadbed 0-100:	19	* (0.67)	13	
b. Roadbed 100-300:	16	* (0.33)	5	
		Total Score:	18	0.90

Comments:

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
a. Invasive Species Presence	**High Optimal:** No invasives present. **Low Optimal:** <5% of the total AA contains invasive species.	**High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species.	**High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species.	> 50% of the total AA contains invasive species.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total % relative cover of all invasives, collectively on site is 10

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
b. Vegetation Stressor Presence	**High Optimal:** No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary.	**High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary.	**High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary.	Greater than five vegetation stressors present within the AA boundary.	CI = Total Score/40
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of vegetation stressors present - 4

a. Invasive Sub-Score:	14	**Total Score:**	
b. Vegetation Sub-Score:	9	**23**	**0.58**

4. Hydrologic Modification Index

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
Hydrologic Modification Stressor Presence	**High Optimal:** No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary.	**High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary.	**High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary.	Greater than five hydrologic stressors present within the AA boundary.	CI = Total Score/20
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of hydrologic modifications present - 0

Score:	19	**0.95**

5. Sediment Stressor Index

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
Sediment Stressor Presence	**High Optimal:** No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary.	**High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary.	**High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary.	Greater than five sediment stressors present within the AA boundary.	CI = Total Score/20
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of sediment stressors present - 0

Score:	19	**0.95**

6. Water Quality Stressor Index

	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
a. Eutro- phication Stressor Presence	No eutrophication stressors present within the AA boundary.	One eutrophication stressors present within the AA boundary.	Two eutrophication stressors present within the AA boundary.	Three eutrophication stressors present within the AA boundary.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Comments: Total number of Eutrophication stressors present - 0

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
b. Contaminant / Toxicity Stressor Presence	No contaminant / toxicity stressors present within the AA boundary.	One contaminant / toxicitystressors present within the AA boundary.	Two contaminant / toxicity stressors present within the AA boundary.	Three contaminant / toxicity stressors present within the AA boundary.	CI = Total Score/40
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of Contaminant/Toxicity stressors present - 0

a. Eutrophication Score	16	**Total Score:**	**0.80**
b. Contaminant Score	16	**32**	

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	**Overall Condition Index:**	**0.79**

Wetland ZOI Worksheet					
Desktop Review			**Field View**		
Condition Category	Size (Ac)	Percentage	Condition Category	Size (Ac)	Percentage
Optimal	10.12	67%	Optimal	4.05	27%
High Suboptimal	1.94	13%	High Suboptimal	1.94	13%
Low Suboptimal	0.00	0%	Low Suboptimal	6.00	40%
High Marginal	0.00	0%	High Marginal	0.00	0%
Low Marginal	0.00	0%	Low Marginal	0.00	0%
High Poor	1.30	9%	High Poor	1.30	9%
Low Poor	1.64	11%	Low Poor	1.64	11%
Calculated total area	15.00	100%	Calculated total area	14.93	100%

Enter Total Area 15.00 From ZOI shapefile

Calculated total area and Entered Total Area must be equal

Optimal

ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor

ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor

ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier		Date	Name(s) of Evaluator(s)
Falcon Ethane Pipeline Project		6/28/2017	Matt Kline, Janna Napoli
Resource Identifier / AA #	**Lat (dd)**	**Long (dd)**	**Notes:**
W-PA-170214-CBA-005	40.34917 / 40.3	-80.265951 /	#VALUE!

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.	0	4	0	100-300 ft.	0	4	0
2 Lane Paved	0-100 ft.	0	2	0	100-300 ft.	0	2	0
1 Lane Paved	0-100 ft.	0	1	0	100-300 ft.	2	1	2
Gravel Road	0-100 ft.	0	1	0	100-300 ft.	0	1	0
Dirt Road	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Railroad	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Other Roadbeds	0-100 ft.	0	1, 2 or 4	0	100-300 ft.	0	1, 2 or 4	0
Total Scores:	0-100 ft.	0			100-300 ft.	2		

Road Comments:

Pennsylvania Wetland Condition Level 2 Rapid Assessment
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **YES**

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	*Species Code*	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%
tyan		10							

Total % relative cover of all invasives, collectively on site: 10 **%**

Comments:

Common Invasives/Aggressives List

Code	Common Name	*Scientific*	Status	Code	Common Name	*Scientific*	Status
aggi2	Redtop	*Agrostis gigantea*	FACW	luhe	Water primrose	*Ludwigia hexapetala*	OBLW
algl2	European Alder	*Alnus glutinosa*	FACW	lyvu	Garden loosestrife	*Lysimachia vulgaris*	OBLW
arhi3	Carpetgrass	*Arthraxon hispidus*	FAC-	lysa2	Purple loosestrife	*Lythrum salicaria*	FACW
beth	Japanese barberry	*Berberis thunbergii*	FACW	maqu	European waterclover	*Marsilea quadrifolia*	OBLW
bevu	European barberry	*Berberis vulgaris*	FACW	mivi	Japanese stiltgrass	*Microstegium vimineum*	FAC
butom	Flowering Rush	*Butomus umbellatus*	OBLW	nami2	Water cress	*Nasturtium officinale*	OBLW
calli6	Pond water-starwort	*Callitriche stagnalis*	OBLW	pelo	Low smartweed	*Persicaria longiseta*	FACW
egde	Brazilian waterweed	*Egeria densa*	OBLW	phar	Reed canary grass	*Phalaris arundinacea*	FACW
elan	Russian olive	*Elaeagnus angustifolia*	FACU	phau7	Common Reed	*Phragmites australis*	OBLW
elum	Autumn olive	*Elaeagnus umbellata*	FACU	potr	Rough bluegrass	*Poa trivialis*	FACW
ephi	Hairy willow-herb	*Epilobium hirsutum*	FACW	pocu6	Japanese knotweed	*Polygonum (Faloia) cuspidatum*	FAC-
eppa5	Willow-herb	*Epilobium parviflorum*	FACW	pgpf	Mile-a-minute	*Polygonum perfoliatum*	FAC-
fasa	Giant knotweed	*Fallopia sachalinensis*	OBLW	puera	Kudzu-vine	*Pueraria lobata*	FAC-
gldi	Mudmats	*Glossostigma diandrum*	OBLW	pysp1	Apple/crabapple/pear	*Pyrus sp.*	FAC?
hola	Velvetgrass	*Holcus lanatus*	FAC	rhfr	Glossy Buckthorn	*Rhamnus frangula*	FAC-
huja	Japanese Hops	*Humulus japonicus*	FACU	romu	Multiflora rose	*Rosa multiflora*	FACU
loja	Japanese honeysuckle	*Lonicera japonica*	FAC-	tyan	Cattail (hybrid)	*Typha angustifolia*	OBLW
lomo	Morrow's honeysuckle	*Lonicera morrowii*	NI	tygl	Hybrid cattail	*Typha x glauca*	OBLW
lota	Tartarian honeysuckle	*Lonicera tatarica*					

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

STRESSOR WORKSHEET

2/4/2017

	Occurrence in AA		
	Y	#'s	N
Vegetation Alteration			
Mowing			
Moderate livestock grazing (within one year)			
Crops (annual row crops, within one year)			
Selective tree harvesting/cutting (>50% removal, within 5 years)	1		
Right-of-way clearing (mechanical or chemical)	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	1		
Removal of woody debris	1		
Aquatic weed control (mechanical or herbicide)			
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)			
Plantation (conversion from typical natural tree species, including orchards)			
Other:			
Total Number:	**4**		
Hydrologic Modification			
Ditching, tile draining, or other dewatering methods			
Dike/weir/dam			
Filling/grading			
Dredging/excavation			
Stormwater inputs (culvert or similar concentrated urban runoff)			
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)			
Dead or dying trees (trunks still standing)*			
Stream alteration (channelization or incision)			
Other:			
Total Number:	**0**		
Sedimentation			
Sediment deposits/plumes			
Eroding banks/slopes			
Active construction (earth disturbance for development)			
Active plowing (plowing for crop planting in past year)			
Intensive livestock grazing (in one year, ground is >50% bare)			
Active selective forestry harvesting (within one year)			
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)			
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)			
Other:			
Total Number:	**0**		
Eutrophication			
Direct discharges from agricultural feedlots, manure pits, etc.			
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.			
Heavy or moderately heavy formation of algal mats			
Other:			
Total Number:	**0**		
Contaminant/Toxicity			
Severe vegetation stress (source unknown or suspected)			
Obvious spills, discharges, plumes, odors, etc.			
Acidic drainages (mined sites, quarries, road cuts)			
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites			
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)			
Fish or wildlife kills or obvious disease or abnormalities observed			
Excessive garbage/dumping			
Other:			
Total Number:	**0**		

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
60536988	Falcon Ethane Pipeline Project	6/28/2017	0.2405	W-PA-151208-MRK-006	0.56

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Resource Identifier:			
Matt Kline, Janna Napoli	40.351492	-80.271416	Classification:	PEM	Delineated Area (acres):	0.5623

General Comments:

1. Wetland Zone of Influence Condition Index

	Condition Category																					
	Optimal					Suboptimal					Marginal					Poor						
Wetland Zone of Influence (300 foot area around AA perimeter)	ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					**High Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				**Low Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				**Low Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				**Low Poor:** ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.				**CI = Total Score/20**
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Total Score = SUM(%Areas*Scores)

	Condition Category:	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Total Score:	CI
Scoring:	% ZOI Area:	33%	0%	0%	0%	0%	48%	19%		
	Score:	16	0	0	0	0	3	1		
	Total Sub-score:	5.30	0.00	0.00	0.00	0.00	1.44	0.19	6.93	0.35

Comments:

2. Roadbed Presence Index

	Condition Categories																				
	Optimal					Suboptimal					Marginal					Poor					
a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	**High Optimal:** No roadbeds present within 100 feet of the AA boundary			**Low Optimal:** Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.		**High Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4.				**Low Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6.	**High Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8.				**Low Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10.	**High Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.				**Low Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: Roadbed 0-100 Total score is 2

	Condition Categories																				
	Optimal					Suboptimal					Marginal					Poor					
b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	**High Optimal:** No roadbeds present within 100 - 300 feet of the AA boundary			**Low Optimal:** Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.		**High Suboptimal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4.				**Low Suboptimal:** Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6.	**High Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8.				**Low Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10.	**High Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12.				**Low Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.	**CI = Total Score/20**
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: Roadbed 100-300 Total score is 3

	Condition Score	Weighting	Sub-Scores	
a. Roadbed 0-100:	16	* (0.67)	11	
b. Roadbed 100-300:	14	* (0.33)	5	
		Total Score:	15	0.77

Comments:

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
a. Invasive Species Presence	**High Optimal:** No invasives present. **Low Optimal:** <5% of the total AA contains invasive species.	**High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species.	**High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species.	> 50% of the total AA contains invasive species.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total % relative cover of all invasives, collectively on site is 0

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
b. Vegetation Stressor Presence	**High Optimal:** No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary.	**High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary.	**High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary.	Greater than five vegetation stressors present within the AA boundary.	**CI = Total Score/40**
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of vegetation stressors present - 2

a. Invasive Sub-Score:	19	**Total Score:**	
b. Vegetation Sub-Score:	14	**33**	**0.83**

4. Hydrologic Modification Index

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
Hydrologic Modification Stressor Presence	**High Optimal:** No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary.	**High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary.	**High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary.	Greater than five hydrologic stressors present within the AA boundary.	**CI = Total Score/20**
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	**0.85**

Comments: Total number of hydrologic modifications present - 1

Score:	17

5. Sediment Stressor Index

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
Sediment Stressor Presence	**High Optimal:** No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary.	**High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary.	**High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary.	Greater than five sediment stressors present within the AA boundary.	**CI = Total Score/20**
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	**0.70**

Comments: Total number of sediment stressors present - 2

Score:	14

6. Water Quality Stressor Index

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
a. Eutro- phication Stressor Presence	No eutrophication stressors present within the AA boundary.	One eutrophication stressors present within the AA boundary.	Two eutrophication stressors present within the AA boundary.	Three eutrophication stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of Eutrophication stressors present - 0

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
b. Contaminant / Toxicity Stressor Presence	No contaminant / toxicity stressors present within the AA boundary.	One contaminant / toxicitystressors present within the AA boundary.	Two contaminant / toxicity stressors present within the AA boundary.	Three contaminant / toxicity stressors present within the AA boundary.	**CI = Total Score/40**
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of Contaminant/Toxicity stressors present - 1

a. Eutrophication Score	16	**Total Score:**	
b. Contaminant Score	13	**29**	**0.73**

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	**Overall Condition Index:**	**0.70**

Wetland ZOI Worksheet					
Desktop Review			**Field View**		
Condition Category	Size (Ac)	Percentage	Condition Category	Size (Ac)	Percentage
Optimal	5.86	33%	Optimal	5.86	33%
High Suboptimal	0.00	0%	High Suboptimal	0.00	0%
Low Suboptimal	0.00	0%	Low Suboptimal	0.00	0%
High Marginal	0.00	0%	High Marginal	0.00	0%
Low Marginal	0.00	0%	Low Marginal	0.00	0%
High Poor	8.49	48%	High Poor	8.49	48%
Low Poor	3.35	19%	Low Poor	3.35	19%
Calculated total area	17.70	100%	Calculated total area	17.70	100%

Enter Total Area 17.70 From ZOI shapefile

Calculated total area and Entered Total Area must be equal

Optimal

ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor

ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor

ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier		Date	Name(s) of Evaluator(s)
Falcon Ethane Pipeline Project		6/28/2017	Matt Kline, Janna Napoli
Resource Identifier / AA #	**Lat (dd)**	**Long (dd)**	**Notes:**
W-PA-151208-MRK-006	40.351492	-80.271416	#VALUE!

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.	0	4	0	100-300 ft.	0	4	0
2 Lane Paved	0-100 ft.	1	2	2	100-300 ft.	1	2	2
1 Lane Paved	0-100 ft.	0	1	0	100-300 ft.	1	1	1
Gravel Road	0-100 ft.	0	1	0	100-300 ft.	0	1	0
Dirt Road	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Railroad	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Other Roadbeds	0-100 ft.	0	1, 2 or 4	0	100-300 ft.	0	1, 2 or 4	0
Total Scores:	0-100 ft.	2			100-300 ft.	3		

Road Comments:

Pennsylvania Wetland Condition Level 2 Rapid Assessment
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **NO**

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	*Species Code*	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%

Total % relative cover of all invasives, collectively on site: 0 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	*Scientific*	Status	Code	Common Name	*Scientific*	Status
aggi2	Redtop	*Agrostis gigantea*	FACW	luhe	Water primrose	*Ludwigia hexapetala*	OBLW
algl2	European Alder	*Alnus glutinosa*	FACW	lyvu	Garden loosestrife	*Lysimachia vulgaris*	OBLW
arhi3	Carpetgrass	*Arthraxon hispidus*	FAC-	lysa2	Purple loosestrife	*Lythrum salicaria*	FACW
beth	Japanese barberry	*Berberis thunbergii*	FACW	maqu	European waterclover	*Marsilea quadrifolia*	OBLW
bevu	European barberry	*Berberis vulgaris*	FACW	mivi	Japanese stiltgrass	*Microstegium vimineum*	FAC
butom	Flowering Rush	*Butomus umbellatus*	OBLW	nami2	Water cress	*Nasturtium officinale*	OBLW
calli6	Pond water-starwort	*Callitriche stagnalis*	OBLW	pelo	Low smartweed	*Persicaria longiseta*	FACW
egde	Brazilian waterweed	*Egeria densa*	OBLW	phar	Reed canary grass	*Phalaris arundinacea*	FACW
elan	Russian olive	*Elaeagnus angustifolia*	FACU	phau7	Common Reed	*Phragmites australis*	OBLW
elum	Autumn olive	*Elaeagnus umbellata*	FACU	potr	Rough bluegrass	*Poa trivialis*	FACW
ephi	Hairy willow-herb	*Epilobium hirsutum*	FACW	pocu6	Japanese knotweed	*Polygonum (Faloia) cuspidatum*	FAC-
eppa5	Willow-herb	*Epilobium parviflorum*	FACW	pgpf	Mile-a-minute	*Polygonum perfoliatum*	FAC-
fasa	Giant knotweed	*Fallopia sachalinensis*	OBLW	puera	Kudzu-vine	*Pueraria lobata*	FAC-
gldi	Mudmats	*Glossostigma diandrum*	OBLW	pysp1	Apple/crabapple/pear	*Pyrus sp.*	FAC?
hola	Velvetgrass	*Holcus lanatus*	FAC	rhfr	Glossy Buckthorn	*Rhamnus frangula*	FAC-
huja	Japanese Hops	*Humulus japonicus*	FACU	romu	Multiflora rose	*Rosa multiflora*	FACU
loja	Japanese honeysuckle	*Lonicera japonica*	FAC-	tyan	Cattail (hybrid)	*Typha angustifolia*	OBLW
lomo	Morrow's honeysuckle	*Lonicera morrowii*	NI	tygl	Hybrid cattail	*Typha x glauca*	OBLW
lota	Tartarian honeysuckle	*Lonicera tatarica*					

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

STRESSOR WORKSHEET

2/4/2017

	Occurrence in AA		
	Y	#'s	N
Vegetation Alteration			
Mowing	1		
Moderate livestock grazing (within one year)	1		
Crops (annual row crops, within one year)			
Selective tree harvesting/cutting (>50% removal, within 5 years)			
Right-of-way clearing (mechanical or chemical)			
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)			
Removal of woody debris			
Aquatic weed control (mechanical or herbicide)			
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)			
Plantation (conversion from typical natural tree species, including orchards)			
Other:			
Total Number:	**2**		
Hydrologic Modification			
Ditching, tile draining, or other dewatering methods			
Dike/weir/dam			
Filling/grading			
Dredging/excavation			
Stormwater inputs (culvert or similar concentrated urban runoff)	1		
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)			
Dead or dying trees (trunks still standing) *			
Stream alteration (channelization or incision)			
Other:			
Total Number:	**1**		
Sedimentation			
Sediment deposits/plumes			
Eroding banks/slopes	1		
Active construction (earth disturbance for development)			
Active plowing (plowing for crop planting in past year)			
Intensive livestock grazing (in one year, ground is >50% bare)	1		
Active selective forestry harvesting (within one year)			
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)			
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)			
Other:			
Total Number:	**2**		
Eutrophication			
Direct discharges from agricultural feedlots, manure pits, etc.			
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.			
Heavy or moderately heavy formation of algal mats			
Other:			
Total Number:	**0**		
Contaminant/Toxicity			
Severe vegetation stress (source unknown or suspected)	1		
Obvious spills, discharges, plumes, odors, etc.			
Acidic drainages (mined sites, quarries, road cuts)			
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites			
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)			
Fish or wildlife kills or obvious disease or abnormalities observed			
Excessive garbage/dumping			
Other:			
Total Number:	**1**		

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
60536988	Falcon Ethane Pipeline Project	6/28/2017	0.0755	W-PA-151012-MRK-002	0.92

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Resource Identifier:			
Matt Kline, Janna Napoli	40.360531	-80.270062	Classification:	PEM	Delineated Area (acres):	0.9243

General Comments:

1. Wetland Zone of Influence Condition Index

	Condition Category																				
	Optimal					Suboptimal					Marginal					Poor					
Wetland Zone of Influence (300 foot area around AA perimeter)	ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					**High Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				**Low Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				**Low Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				**Low Poor:** ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	CI = Total Score/20
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Total Score = SUM(%Areas*Scores)

	Condition Category:	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Total Score:	CI
Scoring:	% ZOI Area:	6%	0%	0%	64%	0%	26%	4%		
	Score:	16	0	0	9	0	4	1		
	Total Sub-score:	0.94	0.00	0.00	5.76	0.00	1.03	0.04	7.78	0.39

Comments:

2. Roadbed Presence Index

	Condition Categories																				
	Optimal					Suboptimal					Marginal					Poor					
a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	**High Optimal:** No roadbeds present within 100 feet of the AA boundary			**Low Optimal:** Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.		**High Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4.				**Low Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6.	**High Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8.				**Low Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10.	**High Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.				**Low Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: Roadbed 0-100 Total score is 1

	Condition Categories																				
	Optimal					Suboptimal					Marginal					Poor					
b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	**High Optimal:** No roadbeds present within 100 - 300 feet of the AA boundary			**Low Optimal:** Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.		**High Suboptimal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4.				**Low Suboptimal:** Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6.	**High Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8.				**Low Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10.	**High Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12.				**Low Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.	CI = Total Score/20
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: Roadbed 100-300 Total score is 1

	Condition Score	Weighting	Sub-Scores	
a. Roadbed 0-100:	17	* (0.67)	11	
b. Roadbed 100-300:	17	* (0.33)	6	
		Total Score:	**17**	**0.85**

Comments:

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
a. Invasive Species Presence	**High Optimal:** No invasives present. **Low Optimal:** <5% of the total AA contains invasive species.	**High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species.	**High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species.	> 50% of the total AA contains invasive species.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total % relative cover of all invasives, collectively on site is 100

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
b. Vegetation Stressor Presence	**High Optimal:** No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary.	**High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary.	**High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary.	Greater than five vegetation stressors present within the AA boundary.	**CI = Total Score/40**
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of vegetation stressors present - 0

a. Invasive Sub-Score:	1	**Total Score:**	
b. Vegetation Sub-Score:	18	**19**	**0.48**

4. Hydrologic Modification Index

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
Hydrologic Modification Stressor Presence	**High Optimal:** No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary.	**High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary.	**High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary.	Greater than five hydrologic stressors present within the AA boundary.	**CI = Total Score/20**
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	**0.80**

Comments: Total number of hydrologic modifications present - 1

Score:	16

5. Sediment Stressor Index

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
Sediment Stressor Presence	**High Optimal:** No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary.	**High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary.	**High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary.	Greater than five sediment stressors present within the AA boundary.	**CI = Total Score/20**
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	**0.90**

Comments: Total number of sediment stressors present - 0

Score:	18

6. Water Quality Stressor Index

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
a. Eutro- phication Stressor Presence	No eutrophication stressors present within the AA boundary.	One eutrophication stressors present within the AA boundary.	Two eutrophication stressors present within the AA boundary.	Three eutrophication stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of Eutrophication stressors present - 0

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
b. Contaminant / Toxicity Stressor Presence	No contaminant / toxicity stressors present within the AA boundary.	One contaminant / toxicitystressors present within the AA boundary.	Two contaminant / toxicity stressors present within the AA boundary.	Three contaminant / toxicity stressors present within the AA boundary.	**CI = Total Score/40**
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of Contaminant/Toxicity stressors present - 1

a. Eutrophication Score	16	**Total Score:**	**0.78**
b. Contaminant Score	15	**31**	

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	**Overall Condition Index:**	**0.70**

Wetland ZOI Worksheet					
Desktop Review			**Field View**		
Condition Category	Size (Ac)	Percentage	Condition Category	Size (Ac)	Percentage
Optimal	0.76	6%	Optimal	0.76	6%
High Suboptimal	0.00	0%	High Suboptimal	0.00	0%
Low Suboptimal	0.00	0%	Low Suboptimal	0.00	0%
High Marginal	8.26	64%	High Marginal	8.26	64%
Low Marginal	0.00	0%	Low Marginal	0.00	0%
High Poor	3.33	26%	High Poor	3.33	26%
Low Poor	0.55	4%	Low Poor	0.55	4%
Calculated total area	12.90	100%	Calculated total area	12.90	100%

Enter Total Area 12.90 From ZOI shapefile

Calculated total area and Entered Total Area must be equal

Optimal

ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor

ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor

ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier		Date	Name(s) of Evaluator(s)
Falcon Ethane Pipeline Project		6/28/2017	Matt Kline, Janna Napoli
Resource Identifier / AA #	**Lat (dd)**	**Long (dd)**	**Notes:**
W-PA-151012-MRK-002	40.360531	-80.270062	#VALUE!

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.	0	4	0	100-300 ft.	0	4	0
2 Lane Paved	0-100 ft.	0	2	0	100-300 ft.	0	2	0
1 Lane Paved	0-100 ft.	1	1	1	100-300 ft.	1	1	1
Gravel Road	0-100 ft.	0	1	0	100-300 ft.	0	1	0
Dirt Road	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Railroad	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Other Roadbeds	0-100 ft.	0	1, 2 or 4	0	100-300 ft.	0	1, 2 or 4	0
Total Scores:	0-100 ft.	1			100-300 ft.	1		

Road Comments:

Pennsylvania Wetland Condition Level 2 Rapid Assessment
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **YES**

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	*Species Code*	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%
phau7				100					

Total % relative cover of all invasives, collectively on site: 100 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	*Scientific*	Status	Code	Common Name	*Scientific*	Status
aggi2	Redtop	*Agrostis gigantea*	FACW	luhe	Water primrose	*Ludwigia hexapetala*	OBLW
algl2	European Alder	*Alnus glutinosa*	FACW	lyvu	Garden loosestrife	*Lysimachia vulgaris*	OBLW
arhi3	Carpetgrass	*Arthraxon hispidus*	FAC-	lysa2	Purple loosestrife	*Lythrum salicaria*	FACW
beth	Japanese barberry	*Berberis thunbergii*	FACW	maqu	European waterclover	*Marsilea quadrifolia*	OBLW
bevu	European barberry	*Berberis vulgaris*	FACW	mivi	Japanese stiltgrass	*Microstegium vimineum*	FAC
butom	Flowering Rush	*Butomus umbellatus*	OBLW	nami2	Water cress	*Nasturtium officinale*	OBLW
calli6	Pond water-starwort	*Callitriche stagnalis*	OBLW	pelo	Low smartweed	*Persicaria longiseta*	FACW
egde	Brazilian waterweed	*Egeria densa*	OBLW	phar	Reed canary grass	*Phalaris arundinacea*	FACW
elan	Russian olive	*Elaeagnus angustifolia*	FACU	phau7	Common Reed	*Phragmites australis*	OBLW
elum	Autumn olive	*Elaeagnus umbellata*	FACU	potr	Rough bluegrass	*Poa trivialis*	FACW
ephi	Hairy willow-herb	*Epilobium hirsutum*	FACW	pocu6	Japanese knotweed	*Polygonum (Faloia) cuspidatum*	FAC-
eppa5	Willow-herb	*Epilobium parviflorum*	FACW	pgpf	Mile-a-minute	*Polygonum perfoliatum*	FAC-
fasa	Giant knotweed	*Fallopia sachalinensis*	OBLW	puera	Kudzu-vine	*Pueraria lobata*	FAC-
gldi	Mudmats	*Glossostigma diandrum*	OBLW	pysp1	Apple/crabapple/pear	*Pyrus sp.*	FAC?
hola	Velvetgrass	*Holcus lanatus*	FAC	rhfr	Glossy Buckthorn	*Rhamnus frangula*	FAC-
huja	Japanese Hops	*Humulus japonicus*	FACU	romu	Multiflora rose	*Rosa multiflora*	FACU
loja	Japanese honeysuckle	*Lonicera japonica*	FAC-	tyan	Cattail (hybrid)	*Typha angustifolia*	OBLW
lomo	Morrow's honeysuckle	*Lonicera morrowii*	NI	tygl	Hybrid cattail	*Typha x glauca*	OBLW
lota	Tartarian honeysuckle	*Lonicera tatarica*					

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

STRESSOR WORKSHEET

2/4/2017

	Occurrence in AA		
	Y	#'s	N
Vegetation Alteration			
Mowing			
Moderate livestock grazing (within one year)			
Crops (annual row crops, within one year)			
Selective tree harvesting/cutting (>50% removal, within 5 years)			
Right-of-way clearing (mechanical or chemical)			
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)			
Removal of woody debris			
Aquatic weed control (mechanical or herbicide)			
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)			
Plantation (conversion from typical natural tree species, including orchards)			
Other:			
Total Number:	**0**		
Hydrologic Modification			
Ditching, tile draining, or other dewatering methods	1		
Dike/weir/dam			
Filling/grading			
Dredging/excavation			
Stormwater inputs (culvert or similar concentrated urban runoff)			
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)			
Dead or dying trees (trunks still standing) *			
Stream alteration (channelization or incision)			
Other:			
Total Number:	**1**		
Sedimentation			
Sediment deposits/plumes			
Eroding banks/slopes			
Active construction (earth disturbance for development)			
Active plowing (plowing for crop planting in past year)			
Intensive livestock grazing (in one year, ground is >50% bare)			
Active selective forestry harvesting (within one year)			
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)			
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)			
Other:			
Total Number:	**0**		
Eutrophication			
Direct discharges from agricultural feedlots, manure pits, etc.			
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.			
Heavy or moderately heavy formation of algal mats			
Other:			
Total Number:	**0**		
Contaminant/Toxicity			
Severe vegetation stress (source unknown or suspected)			
Obvious spills, discharges, plumes, odors, etc.			
Acidic drainages (mined sites, quarries, road cuts)	1		
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites			
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)			
Fish or wildlife kills or obvious disease or abnormalities observed			
Excessive garbage/dumping			
Other:			
Total Number:	**1**		

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
60536988	Falcon Ethane Pipeline Project	6/28/2017	0.0245	W-PA-151012-MRK-003	0.04

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Resource Identifier:			
Matt Kline, Janna Napoli	40.368275	-80.271857	Classification:	PEM	Delineated Area (acres):	0.0426

General Comments:

1. Wetland Zone of Influence Condition Index

	Condition Category																				
	Optimal					Suboptimal					Marginal					Poor					
Wetland Zone of Influence (300 foot area around AA perimeter)	ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					**High Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				**Low Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				**Low Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				**Low Poor:** ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	CI = Total Score/20
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Total Score = SUM(%Areas*Scores)

	Condition Category:	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Total Score:	CI
Scoring:	% ZOI Area:	1%	0%	0%	0%	0%	99%	0%		
	Score:	16	0	0	0	0	4	0		
	Total Sub-score:	0.16	0.00	0.00	0.00	0.00	3.96	0.00	4.12	0.21

Comments:

2. Roadbed Presence Index

	Condition Categories																				
	Optimal					Suboptimal					Marginal					Poor					
a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	**High Optimal:** No roadbeds present within 100 feet of the AA boundary			**Low Optimal:** Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.		**High Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4.				**Low Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6.	**High Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8.				**Low Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10.	**High Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.				**Low Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: Roadbed 0-100 Total score is 0

	Condition Categories																				
	Optimal					Suboptimal					Marginal					Poor					
b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	**High Optimal:** No roadbeds present within 100 - 300 feet of the AA boundary			**Low Optimal:** Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.		**High Suboptimal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4.				**Low Suboptimal:** Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6.	**High Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8.				**Low Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10.	**High Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12.				**Low Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.	CI = Total Score/20
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: Roadbed 100-300 Total score is 0

	Condition Score	Weighting	Sub-Scores	
a. Roadbed 0-100:	19	* (0.67)	13	
b. Roadbed 100-300:	19	* (0.33)	6	
		Total Score:	**19**	**0.95**

Comments:

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category				
a. Invasive Species Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	
	High Optimal: No invasives present. **Low Optimal:** <5% of the total AA contains invasive species.	**High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species.	**High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species.	> 50% of the total AA contains invasive species.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total % relative cover of all invasives, collectively on site is 90

	Condition Category				
b. Vegetation Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/40**
	High Optimal: No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary.	**High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary.	**High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary.	Greater than five vegetation stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of vegetation stressors present - 0

a. Invasive Sub-Score:	3	**Total Score:**	
b. Vegetation Sub-Score:	18	**21**	**0.53**

4. Hydrologic Modification Index

	Condition Category				
Hydrologic Modification Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/20**
	High Optimal: No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary.	**High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary.	**High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary.	Greater than five hydrologic stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of hydrologic modifications present - 3

Score:	11	**0.55**

5. Sediment Stressor Index

	Condition Category				
Sediment Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/20**
	High Optimal: No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary.	**High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary.	**High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary.	Greater than five sediment stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of sediment stressors present - 0

Score:	18	**0.90**

6. Water Quality Stressor Index

	Condition Category				
a. Eutro- phication Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	
	No eutrophication stressors present within the AA boundary.	One eutrophication stressors present within the AA boundary.	Two eutrophication stressors present within the AA boundary.	Three eutrophication stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of Eutrophication stressors present - 0

	Condition Category				
b. Contaminant / Toxicity Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/40**
	No contaminant / toxicity stressors present within the AA boundary.	One contaminant / toxicitystressors present within the AA boundary.	Two contaminant / toxicity stressors present within the AA boundary.	Three contaminant / toxicity stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of Contaminant/Toxicity stressors present - 1

a. Eutrophication Score	16	**Total Score:**	
b. Contaminant Score	13	**29**	**0.73**

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	**Overall Condition Index:**	**0.64**

Wetland ZOI Worksheet					
Desktop Review			**Field View**		
Condition Category	Size (Ac)	Percentage	Condition Category	Size (Ac)	Percentage
Optimal	0.08	1%	Optimal	0.08	1%
High Suboptimal	0.00	0%	High Suboptimal	0.00	0%
Low Suboptimal	0.00	0%	Low Suboptimal	0.00	0%
High Marginal	0.00	0%	High Marginal	0.00	0%
Low Marginal	0.00	0%	Low Marginal	0.00	0%
High Poor	8.15	99%	High Poor	8.15	99%
Low Poor	0.00	0%	Low Poor	0.00	0%
Calculated total area	8.23	100%	Calculated total area	8.23	100%

Enter Total Area 8.23 From ZOI shapefile

Calculated total area and Entered Total Area must be equal

Optimal

ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor

ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor

ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier		Date	Name(s) of Evaluator(s)
Falcon Ethane Pipeline Project		6/28/2017	Matt Kline, Janna Napoli
Resource Identifier / AA #	**Lat (dd)**	**Long (dd)**	**Notes:**
W-PA-151012-MRK-003	40.368275	-80.271857	#VALUE!

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.	0	4	0	100-300 ft.	0	4	0
2 Lane Paved	0-100 ft.	0	2	0	100-300 ft.	0	2	0
1 Lane Paved	0-100 ft.	0	1	0	100-300 ft.	0	1	0
Gravel Road	0-100 ft.	0	1	0	100-300 ft.	0	1	0
Dirt Road	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Railroad	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Other Roadbeds	0-100 ft.	0	1, 2 or 4	0	100-300 ft.	0	1, 2 or 4	0
Total Scores:	0-100 ft.	0			100-300 ft.	0		

Road Comments:

Pennsylvania Wetland Condition Level 2 Rapid Assessment
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **YES**

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	*Species Code*	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%
tyan				90					

Total % relative cover of all invasives, collectively on site: 90 **%**

Comments:

Common Invasives/Aggressives List

Code	Common Name	*Scientific*	Status	Code	Common Name	*Scientific*	Status
aggi2	Redtop	*Agrostis gigantea*	FACW	luhe	Water primrose	*Ludwigia hexapetala*	OBLW
algl2	European Alder	*Alnus glutinosa*	FACW	lyvu	Garden loosestrife	*Lysimachia vulgaris*	OBLW
arhi3	Carpetgrass	*Arthraxon hispidus*	FAC-	lysa2	Purple loosestrife	*Lythrum salicaria*	FACW
beth	Japanese barberry	*Berberis thunbergii*	FACW	maqu	European waterclover	*Marsilea quadrifolia*	OBLW
bevu	European barberry	*Berberis vulgaris*	FACW	mivi	Japanese stiltgrass	*Microstegium vimineum*	FAC
butom	Flowering Rush	*Butomus umbellatus*	OBLW	nami2	Water cress	*Nasturtium officinale*	OBLW
calli6	Pond water-starwort	*Callitriche stagnalis*	OBLW	pelo	Low smartweed	*Persicaria longiseta*	FACW
egde	Brazilian waterweed	*Egeria densa*	OBLW	phar	Reed canary grass	*Phalaris arundinacea*	FACW
elan	Russian olive	*Elaeagnus angustifolia*	FACU	phau7	Common Reed	*Phragmites australis*	OBLW
elum	Autumn olive	*Elaeagnus umbellata*	FACU	potr	Rough bluegrass	*Poa trivialis*	FACW
ephi	Hairy willow-herb	*Epilobium hirsutum*	FACW	pocu6	Japanese knotweed	*Polygonum (Faloia) cuspidatum*	FAC-
eppa5	Willow-herb	*Epilobium parviflorum*	FACW	pgpf	Mile-a-minute	*Polygonum perfoliatum*	FAC-
fasa	Giant knotweed	*Fallopia sachalinensis*	OBLW	puera	Kudzu-vine	*Pueraria lobata*	FAC-
gldi	Mudmats	*Glossostigma diandrum*	OBLW	pysp1	Apple/crabapple/pear	*Pyrus sp.*	FAC?
hola	Velvetgrass	*Holcus lanatus*	FAC	rhfr	Glossy Buckthorn	*Rhamnus frangula*	FAC-
huja	Japanese Hops	*Humulus japonicus*	FACU	romu	Multiflora rose	*Rosa multiflora*	FACU
loja	Japanese honeysuckle	*Lonicera japonica*	FAC-	tyan	Cattail (hybrid)	*Typha angustifolia*	OBLW
lomo	Morrow's honeysuckle	*Lonicera morrowii*	NI	tygl	Hybrid cattail	*Typha x glauca*	OBLW
lota	Tartarian honeysuckle	*Lonicera tatarica*					

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

STRESSOR WORKSHEET

2/4/2017

	Occurrence in AA		
	Y	#'s	N
Vegetation Alteration			
Mowing			
Moderate livestock grazing (within one year)			
Crops (annual row crops, within one year)			
Selective tree harvesting/cutting (>50% removal, within 5 years)			
Right-of-way clearing (mechanical or chemical)			
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)			
Removal of woody debris			
Aquatic weed control (mechanical or herbicide)			
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)			
Plantation (conversion from typical natural tree species, including orchards)			
Other:			
Total Number:	**0**		
Hydrologic Modification			
Ditching, tile draining, or other dewatering methods			
Dike/weir/dam			
Filling/grading	1		
Dredging/excavation	1		
Stormwater inputs (culvert or similar concentrated urban runoff)			
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	1		
Dead or dying trees (trunks still standing) *			
Stream alteration (channelization or incision)			
Other:			
Total Number:	**3**		
Sedimentation			
Sediment deposits/plumes			
Eroding banks/slopes			
Active construction (earth disturbance for development)			
Active plowing (plowing for crop planting in past year)			
Intensive livestock grazing (in one year, ground is >50% bare)			
Active selective forestry harvesting (within one year)			
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)			
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)			
Other:			
Total Number:	**0**		
Eutrophication			
Direct discharges from agricultural feedlots, manure pits, etc.			
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.			
Heavy or moderately heavy formation of algal mats			
Other:			
Total Number:	**0**		
Contaminant/Toxicity			
Severe vegetation stress (source unknown or suspected)			
Obvious spills, discharges, plumes, odors, etc.			
Acidic drainages (mined sites, quarries, road cuts)	1		
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites			
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)			
Fish or wildlife kills or obvious disease or abnormalities observed			
Excessive garbage/dumping			
Other:			
Total Number:	**1**		

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
60536988	Falcon Ethane Pipeline Project	6/28/2017	0.0148	W-PA-151203-MRK-001	0.05

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Resource Identifier:			
Matt Kline, Janna Napoli	40.374230	-80.274986	Classification:	PEM	Delineated Area (acres):	0.0534

General Comments:

1. Wetland Zone of Influence Condition Index

	Condition Category																					
	Optimal					Suboptimal					Marginal					Poor						
Wetland Zone of Influence (300 foot area around AA perimeter)	ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.					CI = Total Score/20
	Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.					Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.									
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Total Score = SUM(%Areas*Scores)

	Condition Category:	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor		
Scoring:	% ZOI Area:	1%	0%	0%	0%	0%	81%	18%	Total Score:	CI
	Score:	16	0	0	0	0	4	2		
	Total Sub-score:	0.10	0.00	0.00	0.00	0.00	3.22	0.36	3.68	0.18

Comments:

2. Roadbed Presence Index

	Condition Categories																					
	Optimal					Suboptimal					Marginal					Poor						
a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	High Optimal: No roadbeds present within 100 feet of the AA boundary			Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.		High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4.			Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6.		High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8.			Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10.		High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.			Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		

Comments: Roadbed 0-100 Total score is 1

	Condition Categories																					
	Optimal					Suboptimal					Marginal					Poor						
b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary			Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.		High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4.			Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6.		High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8.			Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10.		High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12.			Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.		CI = Total Score/20
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		

Comments: Roadbed 100-300 Total score is 2

	Condition Score	Weighting	Sub-Scores	
a. Roadbed 0-100:	17	* (0.67)	11	
b. Roadbed 100-300:	16	* (0.33)	5	
		Total Score:	17	0.83

Comments:

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
a. Invasive Species Presence	**High Optimal:** No invasives present. **Low Optimal:** <5% of the total AA contains invasive species.	**High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species.	**High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species.	> 50% of the total AA contains invasive species.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total % relative cover of all invasives, collectively on site is 100

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
b. Vegetation Stressor Presence	**High Optimal:** No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary.	**High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary.	**High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary.	Greater than five vegetation stressors present within the AA boundary.	**CI = Total Score/40**
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of vegetation stressors present - 1

a. Invasive Sub-Score:	1	**Total Score:**	
b. Vegetation Sub-Score:	17	**18**	**0.45**

4. Hydrologic Modification Index

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
Hydrologic Modification Stressor Presence	**High Optimal:** No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary.	**High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary.	**High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary.	Greater than five hydrologic stressors present within the AA boundary.	**CI = Total Score/20**
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	**0.45**

Comments: Total number of hydrologic modifications present - 4

Score:	9

5. Sediment Stressor Index

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
Sediment Stressor Presence	**High Optimal:** No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary.	**High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary.	**High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary.	Greater than five sediment stressors present within the AA boundary.	**CI = Total Score/20**
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	**0.90**

Comments: Total number of sediment stressors present - 0

Score:	18

6. Water Quality Stressor Index

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
a. Eutro- phication Stressor Presence	No eutrophication stressors present within the AA boundary.	One eutrophication stressors present within the AA boundary.	Two eutrophication stressors present within the AA boundary.	Three eutrophication stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of Eutrophication stressors present - 0

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
b. Contaminant / Toxicity Stressor Presence	No contaminant / toxicity stressors present within the AA boundary.	One contaminant / toxicitystressors present within the AA boundary.	Two contaminant / toxicity stressors present within the AA boundary.	Three contaminant / toxicity stressors present within the AA boundary.	**CI = Total Score/40**
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of Contaminant/Toxicity stressors present - 1

a. Eutrophication Score	16	**Total Score:**	**0.73**
b. Contaminant Score	13	**29**	

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	**Overall Condition Index:**	**0.59**

Wetland ZOI Worksheet					
Desktop Review			**Field View**		
Condition Category	Size (Ac)	Percentage	Condition Category	Size (Ac)	Percentage
Optimal	0.05	1%	Optimal	0.05	1%
High Suboptimal	0.00	0%	High Suboptimal	0.00	0%
Low Suboptimal	0.00	0%	Low Suboptimal	0.00	0%
High Marginal	0.00	0%	High Marginal	0.00	0%
Low Marginal	0.00	0%	Low Marginal	0.00	0%
High Poor	6.44	81%	High Poor	6.44	81%
Low Poor	1.50	18%	Low Poor	1.50	18%
Calculated total area	7.99	100%	Calculated total area	7.99	100%

Enter Total Area 7.99 From ZOI shapefile

Calculated total area and Entered Total Area must be equal

Optimal

ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor

ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor

ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier		Date	Name(s) of Evaluator(s)
Falcon Ethane Pipeline Project		6/28/2017	Matt Kline, Janna Napoli
Resource Identifier / AA #	**Lat (dd)**	**Long (dd)**	**Notes:**
W-PA-151203-MRK-001	40.374230	-80.274986	#VALUE!

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.	0	4	0	100-300 ft.	0	4	0
2 Lane Paved	0-100 ft.	0	2	0	100-300 ft.	0	2	0
1 Lane Paved	0-100 ft.	0	1	0	100-300 ft.	0	1	0
Gravel Road	0-100 ft.	1	1	1	100-300 ft.	2	1	2
Dirt Road	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Railroad	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Other Roadbeds	0-100 ft.	0	1, 2 or 4	0	100-300 ft.	0	1, 2 or 4	0
Total Scores:	0-100 ft.	1			100-300 ft.	2		

Road Comments:

Pennsylvania Wetland Condition Level 2 Rapid Assessment
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **YES**

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	*Species Code*	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%
tyan				100					

Total % relative cover of all invasives, collectively on site: 100 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	*Scientific*	Status	Code	Common Name	*Scientific*	Status
aggi2	Redtop	*Agrostis gigantea*	FACW	luhe	Water primrose	*Ludwigia hexapetala*	OBLW
algl2	European Alder	*Alnus glutinosa*	FACW	lyvu	Garden loosestrife	*Lysimachia vulgaris*	OBLW
arhi3	Carpetgrass	*Arthraxon hispidus*	FAC-	lysa2	Purple loosestrife	*Lythrum salicaria*	FACW
beth	Japanese barberry	*Berberis thunbergii*	FACW	maqu	European waterclover	*Marsilea quadrifolia*	OBLW
bevu	European barberry	*Berberis vulgaris*	FACW	mivi	Japanese stiltgrass	*Microstegium vimineum*	FAC
butom	Flowering Rush	*Butomus umbellatus*	OBLW	nami2	Water cress	*Nasturtium officinale*	OBLW
calli6	Pond water-starwort	*Callitriche stagnalis*	OBLW	pelo	Low smartweed	*Persicaria longiseta*	FACW
egde	Brazilian waterweed	*Egeria densa*	OBLW	phar	Reed canary grass	*Phalaris arundinacea*	FACW
elan	Russian olive	*Elaeagnus angustifolia*	FACU	phau7	Common Reed	*Phragmites australis*	OBLW
elum	Autumn olive	*Elaeagnus umbellata*	FACU	potr	Rough bluegrass	*Poa trivialis*	FACW
ephi	Hairy willow-herb	*Epilobium hirsutum*	FACW	pocu6	Japanese knotweed	*Polygonum (Faloia) cuspidatum*	FAC-
eppa5	Willow-herb	*Epilobium parviflorum*	FACW	pgpf	Mile-a-minute	*Polygonum perfoliatum*	FAC-
fasa	Giant knotweed	*Fallopia sachalinensis*	OBLW	puera	Kudzu-vine	*Pueraria lobata*	FAC-
gldi	Mudmats	*Glossostigma diandrum*	OBLW	pysp1	Apple/crabapple/pear	*Pyrus sp.*	FAC?
hola	Velvetgrass	*Holcus lanatus*	FAC	rhfr	Glossy Buckthorn	*Rhamnus frangula*	FAC-
huja	Japanese Hops	*Humulus japonicus*	FACU	romu	Multiflora rose	*Rosa multiflora*	FACU
loja	Japanese honeysuckle	*Lonicera japonica*	FAC-	tyan	Cattail (hybrid)	*Typha angustifolia*	OBLW
lomo	Morrow's honeysuckle	*Lonicera morrowii*	NI	tygl	Hybrid cattail	*Typha x glauca*	OBLW
lota	Tartarian honeysuckle	*Lonicera tatarica*					

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

STRESSOR WORKSHEET

2/4/2017

	Occurrence in AA		
	Y	#'s	N
Vegetation Alteration			
Mowing	1		
Moderate livestock grazing (within one year)			
Crops (annual row crops, within one year)			
Selective tree harvesting/cutting (>50% removal, within 5 years)			
Right-of-way clearing (mechanical or chemical)			
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)			
Removal of woody debris			
Aquatic weed control (mechanical or herbicide)			
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)			
Plantation (conversion from typical natural tree species, including orchards)			
Other:			
Total Number:	**1**		
Hydrologic Modification			
Ditching, tile draining, or other dewatering methods			
Dike/weir/dam			
Filling/grading	1		
Dredging/excavation	1		
Stormwater inputs (culvert or similar concentrated urban runoff)	1		
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	1		
Dead or dying trees (trunks still standing) *			
Stream alteration (channelization or incision)			
Other:			
Total Number:	**4**		
Sedimentation			
Sediment deposits/plumes			
Eroding banks/slopes			
Active construction (earth disturbance for development)			
Active plowing (plowing for crop planting in past year)			
Intensive livestock grazing (in one year, ground is >50% bare)			
Active selective forestry harvesting (within one year)			
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)			
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)			
Other:			
Total Number:	**0**		
Eutrophication			
Direct discharges from agricultural feedlots, manure pits, etc.			
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.			
Heavy or moderately heavy formation of algal mats			
Other:			
Total Number:	**0**		
Contaminant/Toxicity			
Severe vegetation stress (source unknown or suspected)			
Obvious spills, discharges, plumes, odors, etc.			
Acidic drainages (mined sites, quarries, road cuts)	1		
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites			
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)			
Fish or wildlife kills or obvious disease or abnormalities observed			
Excessive garbage/dumping			
Other:			
Total Number:	**1**		

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
60536988	Falcon Ethane Pipeline Project	6/28/2017	0.0508	W-PA-151203-MRK-005	0.10

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Resource Identifier:			
Matt Kline, Janna Napoli	40.385965	-80.277008	Classification:	PEM	Delineated Area (acres):	0.0996

General Comments:

1. Wetland Zone of Influence Condition Index

	Condition Category																					
	Optimal					Suboptimal					Marginal					Poor						
Wetland Zone of Influence (300 foot area around AA perimeter)	ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.				High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	CI = Total Score/20
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Total Score = SUM(%Areas*Scores)

	Condition Category:	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Total Score:	CI
Scoring:	% ZOI Area:	10%	0%	0%	0%	0%	90%	0%		
	Score:	16	0	0	0	0	4	0		
	Total Sub-score:	1.64	0.00	0.00	0.00	0.00	3.60	0.00	5.24	0.26

1

2. Roadbed Presence Index

	Condition Categories																					
	Optimal					Suboptimal					Marginal					Poor						
a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	High Optimal: No roadbeds present within 100 feet of the AA boundary			Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.		High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6.	High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10.	High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.				Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		

Comments: Roadbed 0-100 Total score is 0

	Condition Categories																					
	Optimal					Suboptimal					Marginal					Poor						
b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary			Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.		High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6.	High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10.	High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12.				Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.	CI = Total Score/20
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		

Comments: Roadbed 100-300 Total score is 0

	Condition Score	Weighting	Sub-Scores	
a. Roadbed 0-100:	19	* (0.67)	13	
b. Roadbed 100-300:	19	* (0.33)	6	
		Total Score:	19	0.95

Comments:

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
a. Invasive Species Presence	**High Optimal:** No invasives present. **Low Optimal:** <5% of the total AA contains invasive species.	**High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species.	**High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species.	> 50% of the total AA contains invasive species.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total % relative cover of all invasives, collectively on site is 0

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
b. Vegetation Stressor Presence	**High Optimal:** No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary.	**High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary.	**High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary.	Greater than five vegetation stressors present within the AA boundary.	**CI = Total Score/40**
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of vegetation stressors present - 2

a. Invasive Sub-Score:	19	**Total Score:**	
b. Vegetation Sub-Score:	14	**33**	**0.83**

4. Hydrologic Modification Index

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
Hydrologic Modification Stressor Presence	**High Optimal:** No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary.	**High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary.	**High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary.	Greater than five hydrologic stressors present within the AA boundary.	**CI = Total Score/20**
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	**0.60**

Comments: Total number of hydrologic modifications present - 3

Score:	12

5. Sediment Stressor Index

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
Sediment Stressor Presence	**High Optimal:** No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary.	**High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary.	**High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary.	Greater than five sediment stressors present within the AA boundary.	**CI = Total Score/20**
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	**0.80**

Comments: Total number of sediment stressors present - 1

Score:	16

6. Water Quality Stressor Index

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
a. Eutro- phication Stressor Presence	No eutrophication stressors present within the AA boundary.	One eutrophication stressors present within the AA boundary.	Two eutrophication stressors present within the AA boundary.	Three eutrophication stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of Eutrophication stressors present - 0

	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
b. Contaminant / Toxicity Stressor Presence	No contaminant / toxicity stressors present within the AA boundary.	One contaminant / toxicitystressors present within the AA boundary.	Two contaminant / toxicity stressors present within the AA boundary.	Three contaminant / toxicity stressors present within the AA boundary.	**CI = Total Score/40**
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of Contaminant/Toxicity stressors present - 1

a. Eutrophication Score	16	**Total Score:**	**0.73**
b. Contaminant Score	13	**29**	

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	**Overall Condition Index:**	**0.69**

Wetland ZOI Worksheet

Desktop Review			Field View		
Condition Category	Size (Ac)	Percentage	Condition Category	Size (Ac)	Percentage
Optimal	0.88	10%	Optimal	0.88	10%
High Suboptimal	0.00	0%	High Suboptimal	0.00	0%
Low Suboptimal	0.00	0%	Low Suboptimal	0.00	0%
High Marginal	0.00	0%	High Marginal	0.00	0%
Low Marginal	0.00	0%	Low Marginal	0.00	0%
High Poor	7.67	90%	High Poor	7.67	90%
Low Poor	0.02	0%	Low Poor	0.02	0%
Calculated total area	8.57	100%	Calculated total area	8.57	100%

Enter Total Area 8.57 From ZOI shapefile

Calculated total area and Entered Total Area must be equal

Optimal

ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor

ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor

ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier		Date	Name(s) of Evaluator(s)
Falcon Ethane Pipeline Project		6/28/2017	Matt Kline, Janna Napoli
Resource Identifier / AA #	**Lat (dd)**	**Long (dd)**	**Notes:**
W-PA-151203-MRK-005	40.385965	-80.277008	#VALUE!

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.	0	4	0	100-300 ft.	0	4	0
2 Lane Paved	0-100 ft.	0	2	0	100-300 ft.	0	2	0
1 Lane Paved	0-100 ft.	0	1	0	100-300 ft.	0	1	0
Gravel Road	0-100 ft.	0	1	0	100-300 ft.	0	1	0
Dirt Road	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Railroad	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Other Roadbeds	0-100 ft.	0	1, 2 or 4	0	100-300 ft.	0	1, 2 or 4	0
Total Scores:	0-100 ft.	0			100-300 ft.	0		

Road Comments:

Pennsylvania Wetland Condition Level 2 Rapid Assessment
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **NO**

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	*Species Code*	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%

Total % relative cover of all invasives, collectively on site: 0 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	*Scientific*	Status	Code	Common Name	*Scientific*	Status
aggi2	Redtop	*Agrostis gigantea*	FACW	luhe	Water primrose	*Ludwigia hexapetala*	OBLW
algl2	European Alder	*Alnus glutinosa*	FACW	lyvu	Garden loosestrife	*Lysimachia vulgaris*	OBLW
arhi3	Carpetgrass	*Arthraxon hispidus*	FAC-	lysa2	Purple loosestrife	*Lythrum salicaria*	FACW
beth	Japanese barberry	*Berberis thunbergii*	FACW	maqu	European waterclover	*Marsilea quadrifolia*	OBLW
bevu	European barberry	*Berberis vulgaris*	FACW	mivi	Japanese stiltgrass	*Microstegium vimineum*	FAC
butom	Flowering Rush	*Butomus umbellatus*	OBLW	nami2	Water cress	*Nasturtium officinale*	OBLW
calli6	Pond water-starwort	*Callitriche stagnalis*	OBLW	pelo	Low smartweed	*Persicaria longiseta*	FACW
egde	Brazilian waterweed	*Egeria densa*	OBLW	phar	Reed canary grass	*Phalaris arundinacea*	FACW
elan	Russian olive	*Elaeagnus angustifolia*	FACU	phau7	Common Reed	*Phragmites australis*	OBLW
elum	Autumn olive	*Elaeagnus umbellata*	FACU	potr	Rough bluegrass	*Poa trivialis*	FACW
ephi	Hairy willow-herb	*Epilobium hirsutum*	FACW	pocu6	Japanese knotweed	*Polygonum (Faloia) cuspidatum*	FAC-
eppa5	Willow-herb	*Epilobium parviflorum*	FACW	pgpf	Mile-a-minute	*Polygonum perfoliatum*	FAC-
fasa	Giant knotweed	*Fallopia sachalinensis*	OBLW	puera	Kudzu-vine	*Pueraria lobata*	FAC-
gldi	Mudmats	*Glossostigma diandrum*	OBLW	pysp1	Apple/crabapple/pear	*Pyrus sp.*	FAC?
hola	Velvetgrass	*Holcus lanatus*	FAC	rhfr	Glossy Buckthorn	*Rhamnus frangula*	FAC-
huja	Japanese Hops	*Humulus japonicus*	FACU	romu	Multiflora rose	*Rosa multiflora*	FACU
loja	Japanese honeysuckle	*Lonicera japonica*	FAC-	tyan	Cattail (hybrid)	*Typha angustifolia*	OBLW
lomo	Morrow's honeysuckle	*Lonicera morrowii*	NI	tygl	Hybrid cattail	*Typha x glauca*	OBLW
lota	Tartarian honeysuckle	*Lonicera tatarica*					

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

STRESSOR WORKSHEET

2/4/2017

	Occurrence in AA		
	Y	#'s	N
Vegetation Alteration			
Mowing	1		
Moderate livestock grazing (within one year)			
Crops (annual row crops, within one year)			
Selective tree harvesting/cutting (>50% removal, within 5 years)			
Right-of-way clearing (mechanical or chemical)	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)			
Removal of woody debris			
Aquatic weed control (mechanical or herbicide)			
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)			
Plantation (conversion from typical natural tree species, including orchards)			
Other:			
Total Number:	**2**		
Hydrologic Modification			
Ditching, tile draining, or other dewatering methods			
Dike/weir/dam			
Filling/grading	1		
Dredging/excavation	1		
Stormwater inputs (culvert or similar concentrated urban runoff)			
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	1		
Dead or dying trees (trunks still standing) *			
Stream alteration (channelization or incision)			
Other:			
Total Number:	**3**		
Sedimentation			
Sediment deposits/plumes			
Eroding banks/slopes			
Active construction (earth disturbance for development)	1		
Active plowing (plowing for crop planting in past year)			
Intensive livestock grazing (in one year, ground is >50% bare)			
Active selective forestry harvesting (within one year)			
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)			
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)			
Other:			
Total Number:	**1**		
Eutrophication			
Direct discharges from agricultural feedlots, manure pits, etc.			
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.			
Heavy or moderately heavy formation of algal mats			
Other:			
Total Number:	**0**		
Contaminant/Toxicity			
Severe vegetation stress (source unknown or suspected)			
Obvious spills, discharges, plumes, odors, etc.			
Acidic drainages (mined sites, quarries, road cuts)	1		
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites			
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)			
Fish or wildlife kills or obvious disease or abnormalities observed			
Excessive garbage/dumping			
Other:			
Total Number:	**1**		

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
60536988	Falcon Ethane Pipeline Project	6/28/2017	0.0106	W-PA-151203-MRK-006	0.91

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Resource Identifier:			
Matt Kline, Janna Napoli	40.386263	-80.277401	Classification:	POW	Delineated Area (acres):	0.9127

General Comments:

1. Wetland Zone of Influence Condition Index

	Condition Category																				
	Optimal					Suboptimal					Marginal					Poor					
Wetland Zone of Influence (300 foot area around AA perimeter)	ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					**High Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				**Low Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	**High Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				**Low Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	**High Poor:** ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				**Low Poor:** ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	CI = Total Score/20
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Total Score = SUM(%Areas*Scores)

	Condition Category:	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Total Score:	CI
Scoring:	% ZOI Area:	9%	0%	0%	0%	0%	91%	0%		
	Score:	16	0	0	0	0	4	0		
	Total Sub-score:	1.42	0.00	0.00	0.00	0.00	3.64	0.00	5.07	0.25

Comments:

2. Roadbed Presence Index

	Condition Categories																				
	Optimal					Suboptimal					Marginal					Poor					
a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	**High Optimal:** No roadbeds present within 100 feet of the AA boundary			**Low Optimal:** Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.		**High Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4.				**Low Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6.	**High Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8.				**Low Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10.	**High Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.				**Low Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: Roadbed 0-100 Total score is 0

	Condition Categories																				
	Optimal					Suboptimal					Marginal					Poor					
b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	**High Optimal:** No roadbeds present within 100 - 300 feet of the AA boundary			**Low Optimal:** Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.		**High Suboptimal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4.				**Low Suboptimal:** Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6.	**High Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8.				**Low Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10.	**High Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12.				**Low Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.	CI = Total Score/20
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: Roadbed 100-300 Total score is 0

	Condition Score	Weighting	Sub-Scores	
a. Roadbed 0-100:	19	* (0.67)	13	
b. Roadbed 100-300:	19	* (0.33)	6	
		Total Score:	**19**	**0.95**

Comments:

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category				
a. Invasive Species Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	
	High Optimal: No invasives present. **Low Optimal:** <5% of the total AA contains invasive species.	**High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species.	**High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species.	> 50% of the total AA contains invasive species.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total % relative cover of all invasives, collectively on site is 20

	Condition Category				
b. Vegetation Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/40**
	High Optimal: No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary.	**High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary.	**High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary.	Greater than five vegetation stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of vegetation stressors present - 0

a. Invasive Sub-Score:	10	**Total Score:**	
b. Vegetation Sub-Score:	18	**28**	**0.70**

4. Hydrologic Modification Index

	Condition Category				
Hydrologic Modification Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/20**
	High Optimal: No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary.	**High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary.	**High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary.	Greater than five hydrologic stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of hydrologic modifications present - 4

Score:	9	**0.45**

5. Sediment Stressor Index

	Condition Category				
Sediment Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/20**
	High Optimal: No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary.	**High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary.	**High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary.	Greater than five sediment stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of sediment stressors present - 1

Score:	17	**0.85**

6. Water Quality Stressor Index

	Condition Category				
a. Eutro- phication Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	
	No eutrophication stressors present within the AA boundary.	One eutrophication stressors present within the AA boundary.	Two eutrophication stressors present within the AA boundary.	Three eutrophication stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of Eutrophication stressors present - 1

	Condition Category				
b. Contaminant / Toxicity Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/40**
	No contaminant / toxicity stressors present within the AA boundary.	One contaminant / toxicitystressors present within the AA boundary.	Two contaminant / toxicity stressors present within the AA boundary.	Three contaminant / toxicity stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of Contaminant/Toxicity stressors present - 1

a. Eutrophication Score	13	**Total Score:**	
b. Contaminant Score	13	**26**	**0.65**

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	**Overall Condition Index:**	**0.64**

Wetland ZOI Worksheet					
Desktop Review			**Field View**		
Condition Category	Size (Ac)	Percentage	Condition Category	Size (Ac)	Percentage
Optimal	1.20	9%	Optimal	1.20	9%
High Suboptimal	0.00	0%	High Suboptimal	0.00	0%
Low Suboptimal	0.00	0%	Low Suboptimal	0.00	0%
High Marginal	0.00	0%	High Marginal	0.00	0%
Low Marginal	0.00	0%	Low Marginal	0.00	0%
High Poor	12.30	91%	High Poor	12.30	91%
Low Poor	0.00	0%	Low Poor	0.00	0%
Calculated total area	13.50	100%	Calculated total area	13.50	100%

Enter Total Area 13.50 From ZOI shapefile

Calculated total area and Entered Total Area must be equal

Optimal

ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor

ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor

ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier		Date	Name(s) of Evaluator(s)
Falcon Ethane Pipeline Project		6/28/2017	Matt Kline, Janna Napoli
Resource Identifier / AA #	**Lat (dd)**	**Long (dd)**	**Notes:**
W-PA-151203-MRK-006	40.386263	-80.277401	#VALUE!

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.	0	4	0	100-300 ft.	0	4	0
2 Lane Paved	0-100 ft.	0	2	0	100-300 ft.	0	2	0
1 Lane Paved	0-100 ft.	0	1	0	100-300 ft.	0	1	0
Gravel Road	0-100 ft.	0	1	0	100-300 ft.	0	1	0
Dirt Road	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Railroad	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Other Roadbeds	0-100 ft.	0	1, 2 or 4	0	100-300 ft.	0	1, 2 or 4	0
Total Scores:	0-100 ft.	0			100-300 ft.	0		

Road Comments:

Pennsylvania Wetland Condition Level 2 Rapid Assessment
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **YES**

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	*Species Code*	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%
tyan			20						

Total % relative cover of all invasives, collectively on site: 20 **%**

Comments:

Common Invasives/Aggressives List

Code	Common Name	*Scientific*	Status	Code	Common Name	*Scientific*	Status
aggi2	Redtop	*Agrostis gigantea*	FACW	luhe	Water primrose	*Ludwigia hexapetala*	OBLW
algl2	European Alder	*Alnus glutinosa*	FACW	lyvu	Garden loosestrife	*Lysimachia vulgaris*	OBLW
arhi3	Carpetgrass	*Arthraxon hispidus*	FAC-	lysa2	Purple loosestrife	*Lythrum salicaria*	FACW
beth	Japanese barberry	*Berberis thunbergii*	FACW	maqu	European waterclover	*Marsilea quadrifolia*	OBLW
bevu	European barberry	*Berberis vulgaris*	FACW	mivi	Japanese stiltgrass	*Microstegium vimineum*	FAC
butom	Flowering Rush	*Butomus umbellatus*	OBLW	nami2	Water cress	*Nasturtium officinale*	OBLW
calli6	Pond water-starwort	*Callitriche stagnalis*	OBLW	pelo	Low smartweed	*Persicaria longiseta*	FACW
egde	Brazilian waterweed	*Egeria densa*	OBLW	phar	Reed canary grass	*Phalaris arundinacea*	FACW
elan	Russian olive	*Elaeagnus angustifolia*	FACU	phau7	Common Reed	*Phragmites australis*	OBLW
elum	Autumn olive	*Elaeagnus umbellata*	FACU	potr	Rough bluegrass	*Poa trivialis*	FACW
ephi	Hairy willow-herb	*Epilobium hirsutum*	FACW	pocu6	Japanese knotweed	*Polygonum (Faloia) cuspidatum*	FAC-
eppa5	Willow-herb	*Epilobium parviflorum*	FACW	pgpf	Mile-a-minute	*Polygonum perfoliatum*	FAC-
fasa	Giant knotweed	*Fallopia sachalinensis*	OBLW	puera	Kudzu-vine	*Pueraria lobata*	FAC-
gldi	Mudmats	*Glossostigma diandrum*	OBLW	pysp1	Apple/crabapple/pear	*Pyrus sp.*	FAC?
hola	Velvetgrass	*Holcus lanatus*	FAC	rhfr	Glossy Buckthorn	*Rhamnus frangula*	FAC-
huja	Japanese Hops	*Humulus japonicus*	FACU	romu	Multiflora rose	*Rosa multiflora*	FACU
loja	Japanese honeysuckle	*Lonicera japonica*	FAC-	tyan	Cattail (hybrid)	*Typha angustifolia*	OBLW
lomo	Morrow's honeysuckle	*Lonicera morrowii*	NI	tygl	Hybrid cattail	*Typha x glauca*	OBLW
lota	Tartarian honeysuckle	*Lonicera tatarica*					

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

STRESSOR WORKSHEET

2/4/2017

	Occurrence in AA		
	Y	#'s	N
Vegetation Alteration			
Mowing			
Moderate livestock grazing (within one year)			
Crops (annual row crops, within one year)			
Selective tree harvesting/cutting (>50% removal, within 5 years)			
Right-of-way clearing (mechanical or chemical)			
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)			
Removal of woody debris			
Aquatic weed control (mechanical or herbicide)			
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)			
Plantation (conversion from typical natural tree species, including orchards)			
Other:			
Total Number:	**0**		
Hydrologic Modification			
Ditching, tile draining, or other dewatering methods	1		
Dike/weir/dam			
Filling/grading	1		
Dredging/excavation	1		
Stormwater inputs (culvert or similar concentrated urban runoff)	1		
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)			
Dead or dying trees (trunks still standing) *			
Stream alteration (channelization or incision)			
Other:			
Total Number:	**4**		
Sedimentation			
Sediment deposits/plumes			
Eroding banks/slopes			
Active construction (earth disturbance for development)			
Active plowing (plowing for crop planting in past year)			
Intensive livestock grazing (in one year, ground is >50% bare)			
Active selective forestry harvesting (within one year)			
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)			
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)	1		
Other:			
Total Number:	**1**		
Eutrophication			
Direct discharges from agricultural feedlots, manure pits, etc.			
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.			
Heavy or moderately heavy formation of algal mats	1		
Other:			
Total Number:	**1**		
Contaminant/Toxicity			
Severe vegetation stress (source unknown or suspected)			
Obvious spills, discharges, plumes, odors, etc.			
Acidic drainages (mined sites, quarries, road cuts)	1		
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites			
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)			
Fish or wildlife kills or obvious disease or abnormalities observed			
Excessive garbage/dumping			
Other:			
Total Number:	**1**		

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
60536988	Falcon Ethane Pipeline Project	6/29/2017	0.1547	W-PA-170113-MRK-007	0.56

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Resource Identifier:			
Matt Kline, Janna Napoli	40.416340	-80.288017	Classification:	PEM	Delineated Area (acres):	0.5621

General Comments:

1. Wetland Zone of Influence Condition Index

	Condition Category																				
	Optimal					Suboptimal					Marginal					Poor					
Wetland Zone of Influence (300 foot area around AA perimeter)	ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.					CI = Total Score/20
	Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.					Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.									
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Total Score = SUM(%Areas*Scores)

	Condition Category:	Optimal	High Suboptimal	Low Suboptimal	High Marginal	Low Marginal	High Poor	Low Poor	Total Score:	CI
Scoring:	% ZOI Area:	68%	0%	0%	0%	22%	5%	5%		
	Score:	16	0	0	0	6	3	1		
	Total Sub-score:	10.95	0.00	0.00	0.00	1.30	0.14	0.05	12.45	0.62

Comments:

2. Roadbed Presence Index

	Condition Categories																				
	Optimal					Suboptimal					Marginal					Poor					
a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	High Optimal: No roadbeds present within 100 feet of the AA boundary				Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.	High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6.	High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10.	High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.				Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: Roadbed 0-100 Total score is 2

	Condition Categories																				
	Optimal					Suboptimal					Marginal					Poor					
b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary				Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.	High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6.	High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10.	High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12.				Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.	CI = Total Score/20
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: Roadbed 100-300 Total score is 2

8

	Condition Score	Weighting	Sub-Scores	
a. Roadbed 0-100:	16	* (0.67)	11	
b. Roadbed 100-300:	16	* (0.33)	5	
		Total Score:	16	0.80

Comments:

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category				
a. Invasive Species Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	
	High Optimal: No invasives present. **Low Optimal:** <5% of the total AA contains invasive species.	**High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species.	**High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species.	> 50% of the total AA contains invasive species.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total % relative cover of all invasives, collectively on site is 76

	Condition Category				
b. Vegetation Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/40**
	High Optimal: No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary.	**High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary.	**High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary.	Greater than five vegetation stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of vegetation stressors present - 0

a. Invasive Sub-Score:	3	**Total Score:**	
b. Vegetation Sub-Score:	18	**21**	**0.53**

4. Hydrologic Modification Index

	Condition Category				
Hydrologic Modification Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/20**
	High Optimal: No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary.	**High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary.	**High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary.	Greater than five hydrologic stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of hydrologic modifications present - 2

Score:	14	**0.70**

5. Sediment Stressor Index

	Condition Category				
Sediment Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/20**
	High Optimal: No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary.	**High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary.	**High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary.	Greater than five sediment stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of sediment stressors present - 1

Score:	16	**0.80**

6. Water Quality Stressor Index

	Condition Category				
a. Eutro- phication Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	
	No eutrophication stressors present within the AA boundary.	One eutrophication stressors present within the AA boundary.	Two eutrophication stressors present within the AA boundary.	Three eutrophication stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of Eutrophication stressors present - 0

	Condition Category				
b. Contaminant / Toxicity Stressor Presence	**Optimal**	**Suboptimal**	**Marginal**	**Poor**	**CI = Total Score/40**
	No contaminant / toxicity stressors present within the AA boundary.	One contaminant / toxicitystressors present within the AA boundary.	Two contaminant / toxicity stressors present within the AA boundary.	Three contaminant / toxicity stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	

Comments: Total number of Contaminant/Toxicity stressors present - 1

a. Eutrophication Score	16	**Total Score:**	
b. Contaminant Score	11	**27**	**0.68**

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	**Overall Condition Index:**	**0.69**

Wetland ZOI Worksheet					
Desktop Review			**Field View**		
Condition Category	Size (Ac)	Percentage	Condition Category	Size (Ac)	Percentage
Optimal	9.79	68%	Optimal	9.79	68%
High Suboptimal	0.00	0%	High Suboptimal	0.00	0%
Low Suboptimal	0.00	0%	Low Suboptimal	0.00	0%
High Marginal	0.00	0%	High Marginal	0.00	0%
Low Marginal	3.10	22%	Low Marginal	3.10	22%
High Poor	0.68	5%	High Poor	0.68	5%
Low Poor	0.73	5%	Low Poor	0.73	5%
Calculated total area	14.30	100%	Calculated total area	14.30	100%

Enter Total Area 14.30 From ZOI shapefile

Calculated total area and Entered Total Area must be equal

Optimal

ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.

High Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.

Low Suboptimal

ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.

High Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.

Low Marginal

ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.

High Poor

ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.

Low Poor

ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier		Date	Name(s) of Evaluator(s)
Falcon Ethane Pipeline Project		6/29/2017	Matt Kline, Janna Napoli
Resource Identifier / AA #	**Lat (dd)**	**Long (dd)**	**Notes:**
W-PA-170113-MRK-007	40.416340	-80.288017	#VALUE!

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.	0	4	0	100-300 ft.	0	4	0
2 Lane Paved	0-100 ft.	0	2	0	100-300 ft.	0	2	0
1 Lane Paved	0-100 ft.	0	1	0	100-300 ft.	0	1	0
Gravel Road	0-100 ft.	0	1	0	100-300 ft.	0	1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.	0	2	0	100-300 ft.	0	2	0
Other Roadbeds	0-100 ft.	0	1, 2 or 4	0	100-300 ft.	0	1, 2 or 4	0
Total Scores:	0-100 ft.	2			100-300 ft.	2		

Road Comments:

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Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **YES**

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	*Species Code*	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%
tyan			**40**						
lomo	4								
phar			30						
elum	2								

Total % relative cover of all invasives, collectively on site: 76 **%**

Comments:

Common Invasives/Aggressives List

Code	Common Name	*Scientific*	Status	Code	Common Name	*Scientific*	Status
aggi2	Redtop	*Agrostis gigantea*	FACW	luhe	Water primrose	*Ludwigia hexapetala*	OBLW
algl2	European Alder	*Alnus glutinosa*	FACW	lyvu	Garden loosestrife	*Lysimachia vulgaris*	OBLW
arhi3	Carpetgrass	*Arthraxon hispidus*	FAC-	lysa2	Purple loosestrife	*Lythrum salicaria*	FACW
beth	Japanese barberry	*Berberis thunbergii*	FACW	maqu	European waterclover	*Marsilea quadrifolia*	OBLW
bevu	European barberry	*Berberis vulgaris*	FACW	mivi	Japanese stiltgrass	*Microstegium vimineum*	FAC
butom	Flowering Rush	*Butomus umbellatus*	OBLW	nami2	Water cress	*Nasturtium officinale*	OBLW
calli6	Pond water-starwort	*Callitriche stagnalis*	OBLW	pelo	Low smartweed	*Persicaria longiseta*	FACW
egde	Brazilian waterweed	*Egeria densa*	OBLW	phar	Reed canary grass	*Phalaris arundinacea*	FACW
elan	Russian olive	*Elaeagnus angustifolia*	FACU	phau7	Common Reed	*Phragmites australis*	OBLW
elum	Autumn olive	*Elaeagnus umbellata*	FACU	potr	Rough bluegrass	*Poa trivialis*	FACW
ephi	Hairy willow-herb	*Epilobium hirsutum*	FACW	pocu6	Japanese knotweed	*Polygonum (Faloia) cuspidatum*	FAC-
eppa5	Willow-herb	*Epilobium parviflorum*	FACW	pgpf	Mile-a-minute	*Polygonum perfoliatum*	FAC-
fasa	Giant knotweed	*Fallopia sachalinensis*	OBLW	puera	Kudzu-vine	*Pueraria lobata*	FAC-
gldi	Mudmats	*Glossostigma diandrum*	OBLW	pysp1	Apple/crabapple/pear	*Pyrus sp.*	FAC?
hola	Velvetgrass	*Holcus lanatus*	FAC	rhfr	Glossy Buckthorn	*Rhamnus frangula*	FAC-
huja	Japanese Hops	*Humulus japonicus*	FACU	romu	Multiflora rose	*Rosa multiflora*	FACU
loja	Japanese honeysuckle	*Lonicera japonica*	FAC-	tyan	Cattail (hybrid)	*Typha angustifolia*	OBLW
lomo	Morrow's honeysuckle	*Lonicera morrowii*	NI	tygl	Hybrid cattail	*Typha x glauca*	OBLW
lota	Tartarian honeysuckle	*Lonicera tatarica*					

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

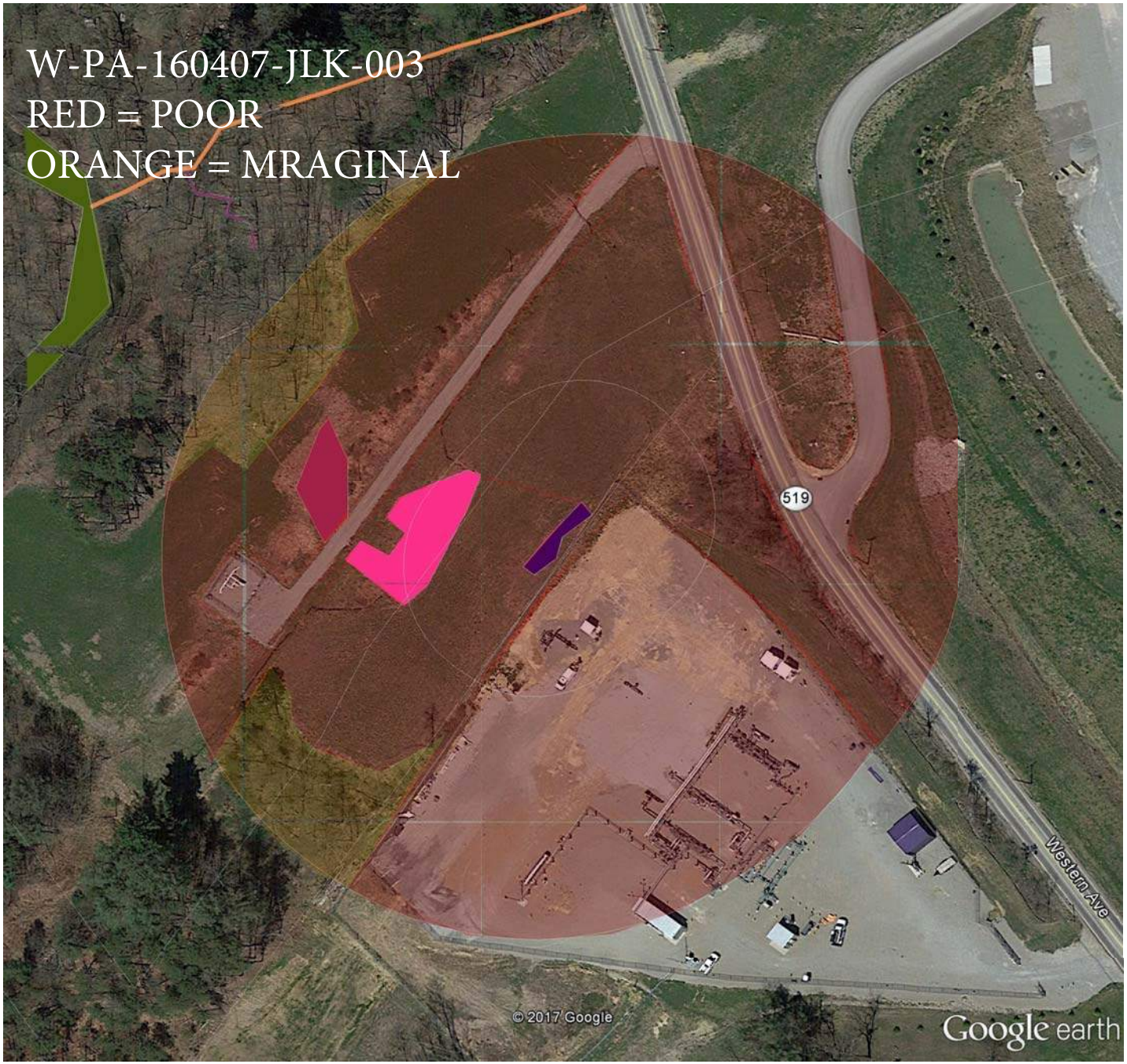
Pennsylvania Department of Environmental Protection

STRESSOR WORKSHEET

2/4/2017

	Occurrence in AA		
	Y	#'s	N
Vegetation Alteration			
Mowing			
Moderate livestock grazing (within one year)			
Crops (annual row crops, within one year)			
Selective tree harvesting/cutting (>50% removal, within 5 years)			
Right-of-way clearing (mechanical or chemical)			
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)			
Removal of woody debris			
Aquatic weed control (mechanical or herbicide)			
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)			
Plantation (conversion from typical natural tree species, including orchards)			
Other:			
Total Number:	**0**		
Hydrologic Modification			
Ditching, tile draining, or other dewatering methods			
Dike/weir/dam			
Filling/grading			
Dredging/excavation			
Stormwater inputs (culvert or similar concentrated urban runoff)	2		
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)			
Dead or dying trees (trunks still standing) *			
Stream alteration (channelization or incision)			
Other:			
Total Number:	**2**		
Sedimentation			
Sediment deposits/plumes			
Eroding banks/slopes	1		
Active construction (earth disturbance for development)			
Active plowing (plowing for crop planting in past year)			
Intensive livestock grazing (in one year, ground is >50% bare)			
Active selective forestry harvesting (within one year)			
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)			
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)			
Other:			
Total Number:	**1**		
Eutrophication			
Direct discharges from agricultural feedlots, manure pits, etc.			
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.			
Heavy or moderately heavy formation of algal mats			
Other:			
Total Number:	**0**		
Contaminant/Toxicity			
Severe vegetation stress (source unknown or suspected)			
Obvious spills, discharges, plumes, odors, etc.			
Acidic drainages (mined sites, quarries, road cuts)	1		
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites			
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)			
Fish or wildlife kills or obvious disease or abnormalities observed			
Excessive garbage/dumping			
Other:			
Total Number:	**1**		

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***



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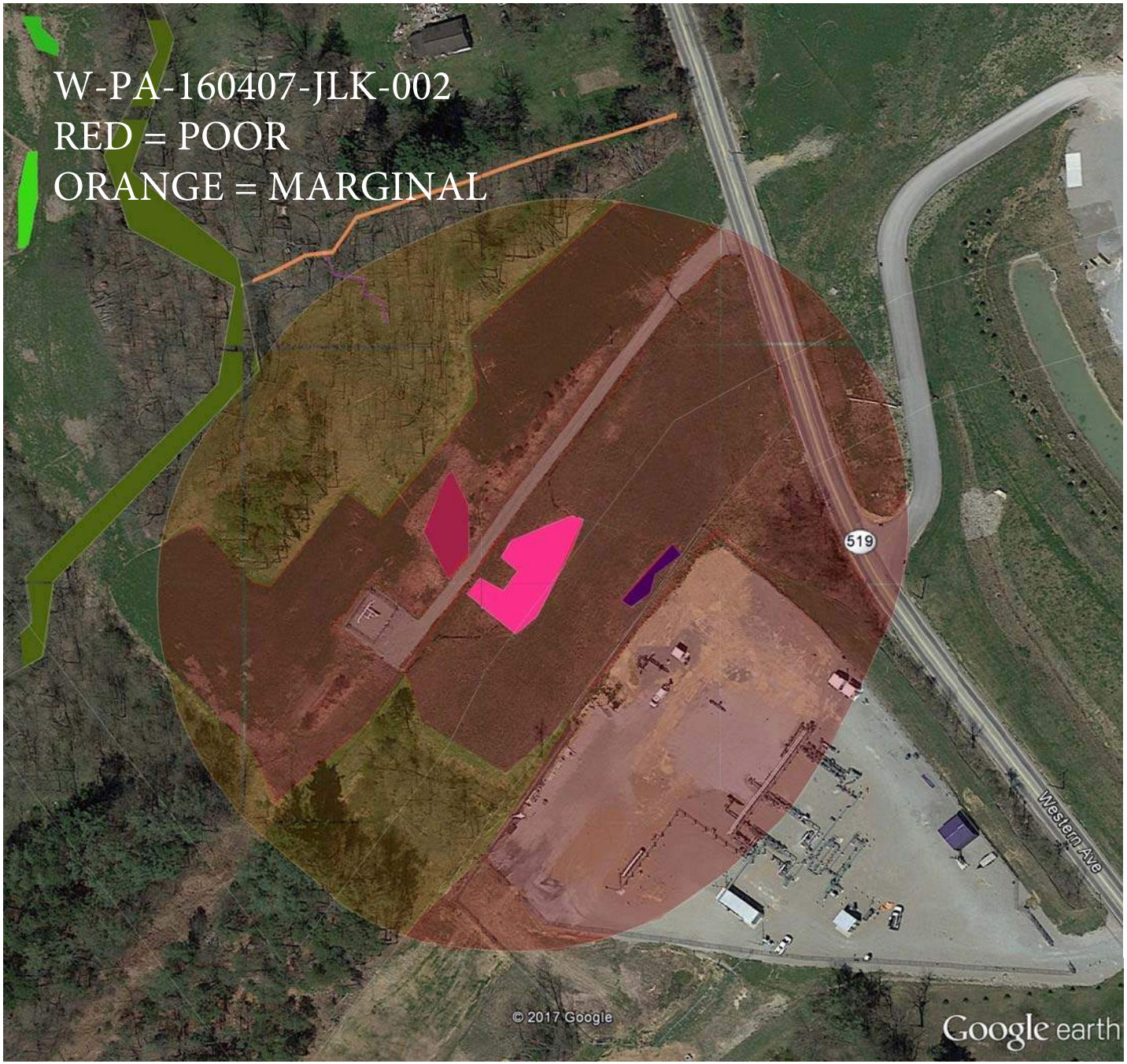

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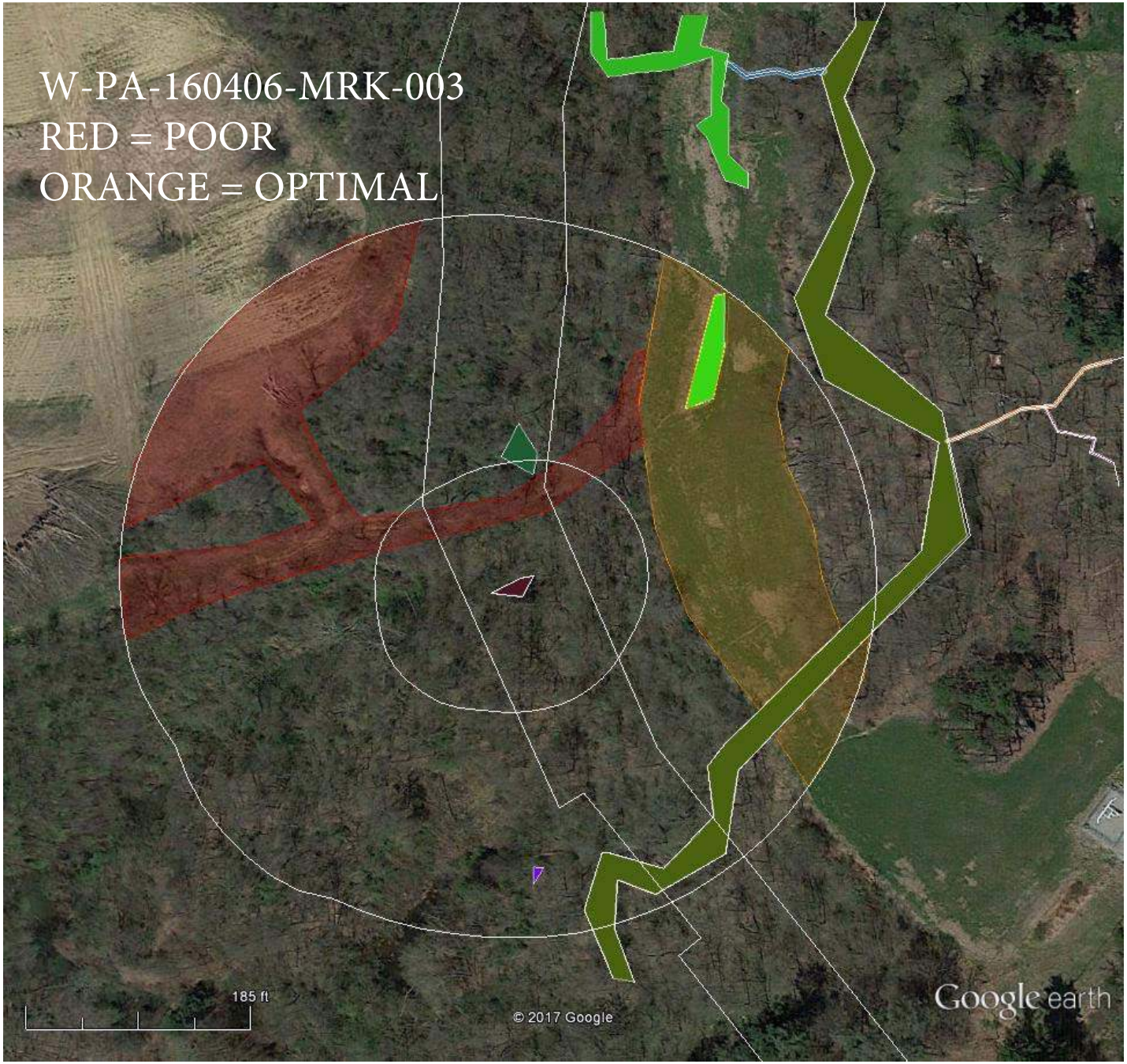

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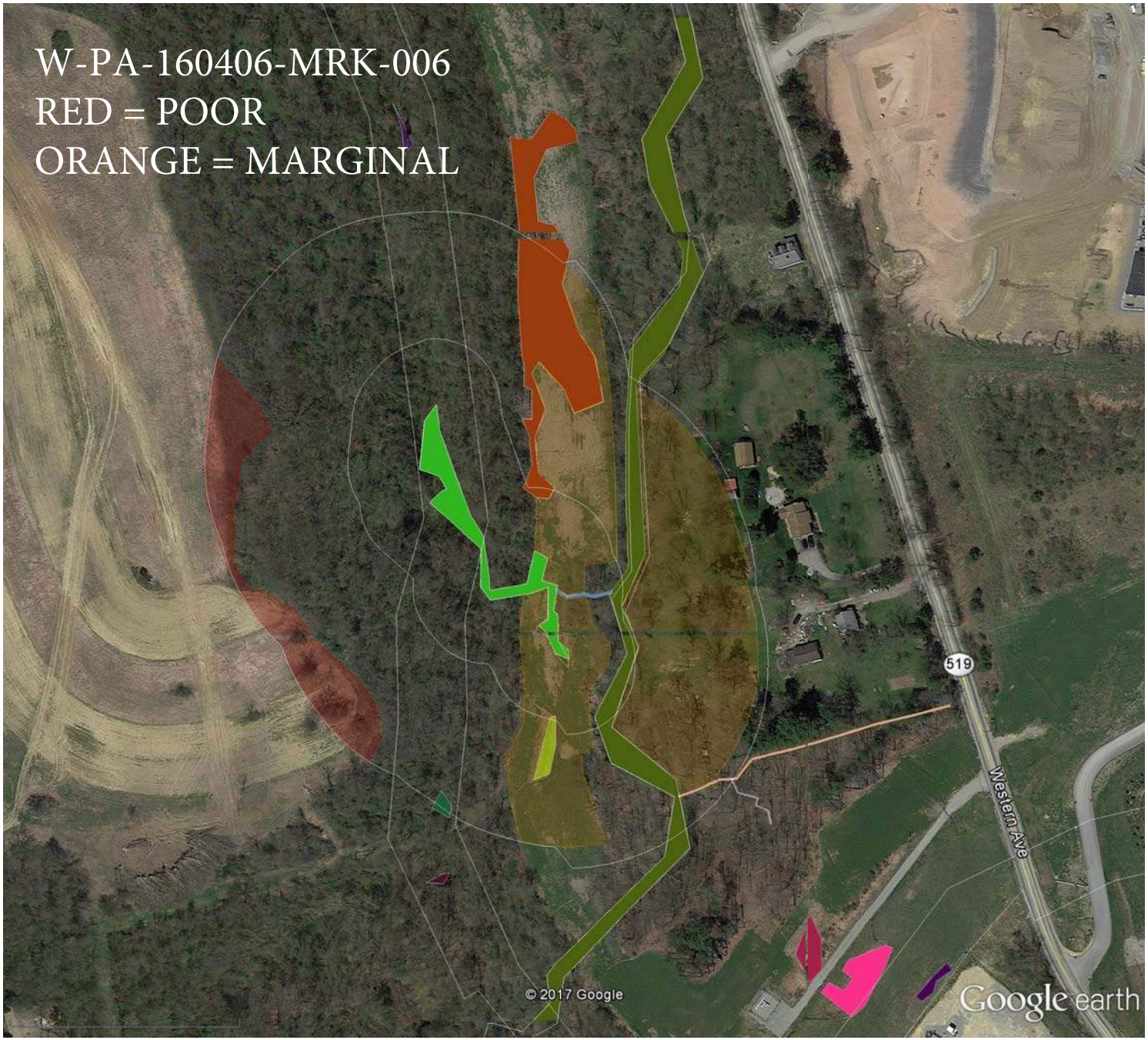

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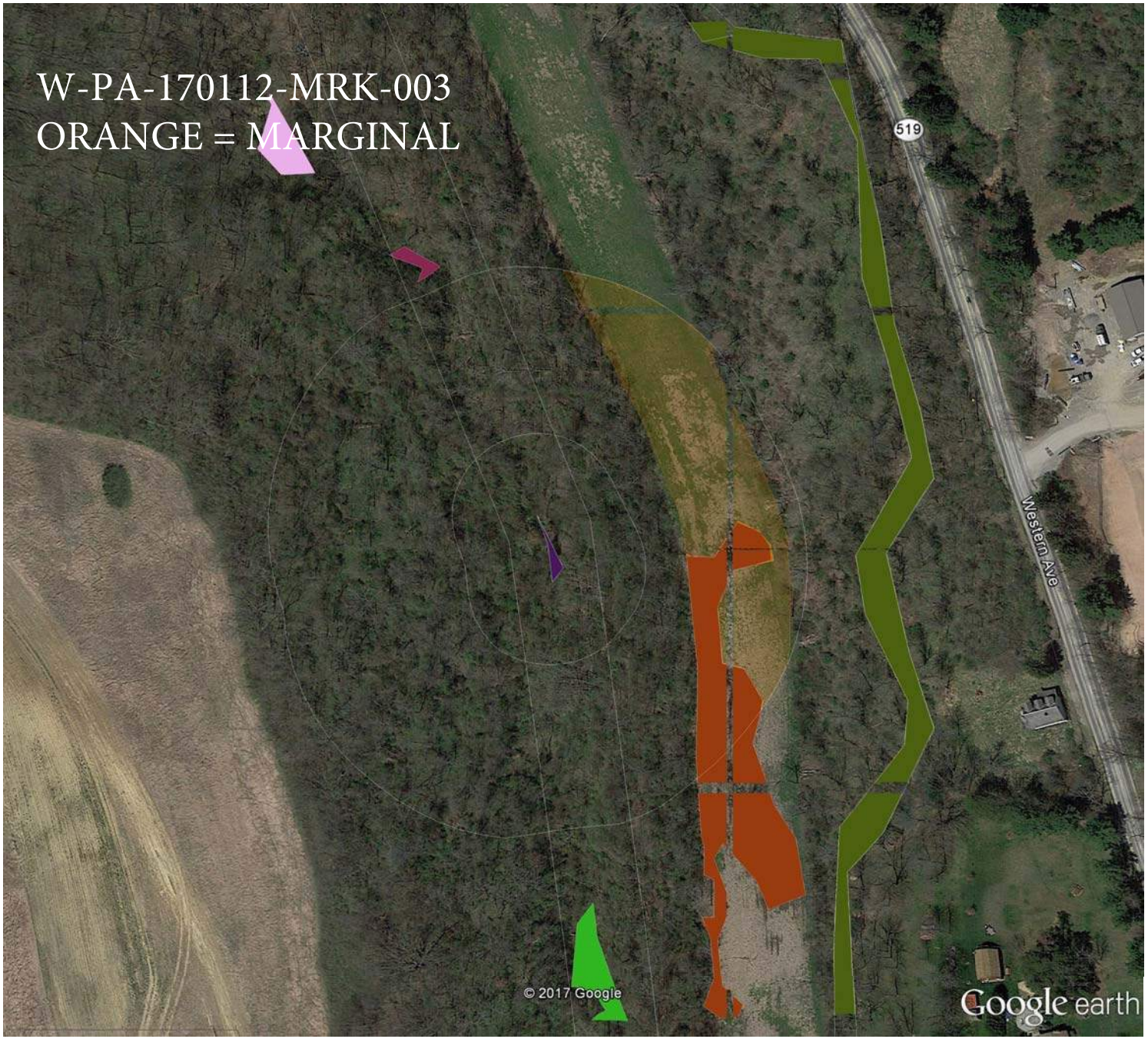

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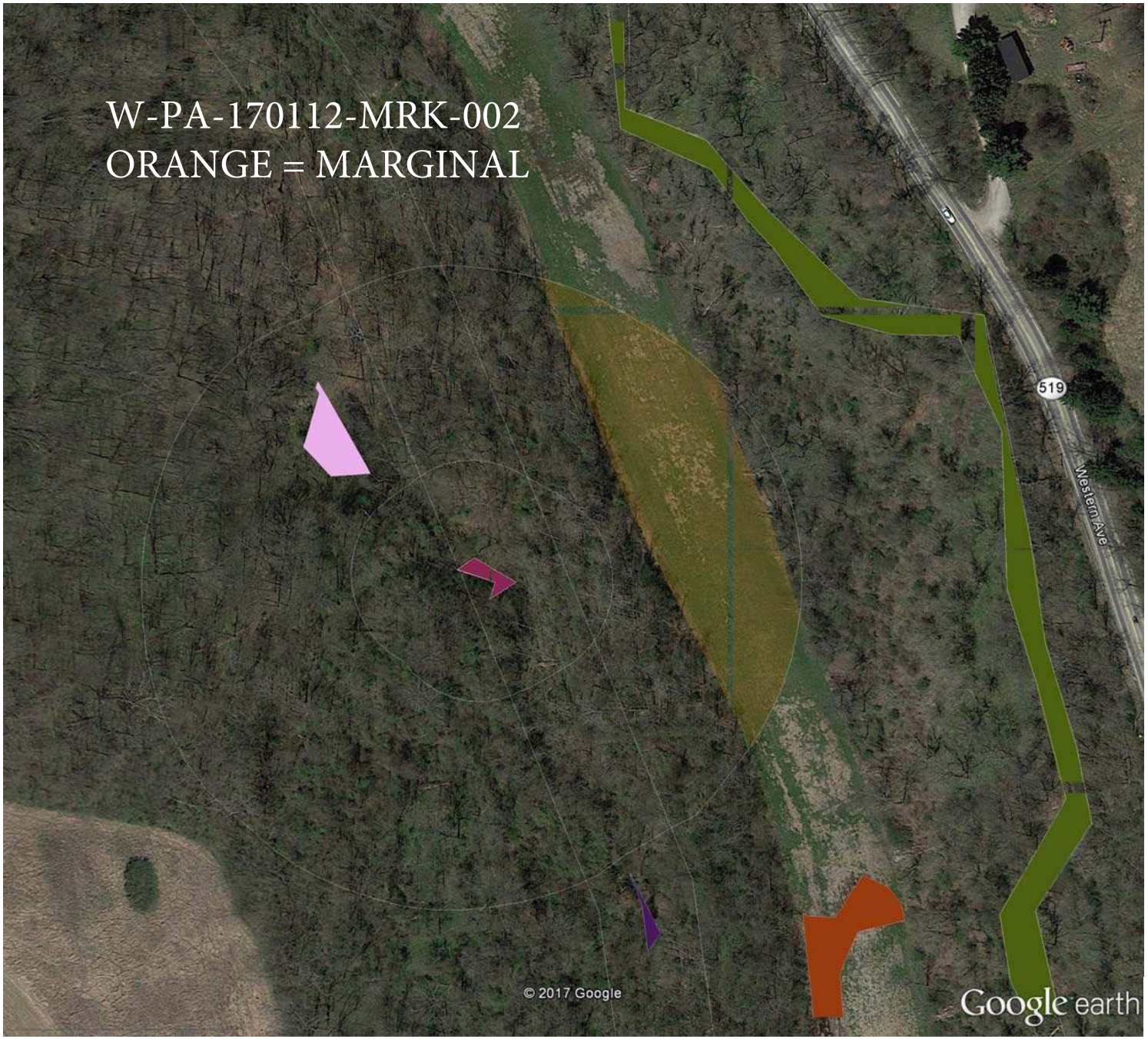

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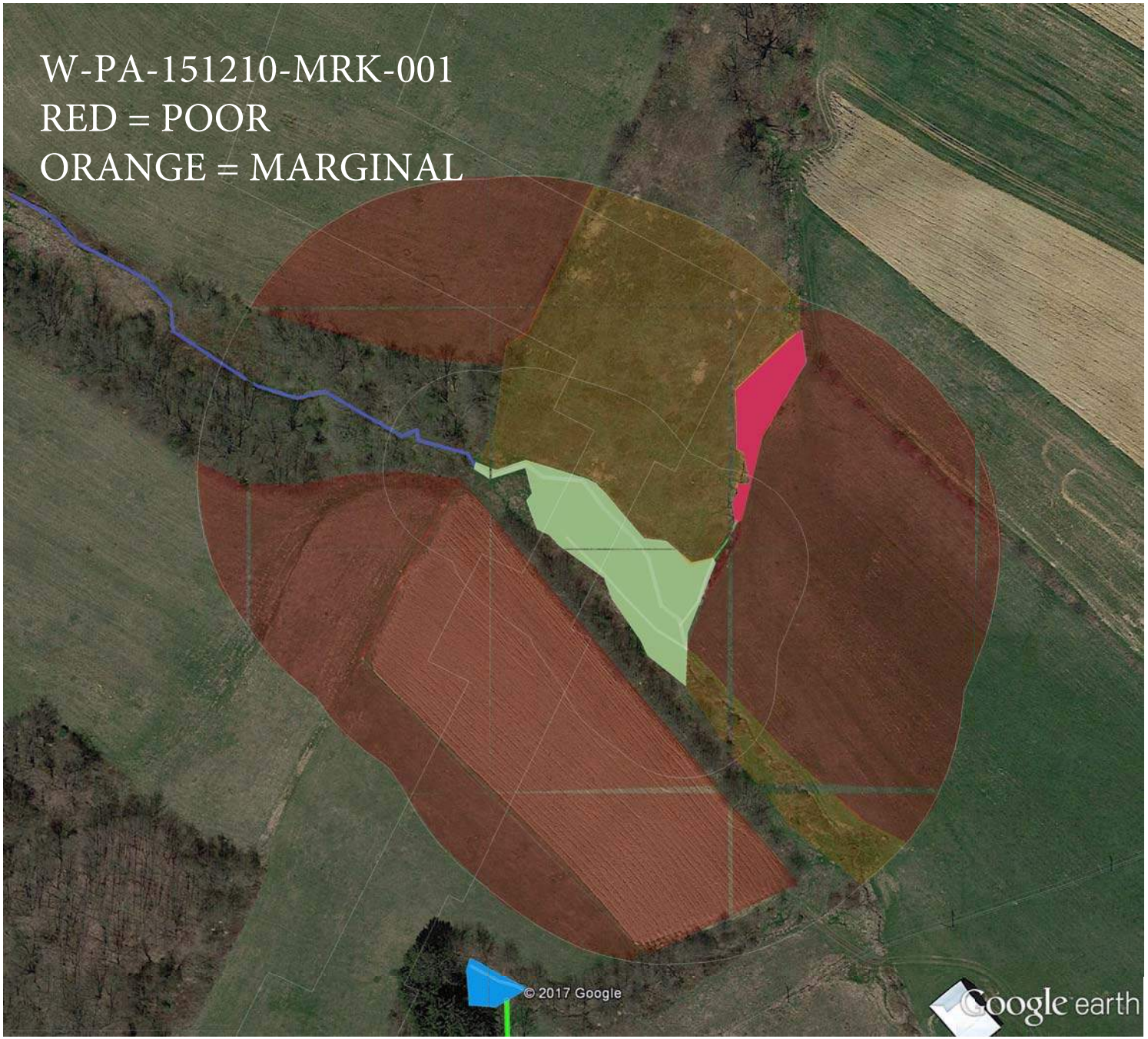

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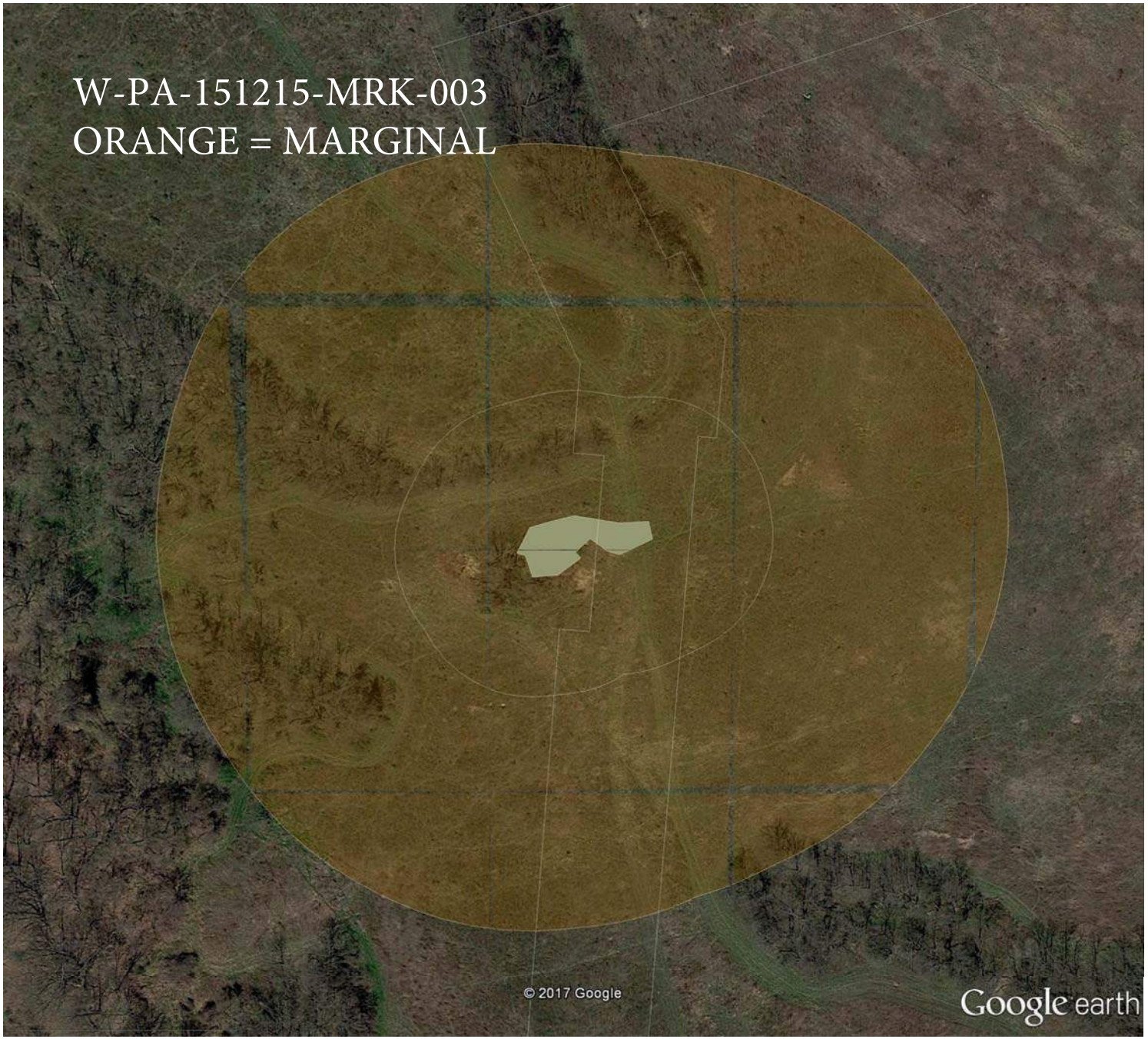

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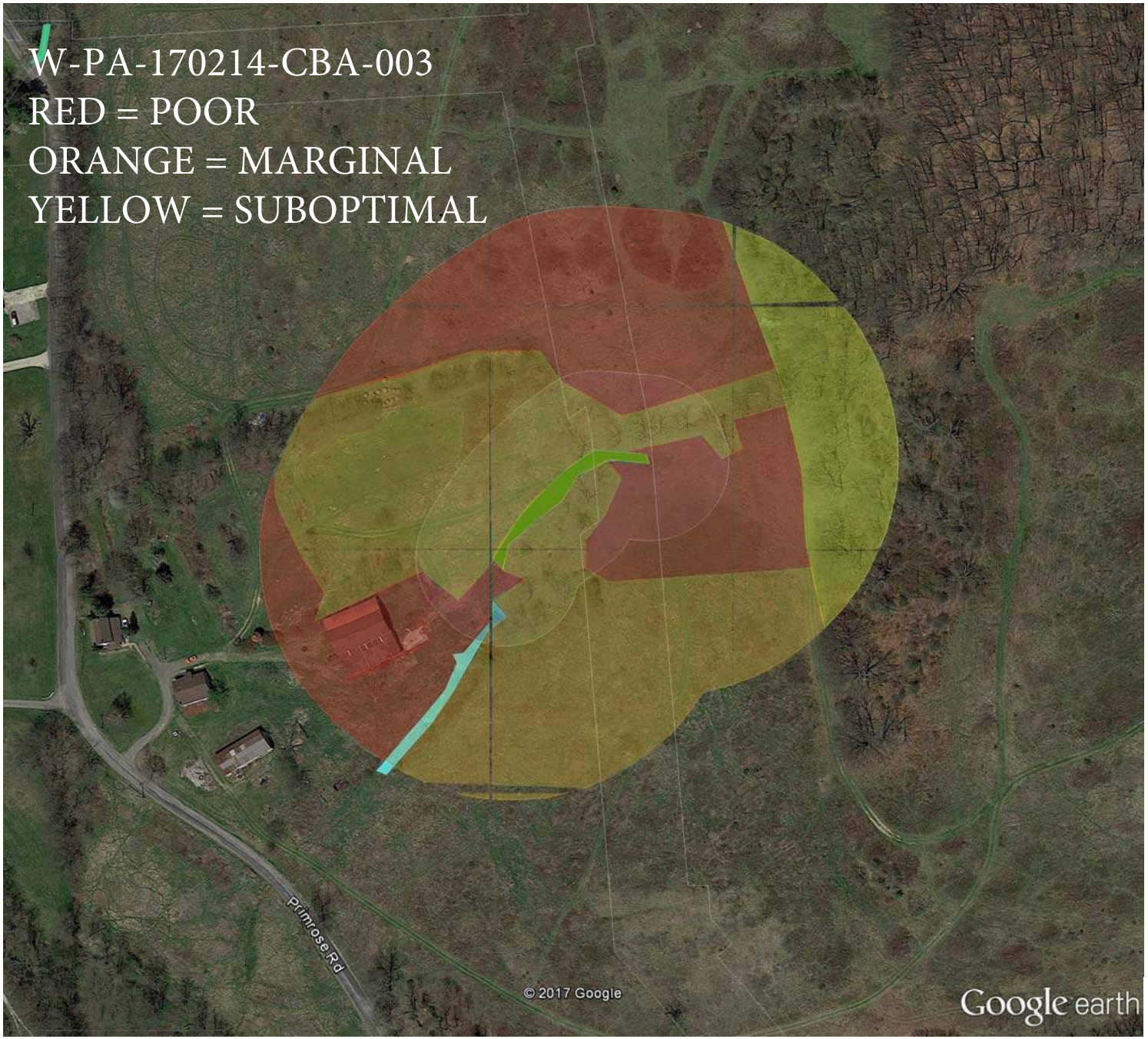

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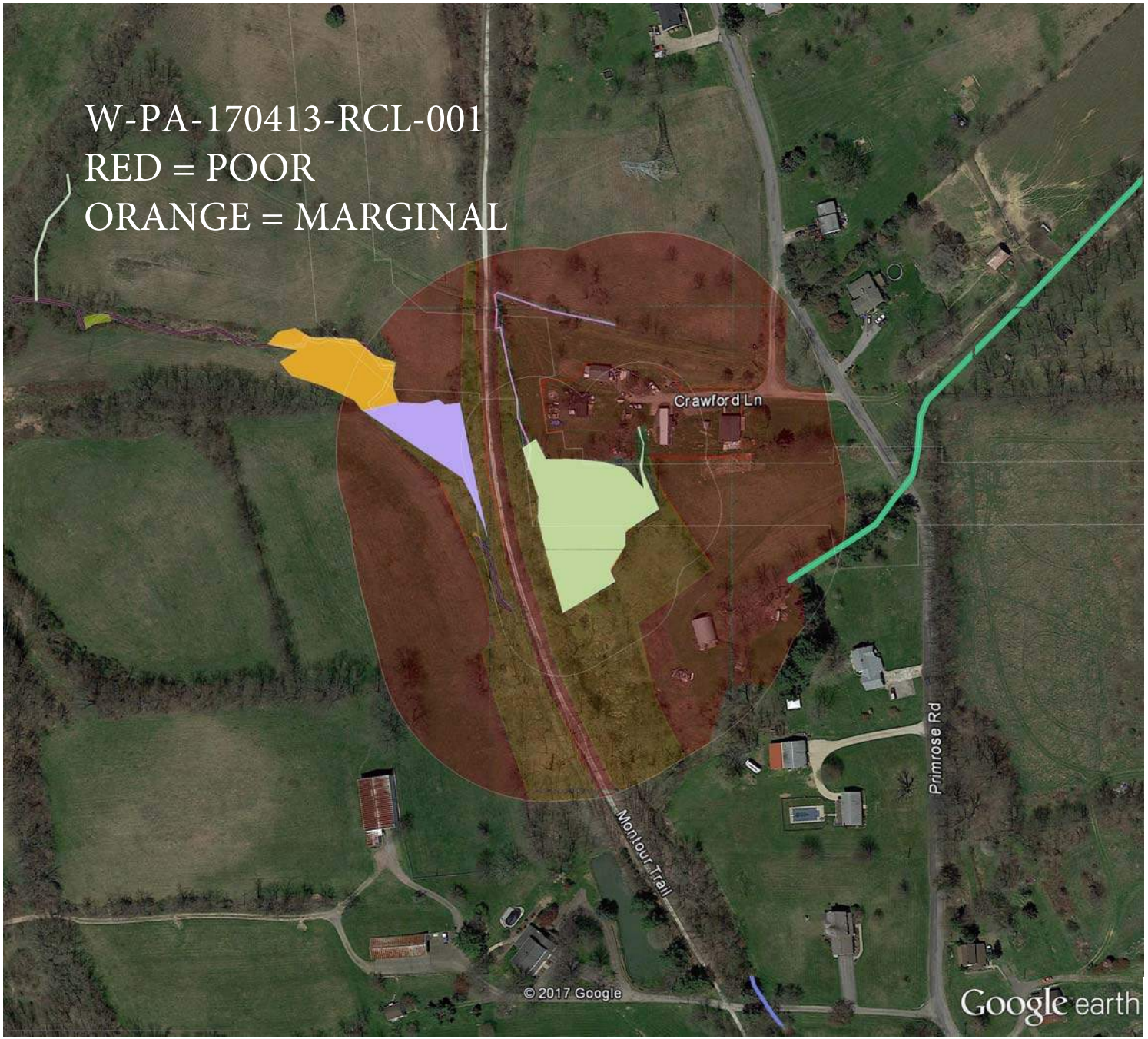

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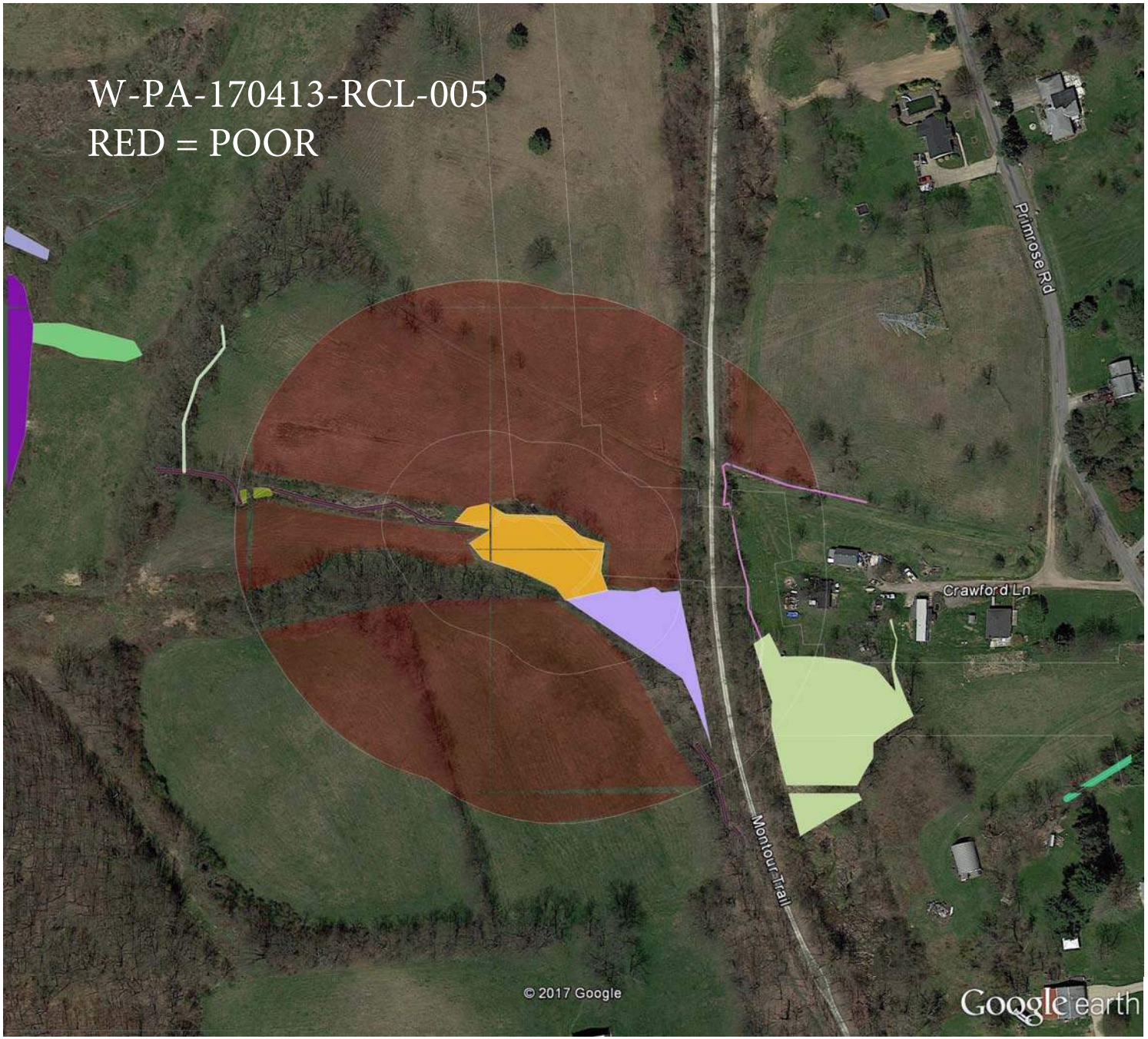

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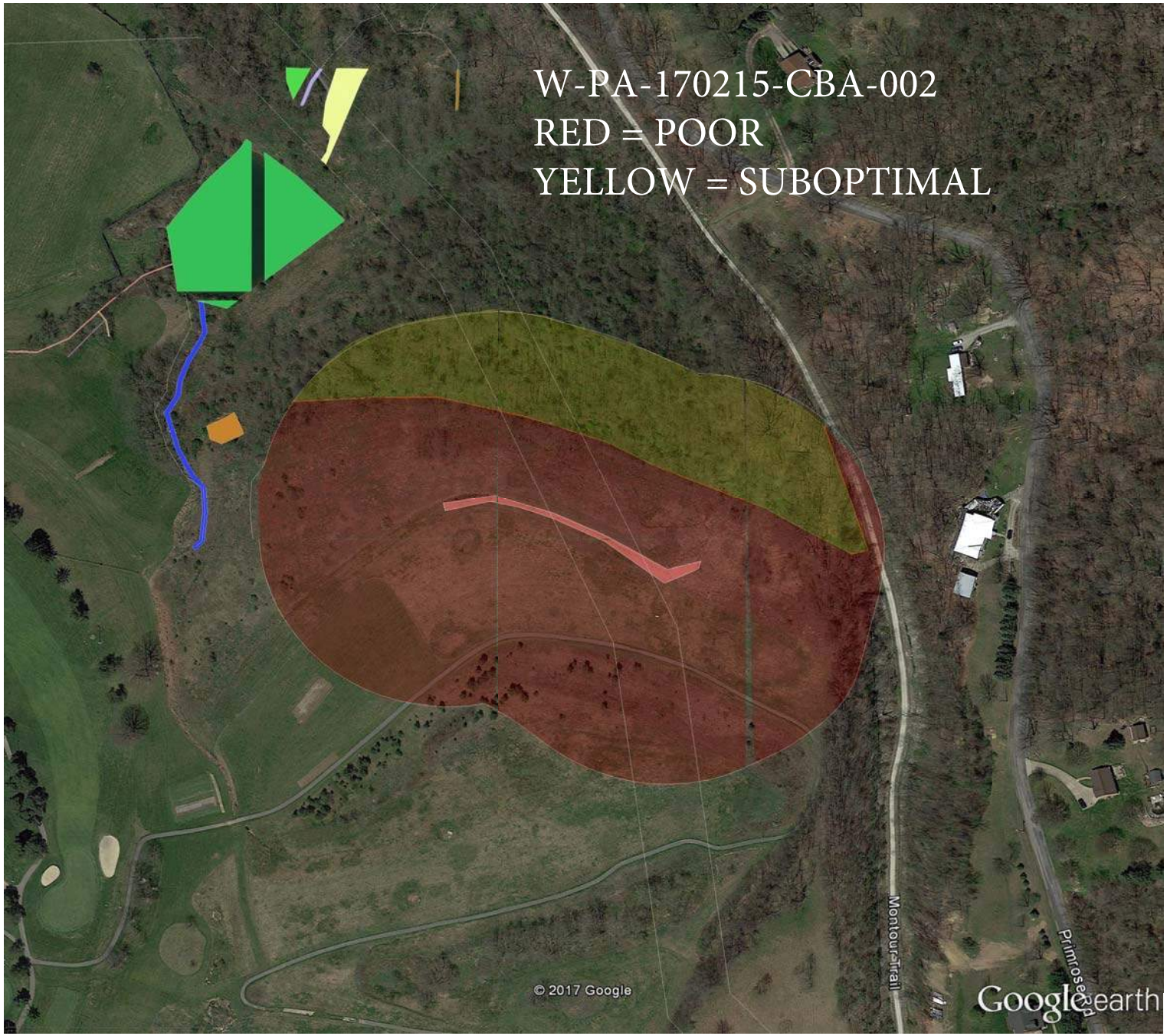

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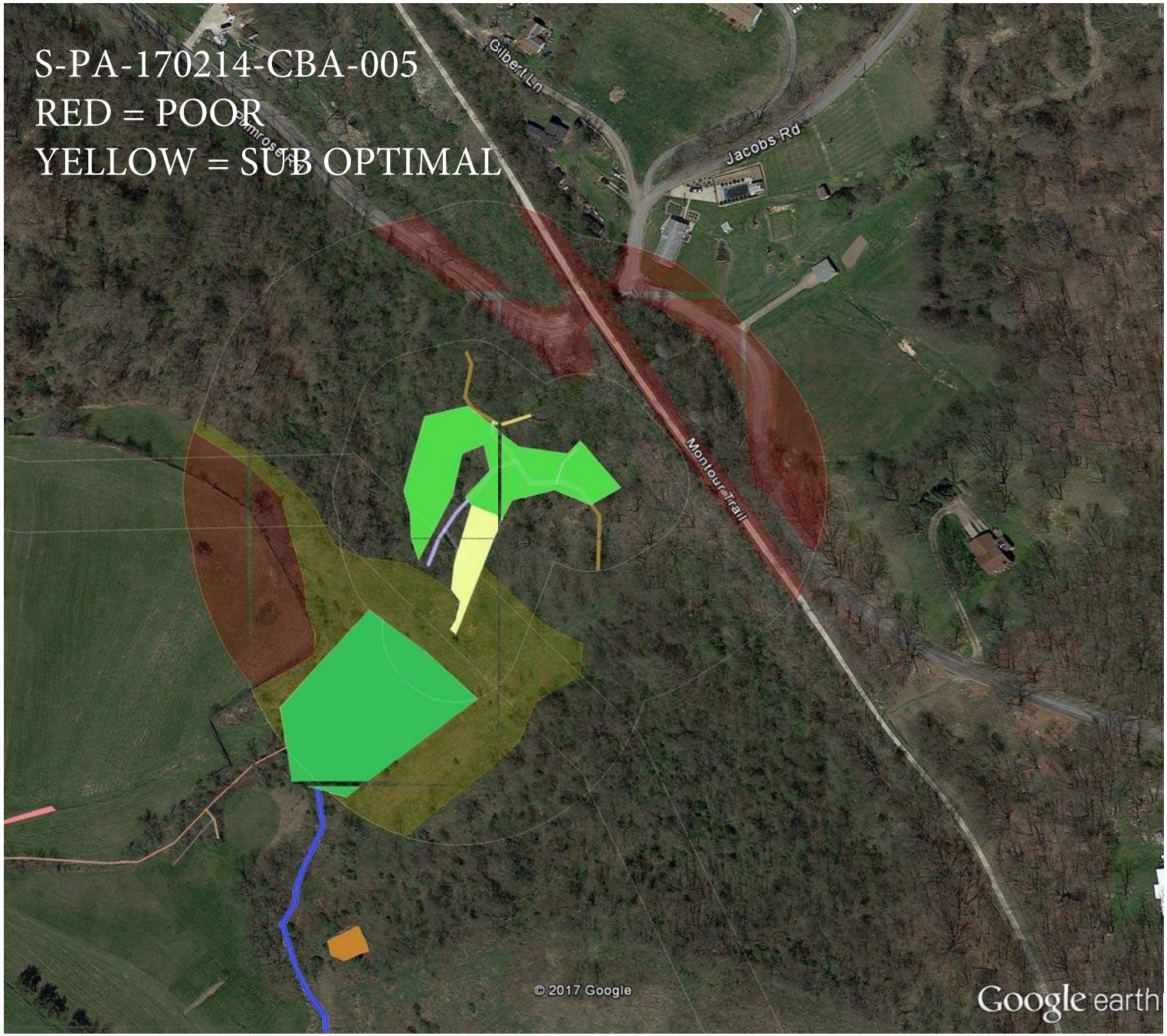

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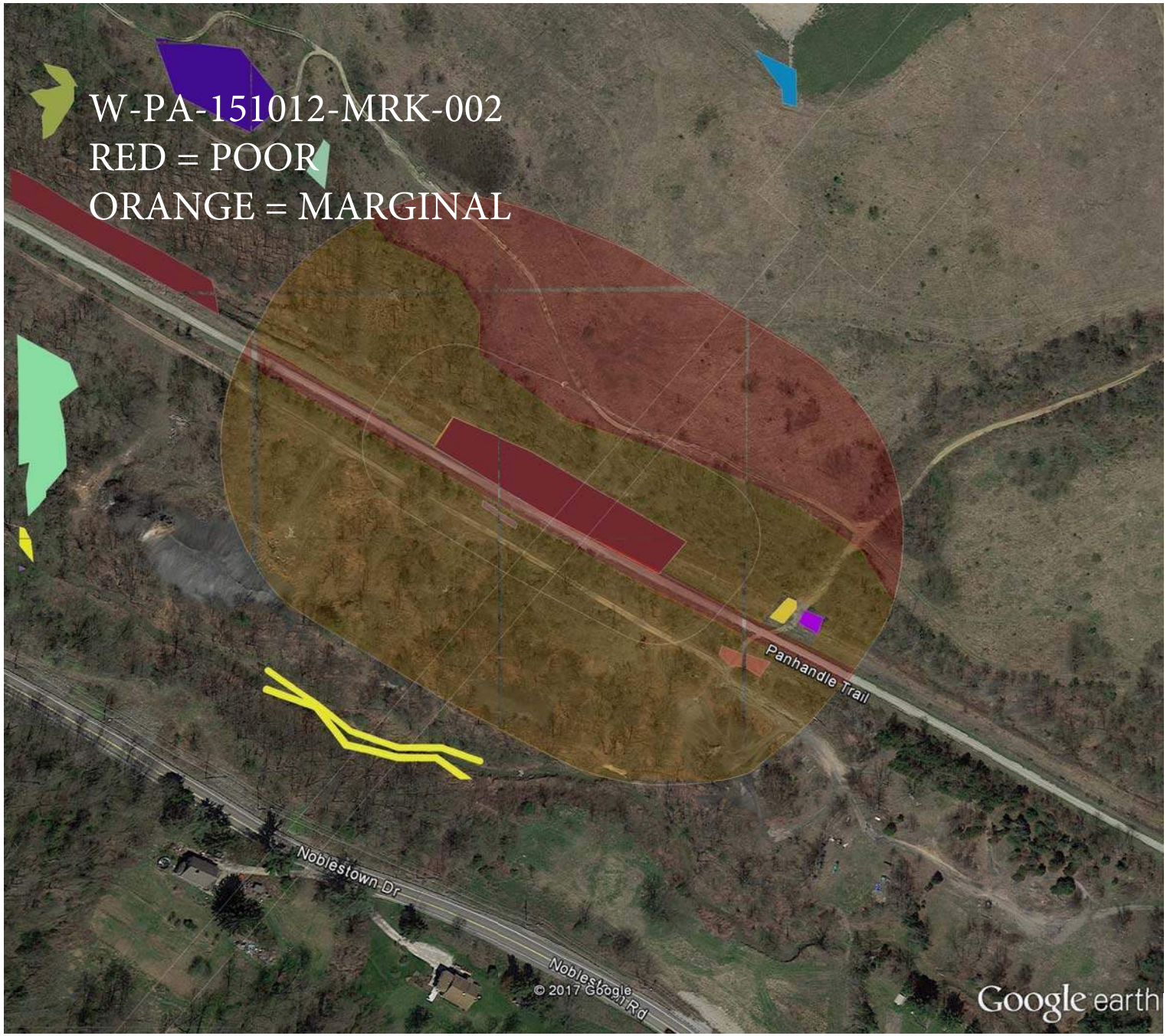

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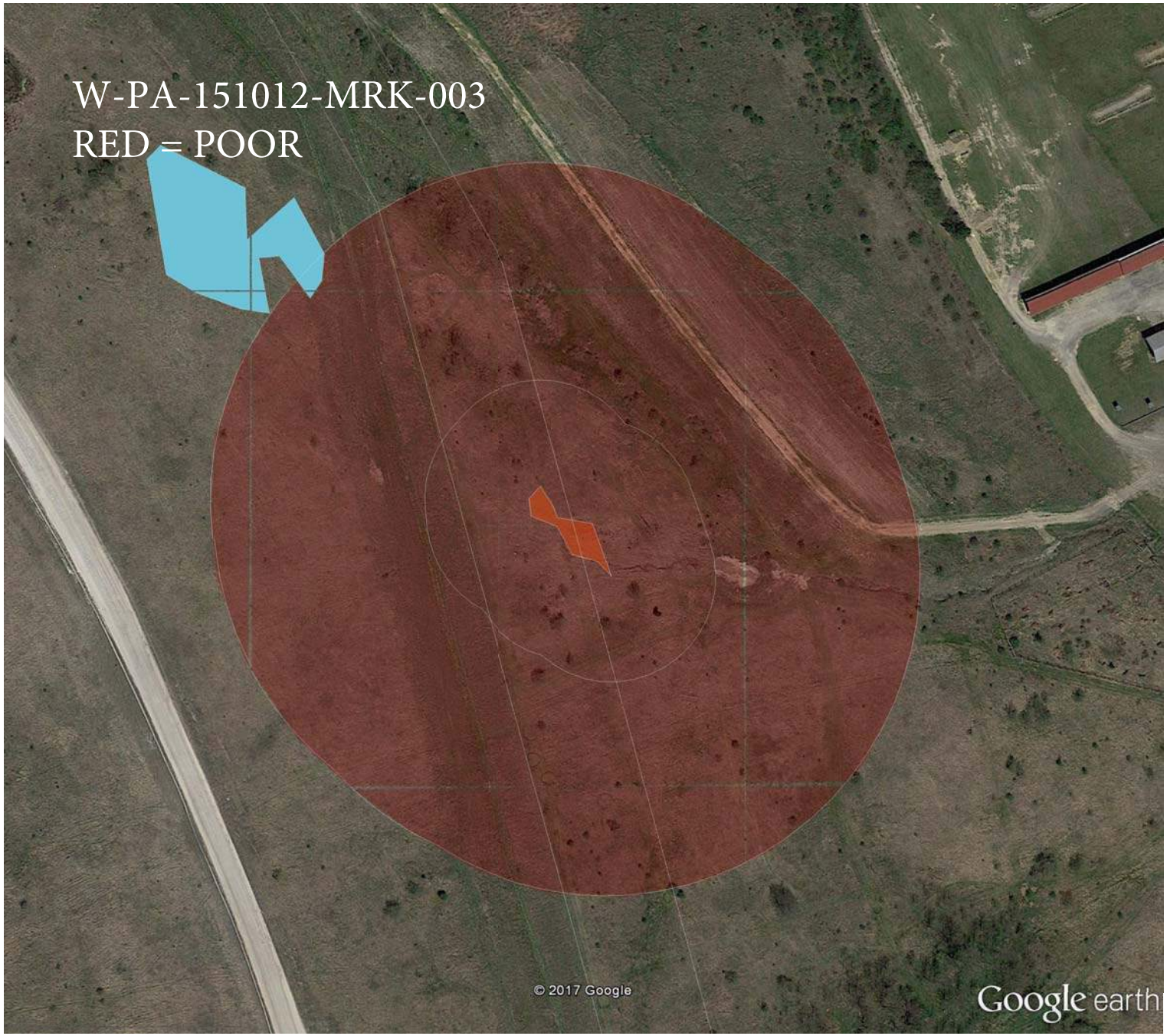

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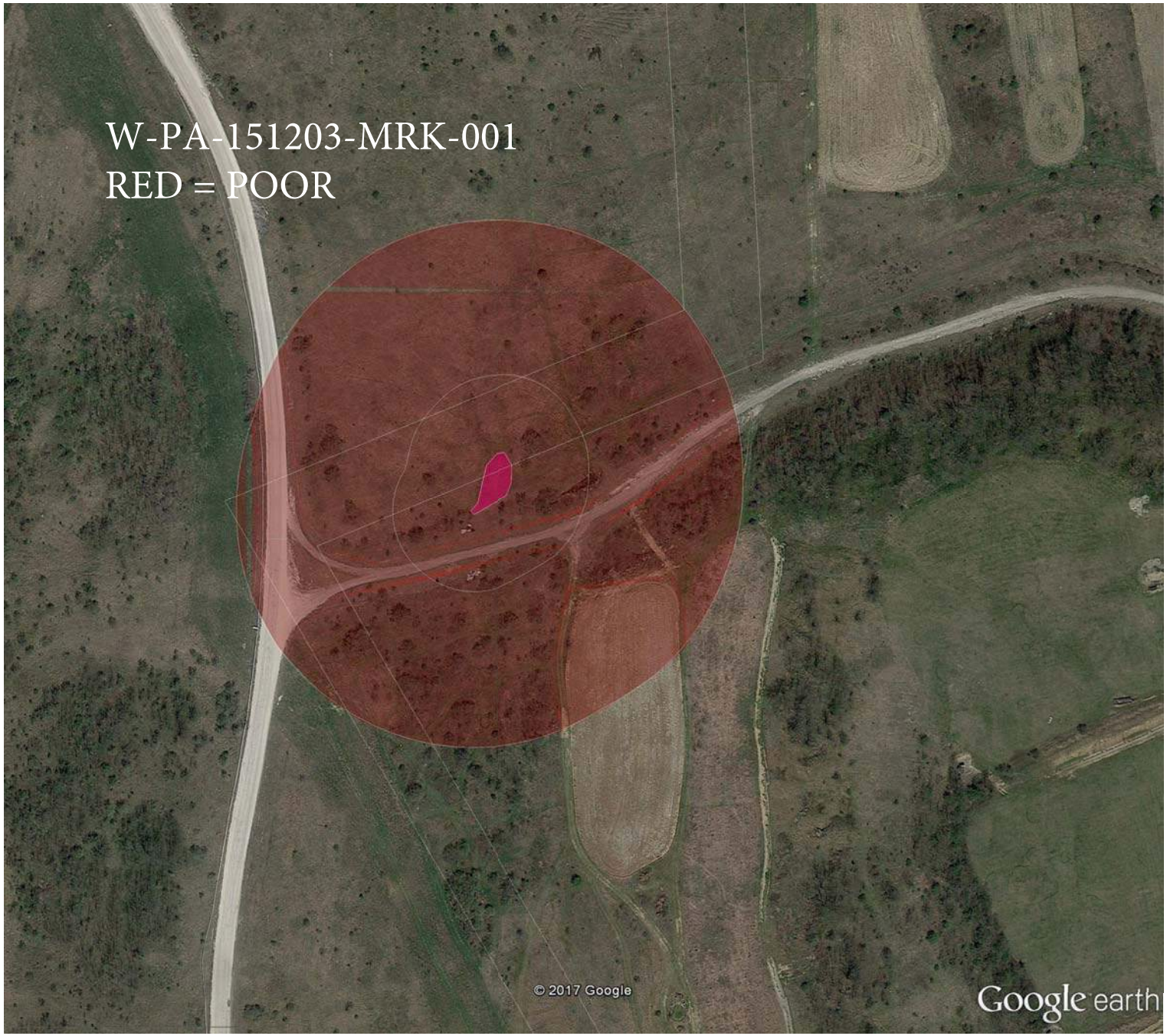

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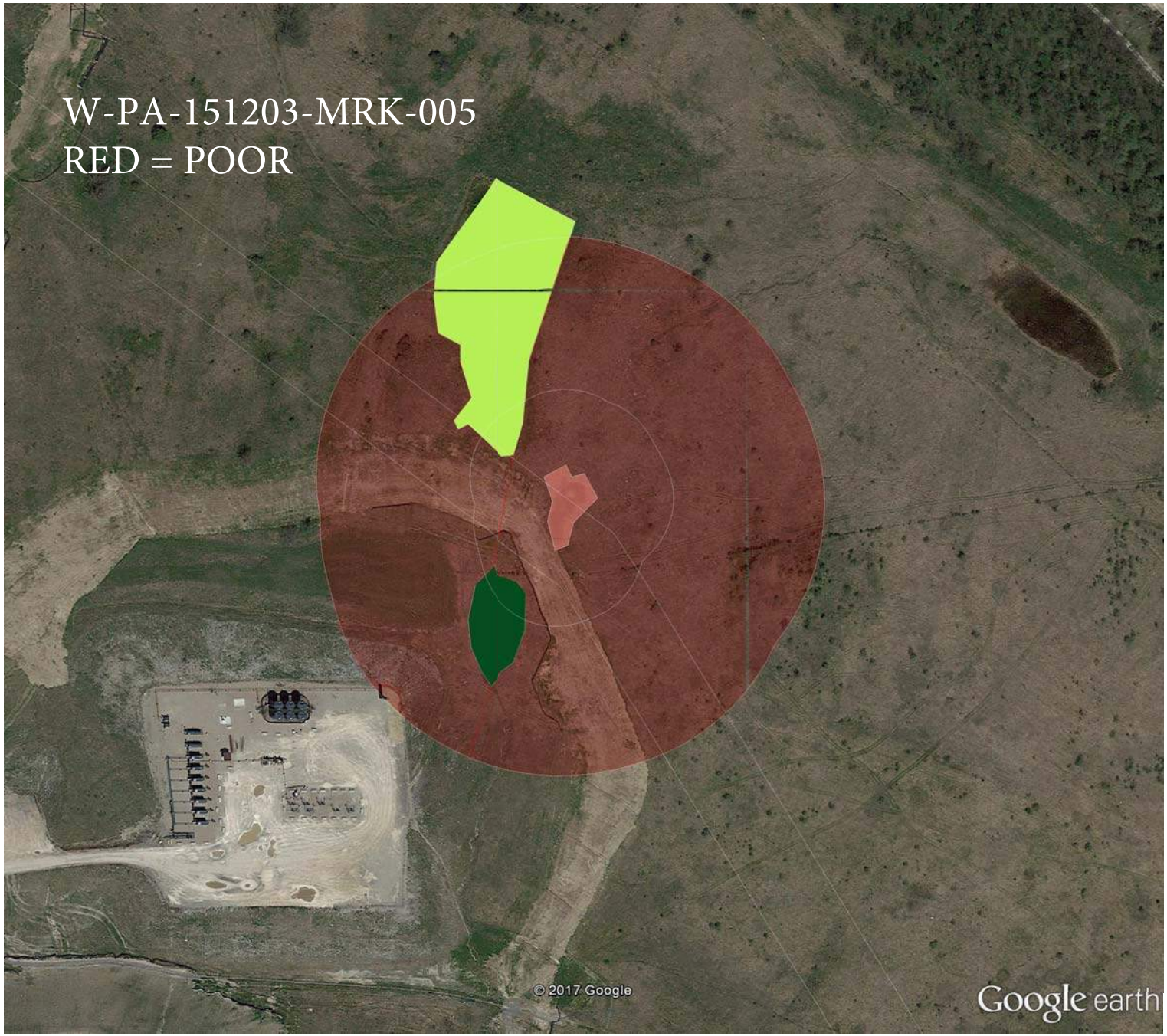

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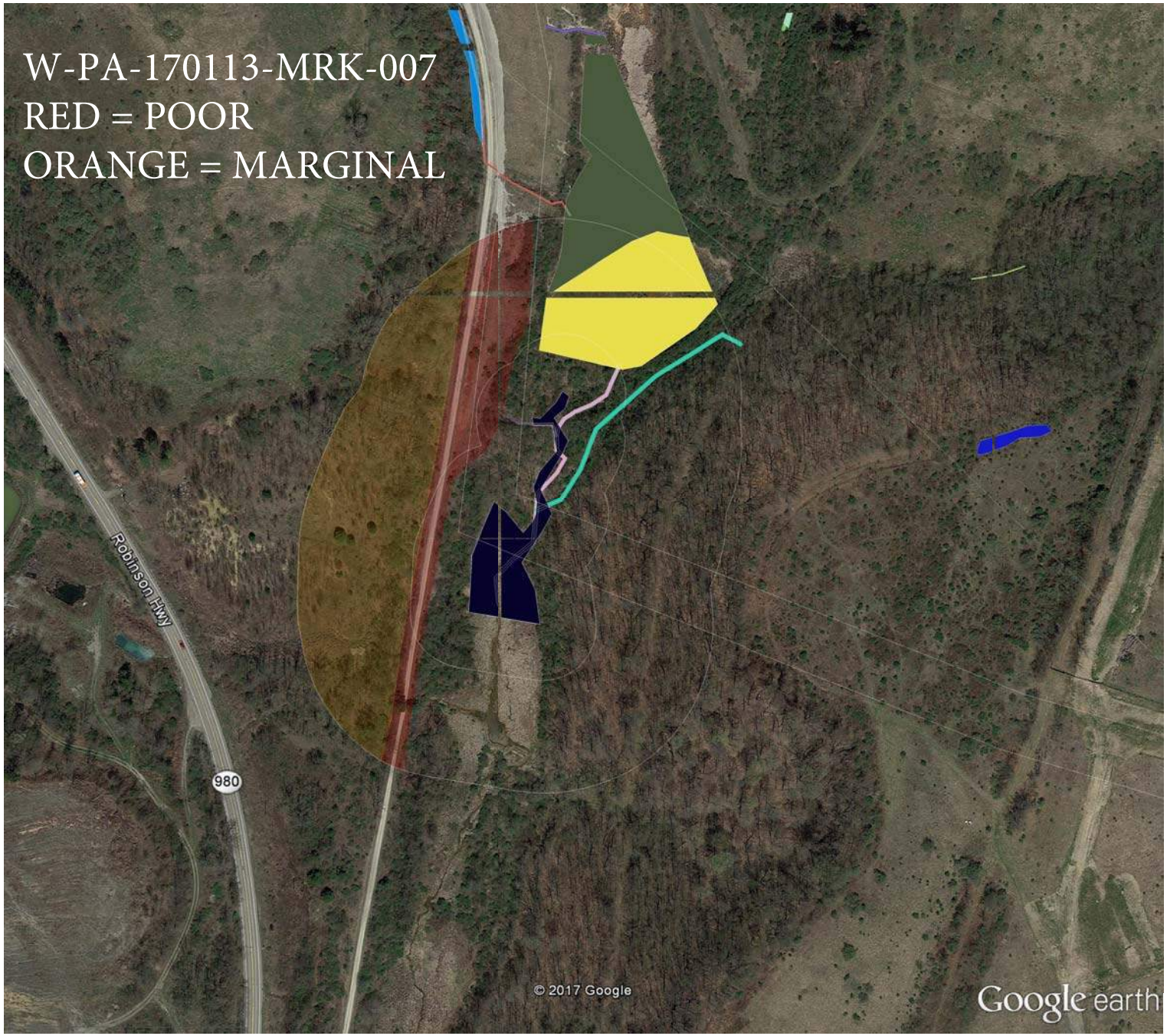

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