



**US Army Corps  
of Engineers**  
Philadelphia District  
Wanamaker Building  
100 Penn Square East  
Philadelphia, PA 19107-3390  
ATTN: CENAP-OP-R

# Public Notice

Public Notice No. CENAP-OP-R-2012-00216-75	Date OCT 22 2015
Application No.	File No.
In Reply Refer to: REGULATORY BRANCH	

This District has received an application for a Department of the Army permit pursuant to Section 404 of the Clean Water Act (33 U.S.C. 1344).

The purpose of this notice is to solicit comments and recommendations from the public concerning issuance of a Department of the Army permit for the work described below.

**APPLICANT:** Mr. Charles H. Davies  
Pennsylvania Department of Transportation  
Engineering District 6-0  
7000 Geerdes Boulevard  
King of Prussia, PA 19046

**AGENT:** Mr. Paul DeAngelo  
Skelly and Loy, Inc.  
449 Eisenhower Boulevard  
Harrisburg, PA 17111

**WATERWAY:** Webb Creek, Green Creek, Naamans Creek, Marcus Hook Creek

**LOCATION:** The proposed project is located along US 322 from the intersection with US 1 in Concord Township, through Bethel Township, and to a point east of the Market Street (SR 452) interchange in Upper Chichester Township, Delaware County, Pennsylvania.

**ACTIVITY:** The applicant proposes to address deficiencies of the existing US 322 roadway. The US 322 Improvement Project is being undertaken by the Pennsylvania Department of Transportation in cooperation with the Federal Highway Administration. Currently, the US 322 lane configuration is divided into two typical cross sections: a western section and an eastern section. The western section consists primarily of two lanes with uncontrolled access to both lanes from intersecting roads and driveways. The eastern section, beginning east of the intersection with Cherry Tree Road in Upper Chichester Township, consists of a four lane divided highway and provides semi-controlled access to one direction of the highway from properties adjacent to the roadway.

The project consists of the complete reconstruction of the existing highway, including the widening of the existing western alignment from two lanes to four lanes to increase capacity; reconfiguring the two existing grade-separated interchanges at Foulk Road (SR 261) and Market Street (SR 452); and replacing existing culvert and bridge structures throughout the corridor

(some existing culverts will be extended rather than replaced). For safety considerations, the project will separate the two directions of traffic with a grass median in the widened section to control access to and from the highway. Incidental to the widening, the project will include construction of capacity and signalization improvements at select on-corridor intersections; construction of multiple retaining walls to minimize right-of-way and environmental impacts; and construction of several sound barriers to provide noise abatement for adjacent residences.

As part of the final design, the project was divided into three sections, referred to as Section MIT, Section 101, and Section 102 to accommodate the advancement of final design of the proposed improvements, the timing of construction and fiscal appropriations. Section MIT consists of mitigation that is required because of roadway improvement impacts for the entire project. This section (MIT) includes the relocation of the existing Operation Staging Area at the US 322/Foulk Road interchange; the construction of an off-corridor Wetland Mitigation Site located at the intersection of Tanguy Road and Creek Road in Thornbury Township, Delaware County; and the removal of the Brandywine Dam (a.k.a. Downing Ridge Dam) in Caln and East Caln Townships in Chester County, Pennsylvania. Section 101 consists of the proposed roadway improvements located within Concord and Bethel Townships extending from the US Route 1 intersection eastward to Garnet Mine Road. Section 102 consists of the proposed roadway improvements extending from the Section 101 eastern terminus through Bethel and Upper Chichester Townships and terminating just west of the existing bridge structure over the CSX Railroad approximately a half mile west of the I-95 interchange.

Final design for the Wetland Mitigation Site and the new Operation Staging Area has been completed. Final design for Section 101 has been nearly completed. Final design efforts for the removal of the Brandywine Dam (a.k.a. Downing Ridge Dam) and Section 102 are still underway and remain on-going. It is anticipated that Section 102 will also include a second new Operation Staging Area in proximity to the US 322 and I-95 interchange.

Construction of the US 322 Improvement Project would result in the cumulative impact to approximately 1.26 acres of wetlands and 6,906 linear feet of watercourses. Permanent impacts total approximately 1.05 acres of wetlands and 6,655 linear feet of watercourses. Permanent impacts include the areas under direct fill, stream crossing and/or channel modification. Temporary impacts total approximately 0.21 acres of wetlands and 251 linear feet of watercourses. Temporary impacts include the areas exposed to construction traffic but no permanent grading/encroachments. Permanent loss, which requires compensatory mitigation, totals approximately 1.05 acres of wetlands and 3,115 linear feet of watercourses. Permanent loss includes those sections of stream that will be filled and/or enclosed and not relocated or spanned. Mitigation includes those sections of perennial streams that will be filled or enclosed and not relocated or spanned. The section of stream already culverted was not counted as permanent loss.

Wetland mitigation would be provided at a property owned by Thornbury Township, referenced as the Patterson Tract, which is an off-site location along the East Branch of Chester Creek. The mitigation site will replace the 1.05 acres of permanent wetland loss through the creation a minimum of 1.464 acres of palustrine wetlands, including a minimum of 0.604 acres of emergent habitat, 0.16 acres of scrub shrub habitat, and 0.7 acres of forested habitat. Stream mitigation would be provided through the coordination with the Pennsylvania Fish & Boat Commission, including the execution of a Memorandum of Agreement between the Federal Highway

Administration, Pennsylvania Department of Transportation and the Pennsylvania Fish & Boat Commission for the removal of the Brandywine Dam (a.k.a. Downing Ridge Dam) on the East Branch of the Brandywine Creek in Caln and East Caln Townships, Chester County. The removal of the Brandywine Dam (a.k.a. Downing Ridge Dam) would result in the restoration of approximately 3,000 linear feet of riffle and pool stream habitat along the East Branch Brandywine Creek.

**PURPOSE:** The applicant's stated purpose is to improve the existing deficiencies along a 6.67-mile segment of roadway in a corridor that has been experiencing steady growth in population and economic development since 1980 and is expected to continue given its direct connections to US 1 and I-95 and proximity to Philadelphia. Sections of the roadway are already at or beyond their capacity to efficiently and safely serve the regional and local traffic volumes. The proposed project will improve motorist safety, enhance ride quality and remedy existing physical deterioration while bringing the existing roadway into compliance with current design criteria for roadways of this functional classification. In addition, the applicant's stated purpose is to construct a viable Operation Staging Area site in the western portion of Delaware County.

Federal regulations contained in 33 CFR 325.1(d)(7) require applicants to include a statement describing how impacts to waters of the United States are to be avoided and minimized. Furthermore, the application must also contain a statement describing how impacts to waters of the United States are to be compensated for or a statement explaining why compensatory mitigation should not be required for the proposed impacts.

The following paragraphs describe the avoidance and minimization measures at proposed wetland and watercourse impacts associated with the development of the Operation Staging Area site. The implementation of the proposed improvements would result in 0.22 acres of permanent impacts to wetlands, 0.21 acres of temporary impacts to wetlands, 319 linear feet of direct fill/piping to Channel 61 and a 38.6-foot out-to-out/48-foot span road crossing over Channel 60 as well as a 23 linear foot stormwater outfall installation within Channel 60.

#### Realigned Station Road Crossing over Channel 60 and Wetland 91

This alignment would require a 48-foot span over a tributary to Webb Creek and 310 feet of retaining walls to limit the wetland disturbance. Impacts to Channel 60 would be minimized through the use of a CON/SPAN structure.

#### Operation Staging Area Site Design

The original design of the proposed Operation Staging Area called for the use of a 2:1 fill slope which would result in fill encroachment impacts to Wetland 91. The site design was updated after a pre-application meeting to include the use of a retaining wall along the northern edge of the Operation Staging Area facility. With the use of a wall, the direct permanent impacts would be minimized. Fill encroachment impacts associated with the installation of the wall and development of the Operation Staging Area facility would be reduced to 0.01 acres of permanent wetland impacts and 0.13 acres of temporary wetland impacts. Use of the wall would result in a reduction of direct permanent impacts to Wetland 91.

The following paragraphs describe the avoidance and minimization measures at proposed wetland and watercourse impacts located along the US 322, Section 101 roadway. The paragraphs are presented in order according to roadway stationing. The implementation of the

proposed improvements would result in 0.325 acres of permanent impacts to wetlands, 0.002 acres of temporary impacts to wetlands and require nine stream crossings. The majority of the impacts would occur from upgrading, widening or replacing portions of the existing US 322 roadway and connector roads.

US 322, Station 18+20 – Wetland FFF, Watercourse 200 and Watercourse 201

The temporary impacts to Wetland FFF would be minimized by including temporary protective fencing, where practical to avoid and minimize impacts. Upslope hydrology to Channel 200 from US Route 1 would be directed to the northern side of US 322 in a pipe from Station 11+00 to 15+20, and from station 15+20 to 18+20 a new channel would be constructed to the new inlet for Watercourse 201. By diverting Watercourse 201 into Watercourse 200, the hydrology to the upper portion of Wetland FFF would not be changed.

US 322, Station 25+00 Right – Watercourse 301

The outlet protection has been designed and positioned to minimize impacts to Watercourse 301. The end of the pipe and associated grading and outfall would be shortened to minimize impacts to Watercourse 301 in response to agency input from a 2012 field view.

US 322, Station 38+07 – Watercourse 202 and Wetland DDD

The upstream end of the proposed culvert would be positioned in close proximity to the existing culvert to minimize impacts. The downstream location would be positioned to provide a stable connection for the downstream channel. The off-set replacement location would allow for stream flow and traffic to be maintained during construction and would avoid additional impacts to Wetland DDD.

US 322 at Station 60+50 Right – Webb Creek (Watercourse 203) and Watercourse 3

The new structure's endwalls would be mostly outside of the channel limits. The bridge would consist of two endwalls and a center pier. The center pier would be positioned outside of Webb Creek to avoid direct impacts; however, rock protection would be installed around the pier and endwalls for scour protection. The scour protection rock would be buried/submerged to minimize impacts to the flow patterns of the creek. The fill slopes along US 322 would be steepened to 1.5 to 1 to minimize encroachment to Webb Creek and to avoid impacts to Watercourse 3 on the northern side of the roadway. The project has been designed to avoid impacts to Watercourse 3 which flows parallel to the existing Route 322, immediately northeast of the bridge crossing.

US 322 at Station 98+28 – Wetland OO

The off-set replacement location would allow for stream flow and traffic to be maintained during construction and to avoid minimizing impacts to Wetland OO.

US 322 at Station 117+16 – Wetland MM

The outfalls would be stabilized with rock to avoid erosion and sedimentation impacts to Wetland MM.

US 322 at Station 149+65 – Wetland KK, HH, JJ and Watercourse 100

The overall width of the proposed four lane roadway would be minimized to avoid impacts to Wetland KK to the north and the Clayton Park to the South. A wall would be installed along the southern side of the roadway widening to avoid/minimize impacts to the park, wetlands and

Watercourse 100. Stormwater Management Basin B4 has been sized to minimize impacts to Wetland KK to the greatest extent feasible. After the April 19, 2012 field view, the northern boundary of Basin B4 was regraded to further minimize impacts to Wetland KK. With the presence of Wetland KK to the north, the stormwater management basin could not be shifted to the north. As described above, with the basin being constrained by the presence of wetlands to the north and east, a residential house to the west and Route 322 to the south, the stormwater management basin was minimized to the extent practical while still being able to provide the minimum necessary storage volume.

The following paragraphs describe the avoidance and minimization measures at proposed wetland and watercourse impacts located along the US 322, Section 102 roadway. The paragraphs are presented in order according to roadway stationing. Since the November 2014 meeting with our office, final design efforts have been initiated for Section 102 and will remain on-going.

US 322 at Station 170+00 – 180+00 – Wetland CC, DD, GG and a tributary to Green Creek (Watercourse 6A)

The improvements favor the northern side of the existing roadway to avoid impacting the Historic Loden Property along the southern side of US 322. This property is eligible for listing on the National Register of Historic Places and is a Section 4(f) resource. A retaining wall is proposed along the northern side of US 322 to accommodate the proposed roadway widening, as well as, avoiding and minimizing impacts to the adjacent wetlands and watercourse. Additionally, the reconfiguration of the interchange would also minimize the impact to the adjacent wetlands and Watercourse 6A.

US 322 at Station 240 – 242 – Wetlands A1, C, D, and E and Watercourse 104 (Naamans Creek) and Watercourse 105

Retaining walls have been incorporated into the project design to avoid and minimize impacts to adjacent wetlands and watercourses.

US 322 at Station 343 – Wetlands PJD-005

The use of retaining walls has been incorporated into the project design to avoid and minimize impacts to Wetland PJD-005.

Wetland mitigation would be provided at a property owned by Thornbury Township, referenced as the Patterson Tract, which is an off-site location along the East Branch of Chester Creek. The mitigation site will replace the 1.05 acres of permanent wetland loss through the creation a minimum of 1.464 acres of palustrine wetlands, including a minimum of 0.604 acres of emergent habitat, 0.16 acres of scrub shrub habitat, and 0.7 acres of forested habitat. Stream mitigation would be provided through the coordination with the Pennsylvania Fish & Boat Commission, including the execution of a Memorandum of Agreement between the Federal Highway Administration, Pennsylvania Department of Transportation and the Pennsylvania Fish & Boat Commission for the removal of the Brandywine Dam (a.k.a. Downing Ridge Dam) on the East Branch of the Brandywine Creek in Caln and East Caln Townships, Chester County. The removal of the Brandywine Dam (a.k.a. Downing Ridge Dam) would result in the restoration of approximately 3,000 linear feet of riffle and pool stream habitat along the East Branch Brandywine Creek.

A preliminary review of this application indicates that the proposed work would not affect listed species or their critical habitat pursuant to Section 7 of the Endangered Species Act as amended. As the evaluation of this application continues, additional information may become available which could modify this preliminary determination.

The decision whether to issue a permit will be based on an evaluation of the activity's probable impact including its cumulative impacts on the public interest. The decision will reflect the national concern for both protection and utilization of important resources. The benefits which reasonably may be expected to accrue from the work must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the work will be considered including the cumulative effects thereof; among those are conservation, economics, aesthetics, general environmental concerns, wetlands, cultural values, fish and wildlife values, flood hazards, flood plain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs and welfare of the people. A Department of the Army permit will be granted unless the District Engineer determines that it would be contrary to the public interest.

The Corps of Engineers is soliciting comments from the public; Federal, State, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

Comments on the proposed work should be submitted, in writing, within 30 days to the District Engineer, U.S. Army Corps of Engineers, Philadelphia District, Wanamaker Building, 100 Penn Square East, Philadelphia, Pennsylvania 19107-3390.

Review of the National Register of Historic Places indicates that no registered properties or properties listed as eligible for inclusion therein are located within the permit area of the work.

The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act 1996 (Public Law 104-267), requires all Federal agencies to consult with the National Marine Fisheries Service on all actions, or proposed actions, permitted, funded, or undertaken by the agency that may adversely affect Essential Fish Habitat (EFH). A preliminary assessment of the EFH found on the "NOAA FISHERIES SERVICE: HABITAT CONSERVATION DIVISION" website indicates that the proposed activity would have little to no effect on EFH and species of concern due to the nature of the project. However, this determination may be modified upon further coordination with Federal resource agencies.

In accordance with Section 307(c) of the Coastal Zone Management Act of 1972, applicants for Federal Licenses or Permits to conduct an activity affecting land or water uses in a State's coastal zone must provide certification that the activity complies with the State's Coastal Zone Management Program. The applicant has stated that the proposed activity complies with

and will be conducted in a manner that is consistent with the approved State Coastal Zone Management (CZM) Program. No permit will be issued until the State has concurred with the applicant's certification or has waived its right to do so. Comments concerning the impact of the proposed and/or existing activity on the State's coastal zone should be sent to this office, with a copy to the State's Office of Coastal Zone Management.

In accordance with Section 401 of the Clean Water Act, a Water Quality Certificate is necessary from the State government in which the work is located. Any comments concerning the work described above which relate to Water Quality considerations should be sent to this office with a copy to the State.

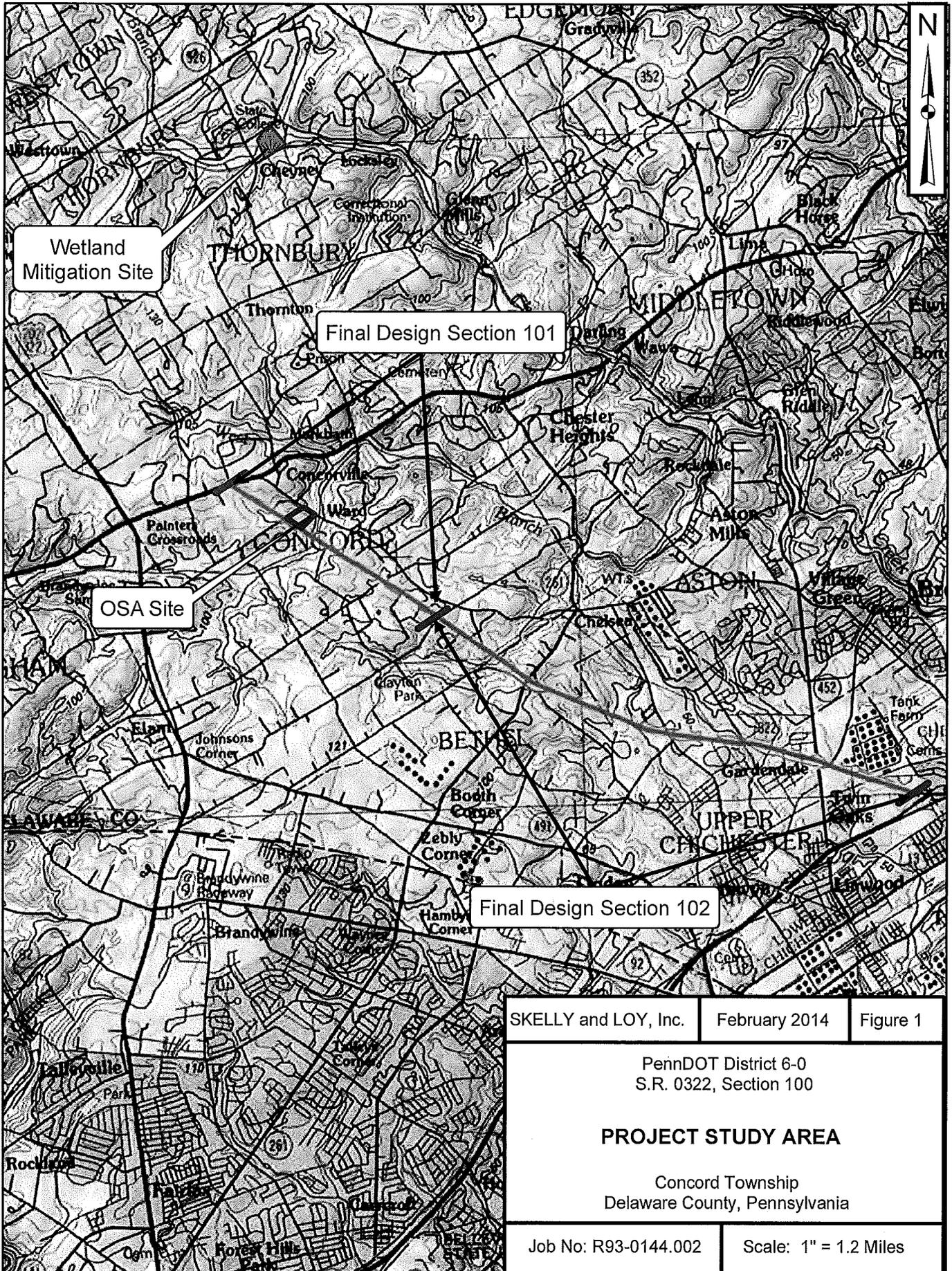
The evaluation of the impact of the work described above on the public interest will include application of the guidelines promulgated by the Administrator, U.S. Environmental Protection Agency, under authority of Section 404(b) of the Clean Water Act.

Any person may request, in writing, to the District Engineer, within the comment period specified in this notice, that a public hearing be held to consider this application. Requests for a public hearing shall state in writing, with particularity, the reasons for holding a public hearing.

Additional information concerning this permit application may be obtained by calling Todd Schaible at (215) 656-6591 between the hours of 1:00 and 3:30 p.m. or writing this office at the above address.



Frank J. Cianfrani  
Chief, Regulatory Branch



SKELLY and LOY, Inc.	February 2014	Figure 1
PennDOT District 6-0 S.R. 0322, Section 100		
<b>PROJECT STUDY AREA</b>		
Concord Township Delaware County, Pennsylvania		
Job No: R93-0144.002	Scale: 1" = 1.2 Miles	



SKELLY and LOY, Inc.	July 2015	Figure 1
S.R. 0322 Section OSA (Operations Staging Area)		
<b>SECTION MIT - OSA WETLAND IMPACT MAP</b>		
Concord Township Delaware County, Pennsylvania		
Job No.: R93-0144	Scale: 1" = 80'	

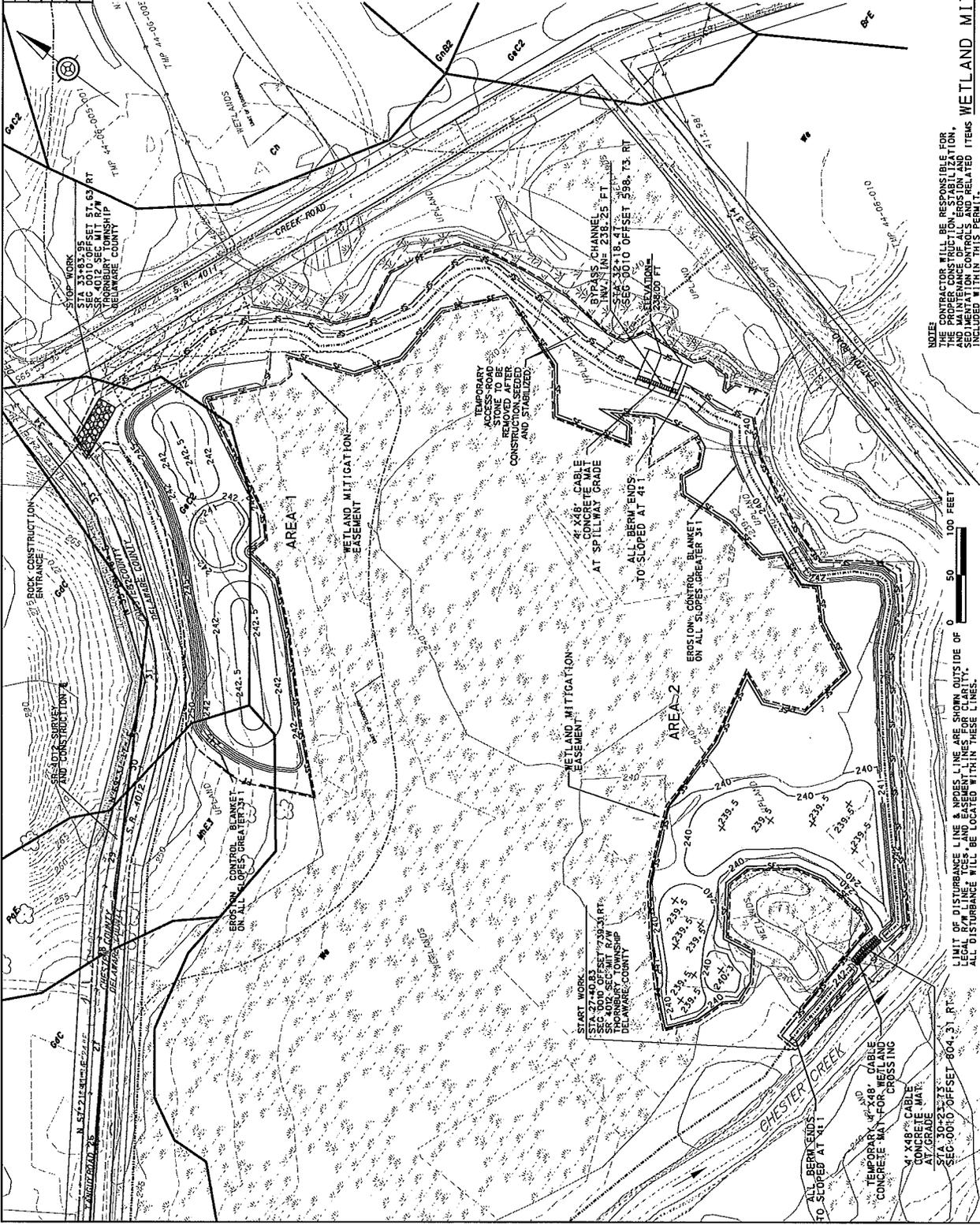
DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-D	DELAWARE	302S	MIT	87 OF 91
REVISION NUMBER	THORNBURY TOWNSHIP	REVISIONS	DATE	BY

### EROSION AND SEDIMENT POLLUTION CONTROL PLAN

- LEGEND**
- PROPERTY LINE
  - RIGHT OF WAY LINE
  - COUNTY LINE
  - LIMIT OF DISTURBANCE
  - TEMPORARY CONSTRUCTION ACCESS ROAD
  - PROTECTIVE FENCE
  - SILT FENCE
  - EXISTING MONITORING WELLS

- SOIL LEGEND**
- B-E BRANKYNE LOAM, 25 TO 40 PERCENT SLOPES
  - CA CHEMULA SILT LOAM
  - CcC CLADSTONE GRAVELLY LOAM, 8 TO 15 PERCENT SLOPES
  - GcC2 GLENNVILLE SILT LOAM, 8 TO 15 PERCENT SLOPES, MODERATELY ERODED
  - GcB2 GLENNVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES, SEVERELY ERODED
  - MhE3 MANOR LOAM AND CHANNERY LOAM, 25 TO 35 PERCENT SLOPES, SEVERELY ERODED
  - PcE PARKS SILT LOAM, 25 TO 35 PERCENT SLOPES, SEVERELY ERODED
  - Wb WEHADKEE SILT LOAM

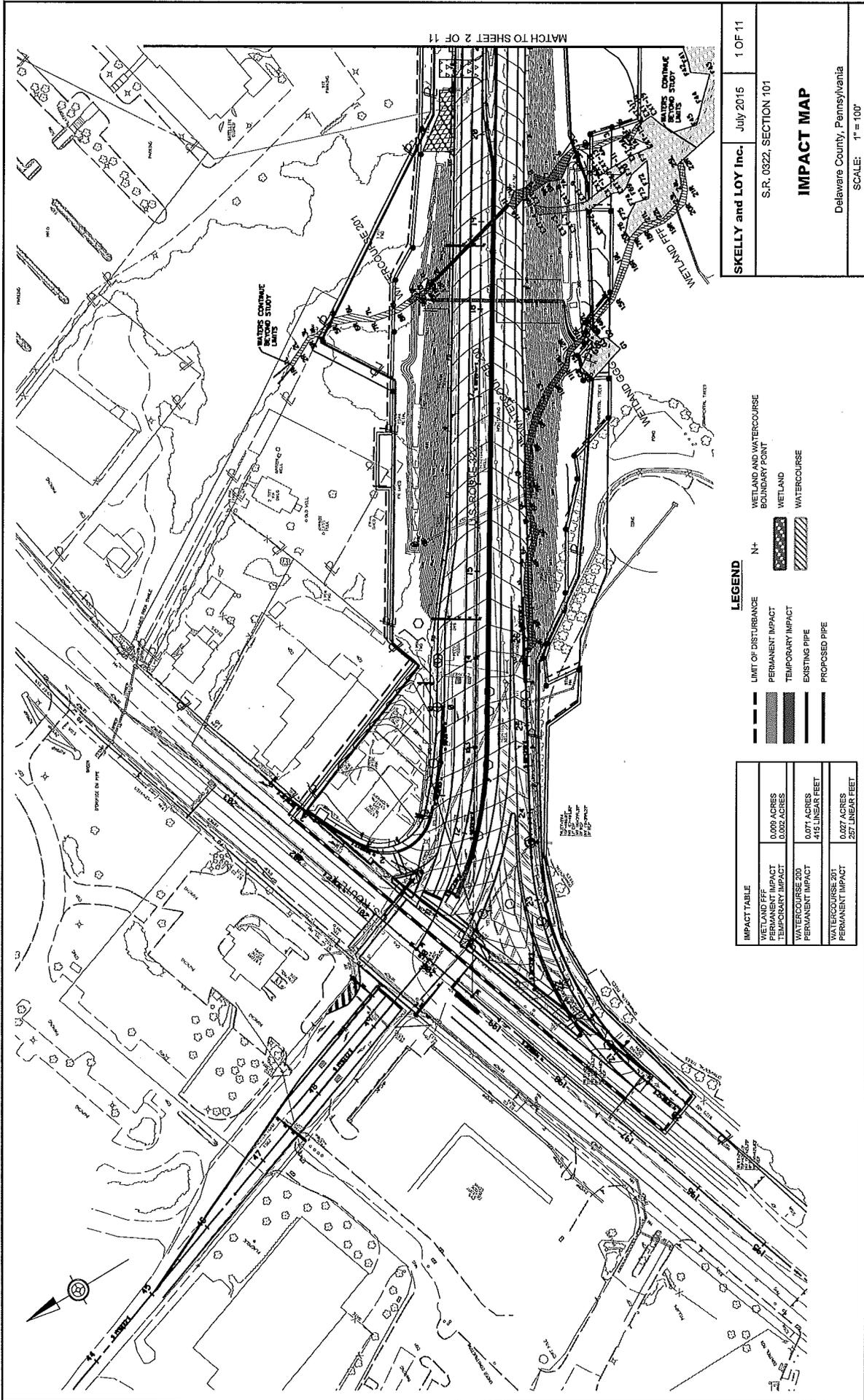
NOTE: THIS EROSION AND SEDIMENT POLLUTION CONTROL (EASPC) PLAN REPRESENTS ONLY A PORTION OF THE COMPLETE EASPC PLAN FOR U.S. ROUTE 322, SECTION 100 (SECTION 101, 102, AND 103). REFER TO THE APPROVED EASPC AND NOTES APPLICATIONS AND PERMITS FOR THE COMPREHENSIVE PLAN AND DETAILS.



NOTE: THE CONTRACTOR WILL BE RESPONSIBLE FOR THE MAINTENANCE OF ALL EROSION AND SEDIMENTATION CONTROLS AND RELATED ITEMS INCLUDED IN THIS PERMIT.

LIMIT OF DISTURBANCE LINE & NOTES LINE ARE SHOWN OUTSIDE OF THESE LINES. ALL DISTURBANCE WILL BE LOCATED WITHIN THESE LINES.

### WETLAND MITIGATION PLAN



MATCH TO SHEET 2 OF 11

<b>SKELLY and LOY Inc.</b>	July 2015	1 OF 11
S.R. 0322, SECTION 101		
<b>IMPACT MAP</b>		
Delaware County, Pennsylvania		
SCALE: 1" = 100'		

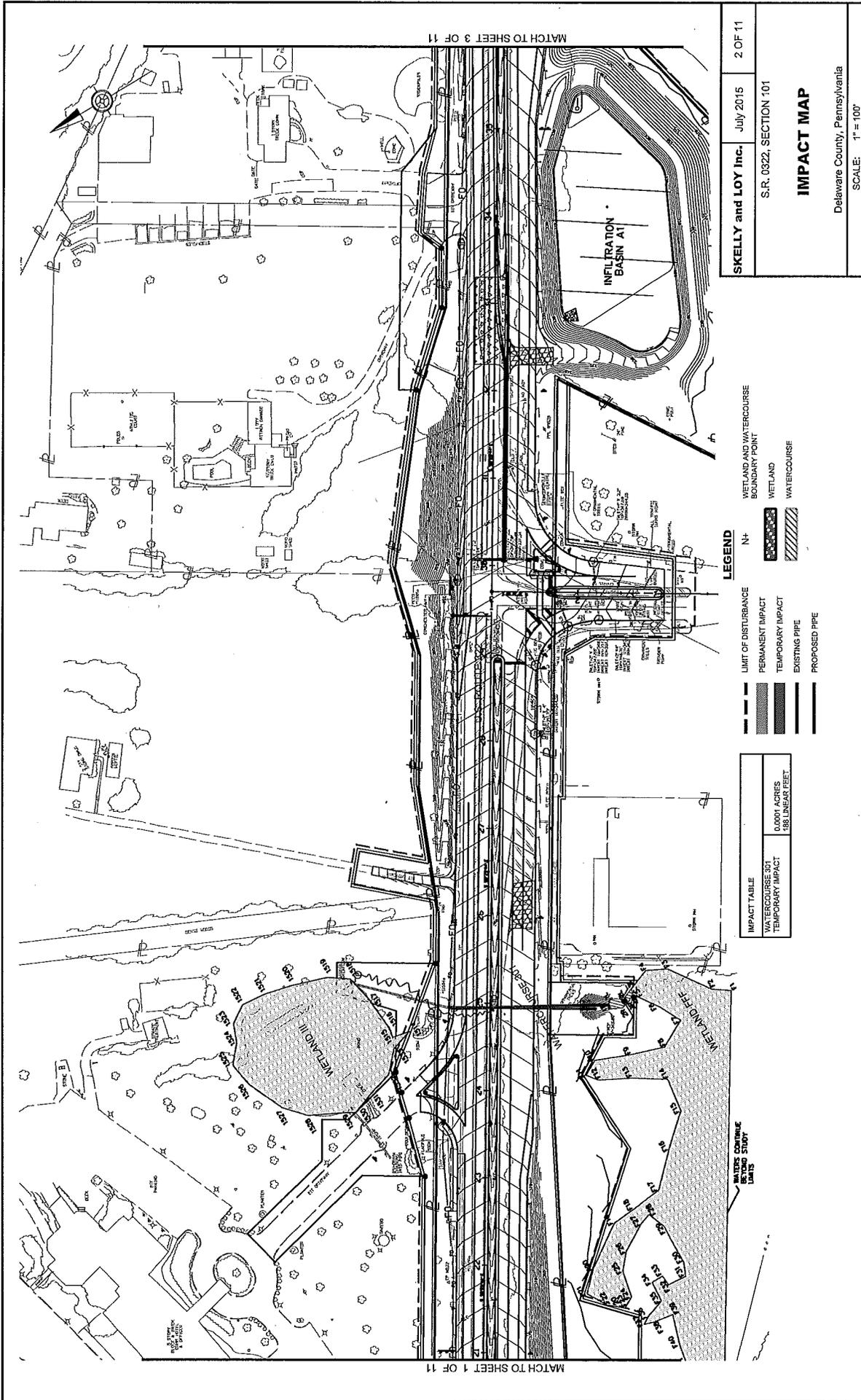
**LEGEND**

	LIMIT OF DISTURBANCE		WETLAND AND WATERCOURSE BOUNDARY POINT
	PERMANENT IMPACT		WETLAND
	TEMPORARY IMPACT		WATERCOURSE
	EXISTING PIPE		
	PROPOSED PIPE		

IMPACT TABLE	
WETLAND OFF	0.009 ACRES
PERMANENT IMPACT	0.002 ACRES
TEMPORARY IMPACT	0.077 ACRES
WATERCOURSE 200	475 LINEAR FEET
PERMANENT IMPACT	0.027 ACRES
TEMPORARY IMPACT	257 LINEAR FEET

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17  
1  
C



MATCH TO SHEET 3 OF 11

MATCH TO SHEET 1 OF 11

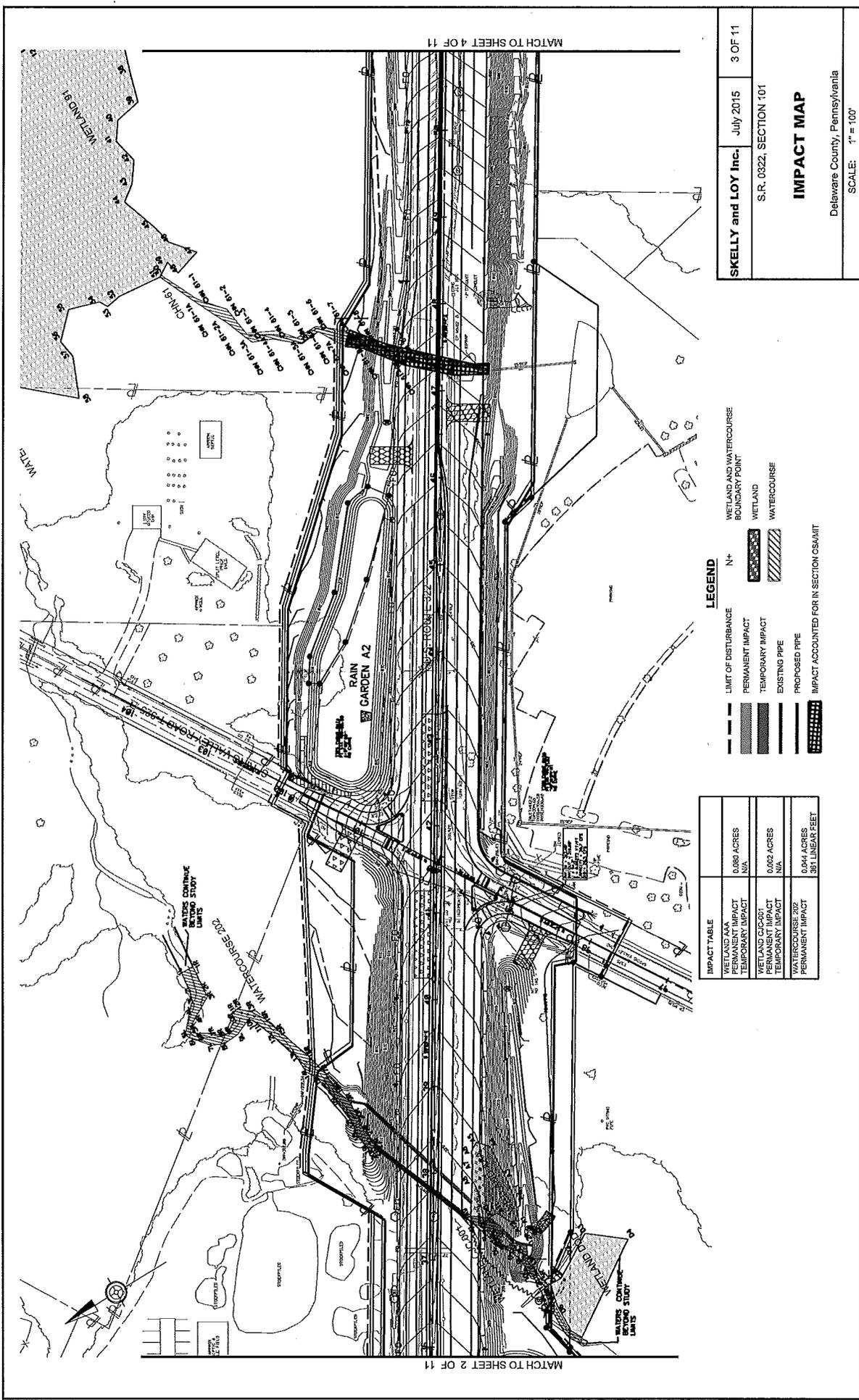
<b>SKELLY and LOY Inc.</b>	July 2015	2 OF 11
S.R. 0322, SECTION 101		
<b>IMPACT MAP</b>		
Delaware County, Pennsylvania		
SCALE: 1" = 100'		

W:\195-0144\CAD\IMPACT MAPS 2013 (7-13-15).DWG

- LEGEND**
- LIMIT OF DISTURBANCE
  - PERMANENT IMPACT
  - TEMPORARY IMPACT
  - EXISTING PIPE
  - PROPOSED PIPE
  - WETLAND AND WATERCOURSE BOUNDARY POINT
  - WETLAND
  - WATERCOURSE

IMPACT TABLE	
WATERCOURSE 501	0.0001 ACRES
TEMPORARY IMPACT	188 LINEAR FEET

WATER COURSE BEYOND STUDY LIMITS

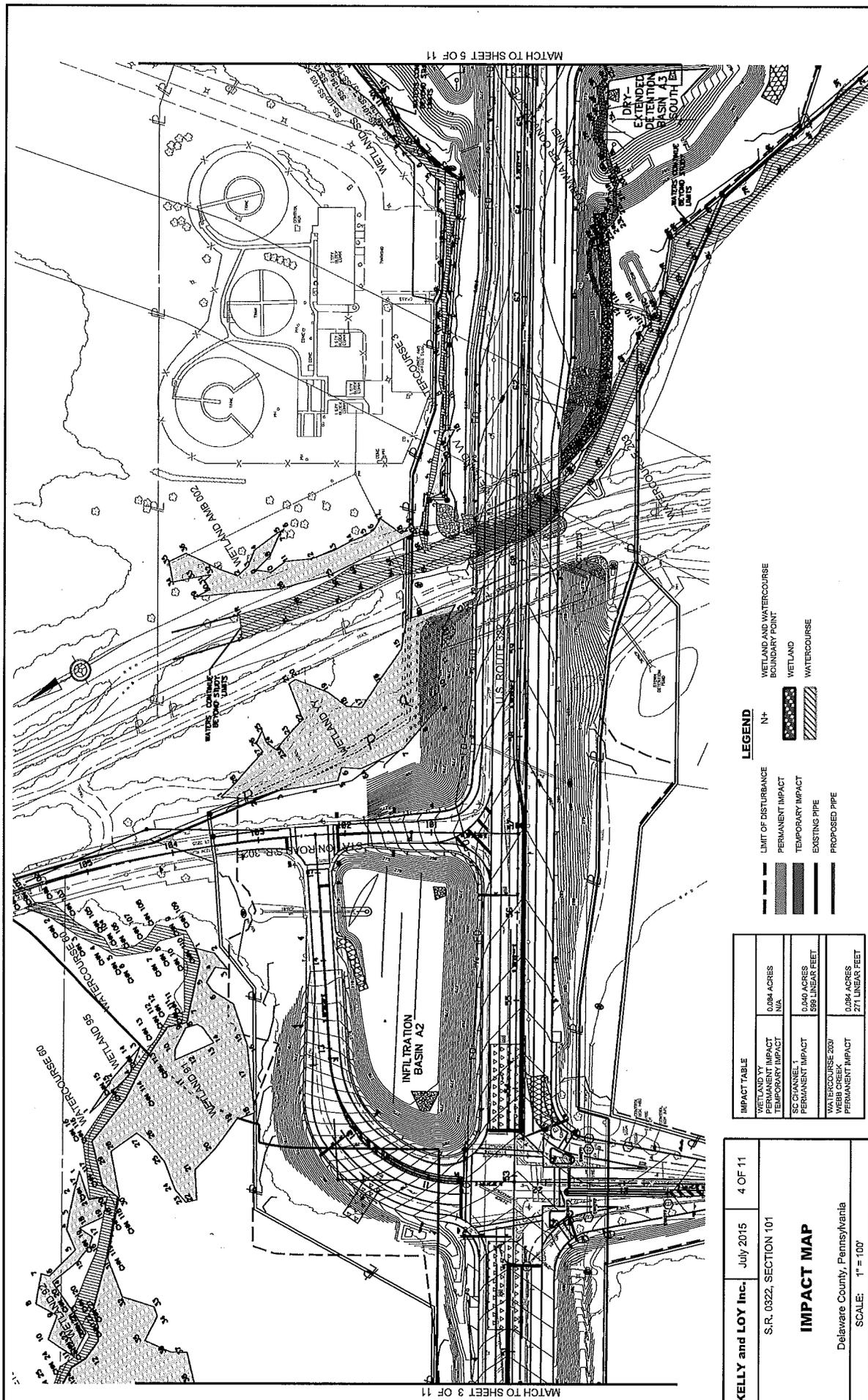


IMPACT TABLE	
WETLAND AFFECT	0.089 ACRES
WETLAND IMPACT	N/A
TEMPORARY IMPACT	0.002 ACRES
PERMANENT IMPACT	N/A
WATERCOURSE AFFECT	0.044 ACRES
WATERCOURSE IMPACT	381 LINEAR FEET

- LEGEND**
- LIMIT OF DISTURBANCE
  - PERMANENT IMPACT
  - TEMPORARY IMPACT
  - EXISTING PIPE
  - PROPOSED PIPE
  - IMPACT ACCOUNTED FOR IN SECTION 05A/11T
  - N+ WETLAND AND WATERCOURSE BOUNDARY POINT
  - WETLAND
  - WATERCOURSE

<b>SKELLY and LOY Inc.</b>	July 2015	3 OF 11
S.R. 0322, SECTION 701		
<b>IMPACT MAP</b>		
Delaware County, Pennsylvania		
SCALE: 1" = 100'		

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**LEGEND**

--- (dashed line)	LIMIT OF DISTURBANCE	--- (dashed line)	WETLAND AND WATERCOURSE BOUNDARY POINT
▨ (diagonal hatching)	PERMANENT IMPACT	▨ (diagonal hatching)	WETLAND
▧ (cross-hatching)	TEMPORARY IMPACT	▧ (cross-hatching)	WATERCOURSE
— (solid line)	EXISTING PIPE	— (solid line)	
- - - (dashed line)	PROPOSED PIPE		

**IMPACT TABLE**

WETLAND TYPE	0.084 ACRES
PERMANENT IMPACT	N/A
TEMPORARY IMPACT	N/A
SC CHANNEL 1	0.040 ACRES
PERMANENT IMPACT	379 LINEAR FEET
TEMPORARY IMPACT	271 LINEAR FEET
WATERCOURSE 20W	0.084 ACRES
WEBB CREEK	271 LINEAR FEET
PERMANENT IMPACT	
TEMPORARY IMPACT	

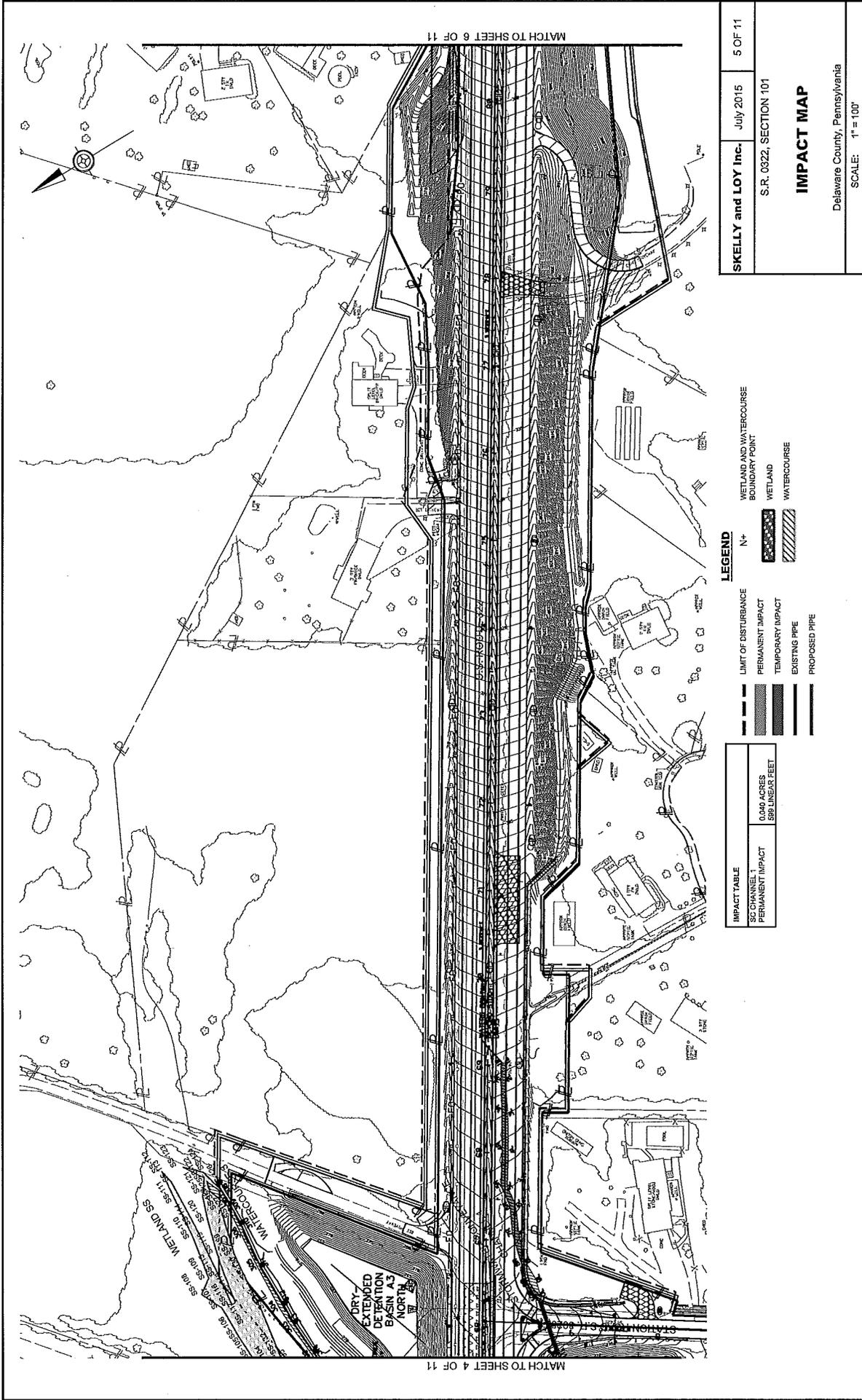
**SKELLY and LOY Inc.** July 2015 4 OF 11

S.R. 0322, SECTION 101

**IMPACT MAP**

Delaware County, Pennsylvania

SCALE: 1" = 100'

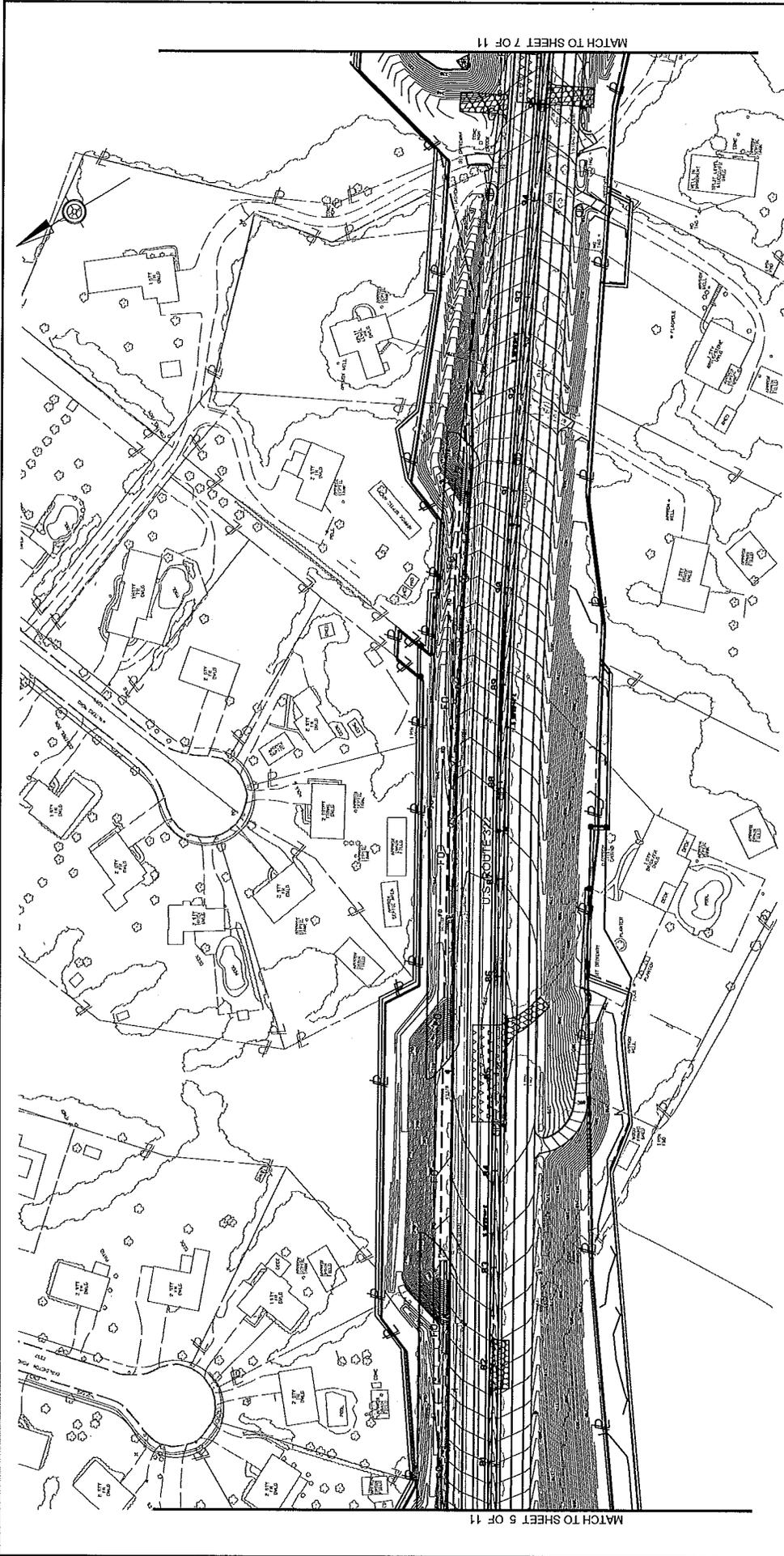


<b>SKELLY and LOY Inc.</b>	July 2015	5 OF 11
S.R. 0322, SECTION 101		
<b>IMPACT MAP</b>		
Delaware County, Pennsylvania		
SCALE: 1" = 100'		

**LEGEND**

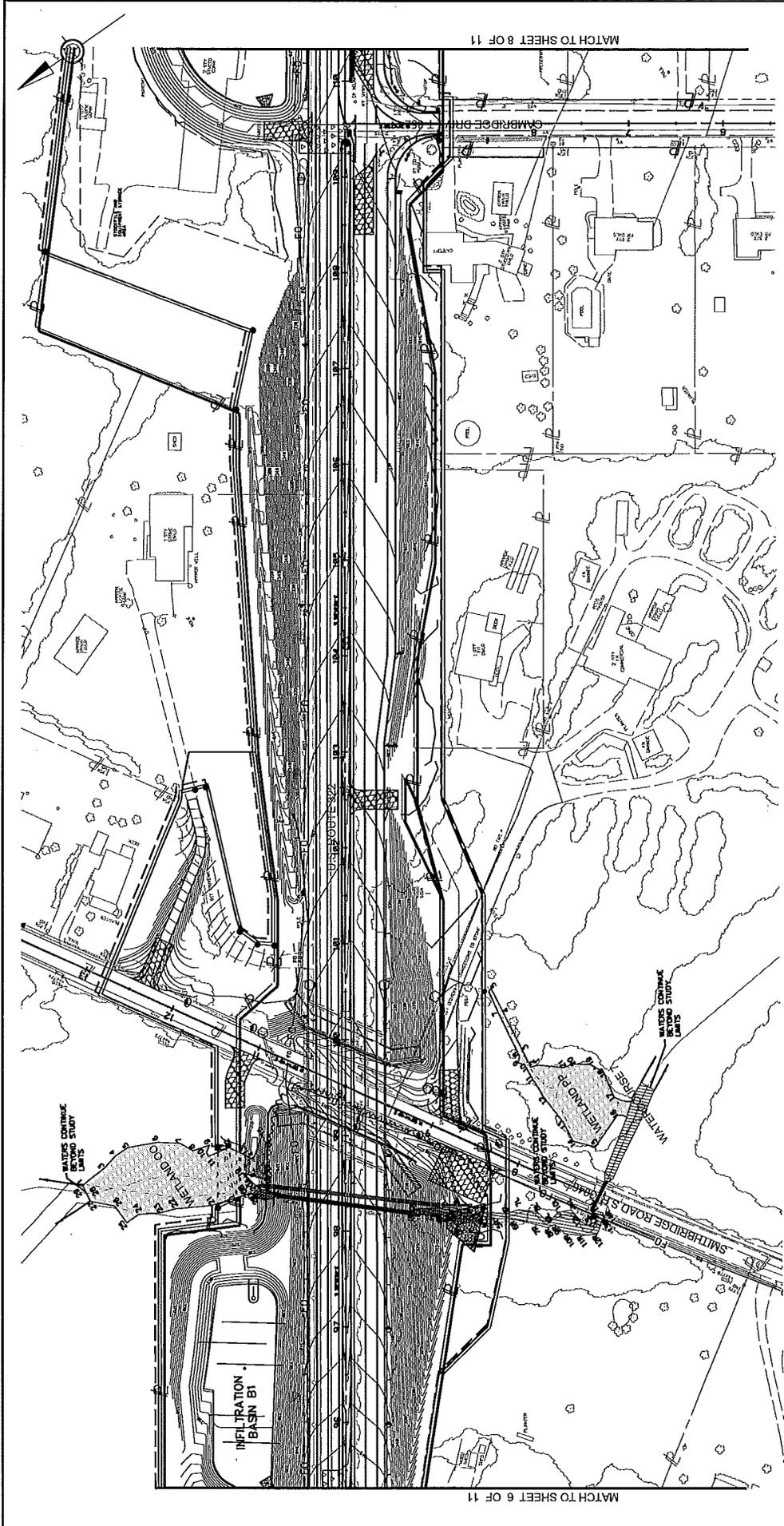
	LIMIT OF DISTURBANCE		WETLAND AND WATERCOURSE BOUNDARY POINT
	PERMANENT IMPACT		WETLAND
	TEMPORARY IMPACT		WATERCOURSE
	EXISTING PIPE		
	PROPOSED PIPE		

<b>IMPACT TABLE</b>	
SC CHANNEL 1	0.649 ACRES
PERMANENT IMPACT	589 LINEAR FEET



SKELLY and LOY Inc.	July 2015	6 OF 11
S.R. 0822, SECTION 101		
<b>IMPACT MAP</b>		
Delaware County, Pennsylvania		
SCALE: 1" = 100'		

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**SKELLY and LOY Inc.** July 2015 7 OF 11

S.R. 0322, SECTION 101

**IMPACT MAP**

Delaware County, Pennsylvania

SCALE: 1" = 100'

**LEGEND**

WETLAND AND WATERCOURSE BOUNDARY POINT

WETLAND

WATERCOURSE

LIMIT OF DISTURBANCE

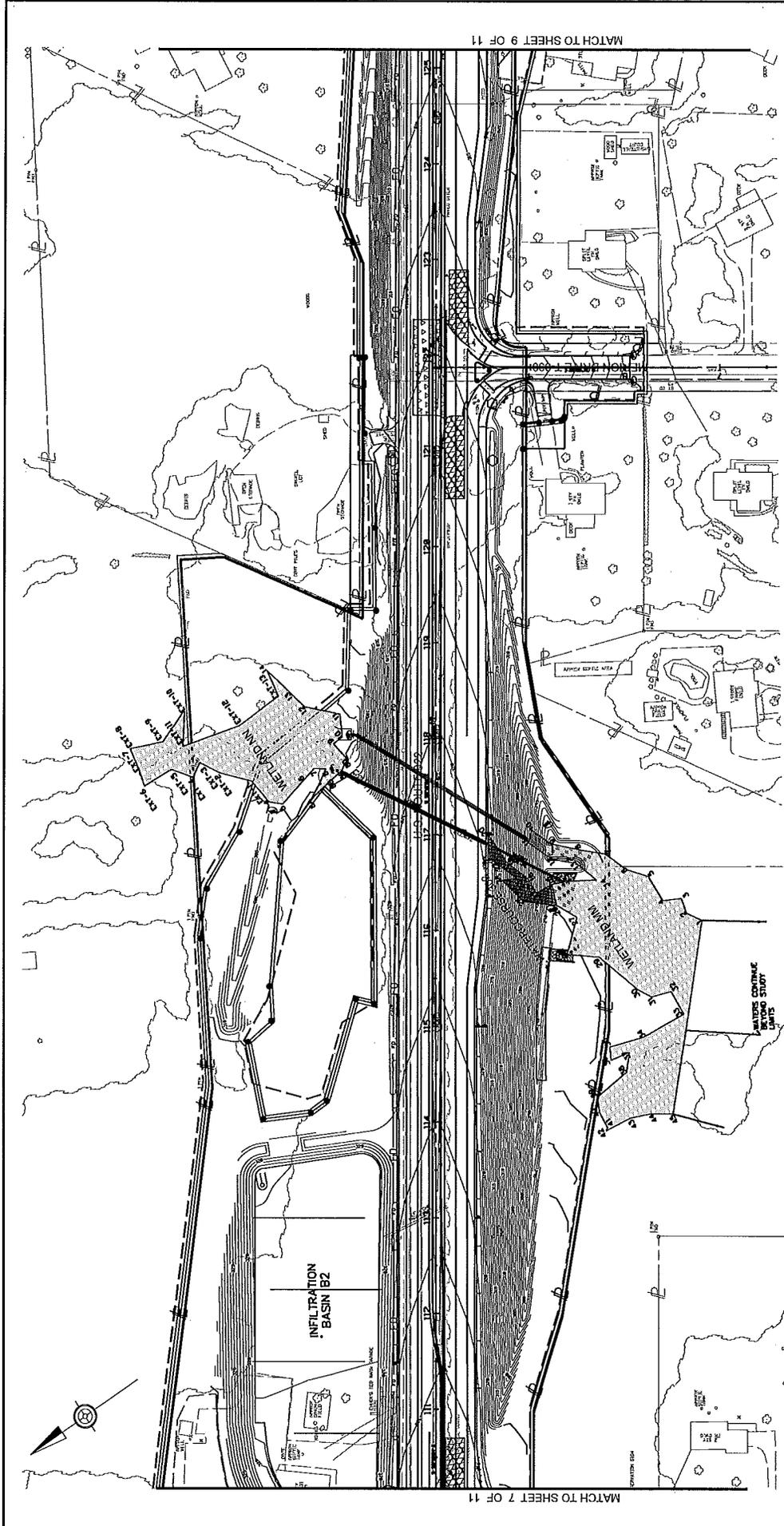
PERMANENT IMPACT

TEMPORARY IMPACT

EXISTING PIPE

PROPOSED PIPE

IMPACT TABLE	
WETLAND CO	0.023 ACRES
PERMANENT IMPACT	N/A
TEMPORARY IMPACT	
WATERCOURSE 7	0.016 ACRES
PERMANENT IMPACT	245 LINEAR FEET



MATCH TO SHEET 9 OF 11

MATCH TO SHEET 7 OF 11

<b>SKELLY and LOY Inc.</b>	July 2015	8 OF 11
S.R. 0322, SECTION 101		
<b>IMPACT MAP</b>		
Delaware County, Pennsylvania		
SCALE: 1" = 100'		

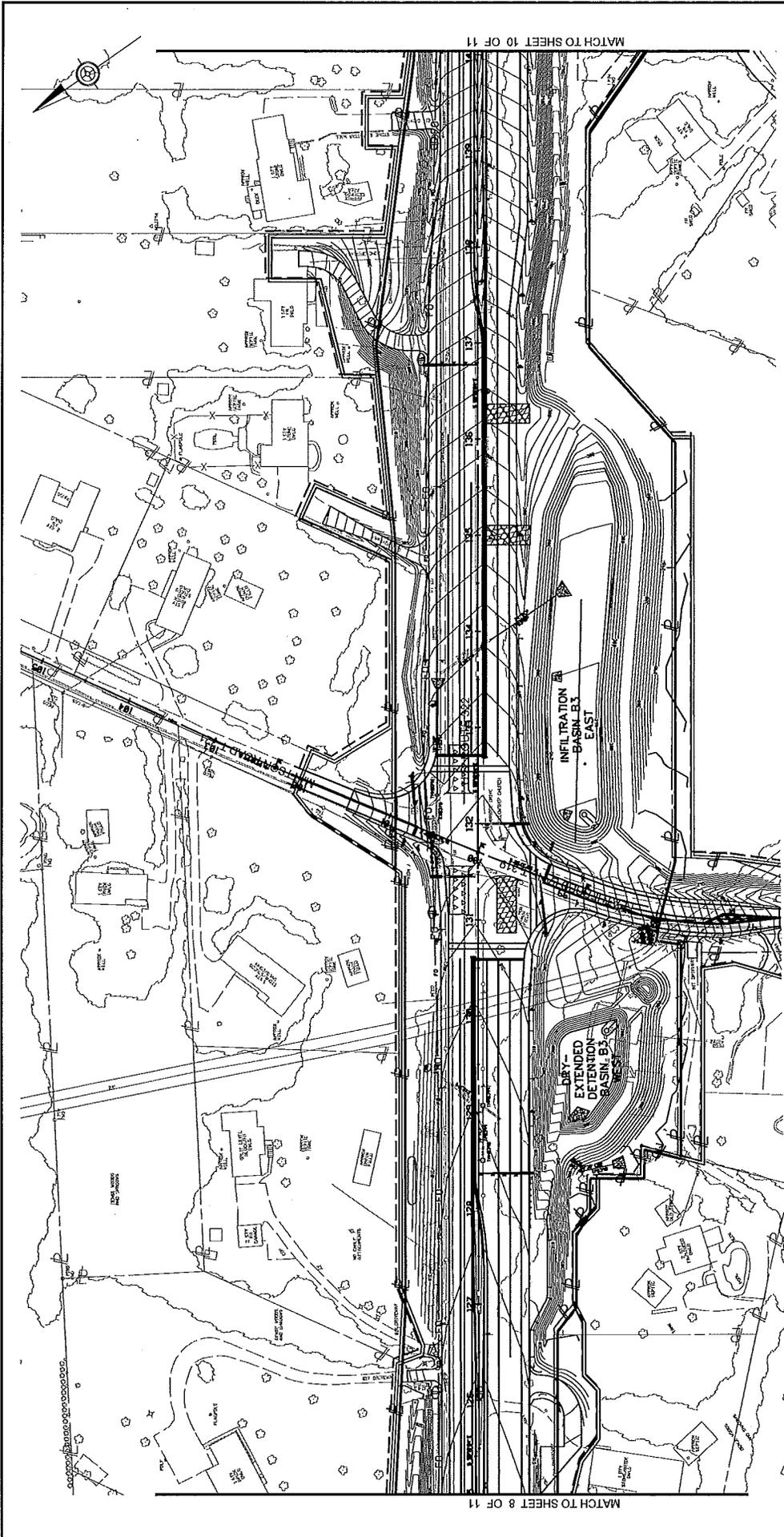
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IMPACT TABLE	
WETLAND IM	0.073 ACRES
PERMANENT IMPACT	N/A
TEMPORARY IMPACT	
WATERCOURSE 30Z	0.025 ACRES
PERMANENT IMPACT	277' LINEAR FEET

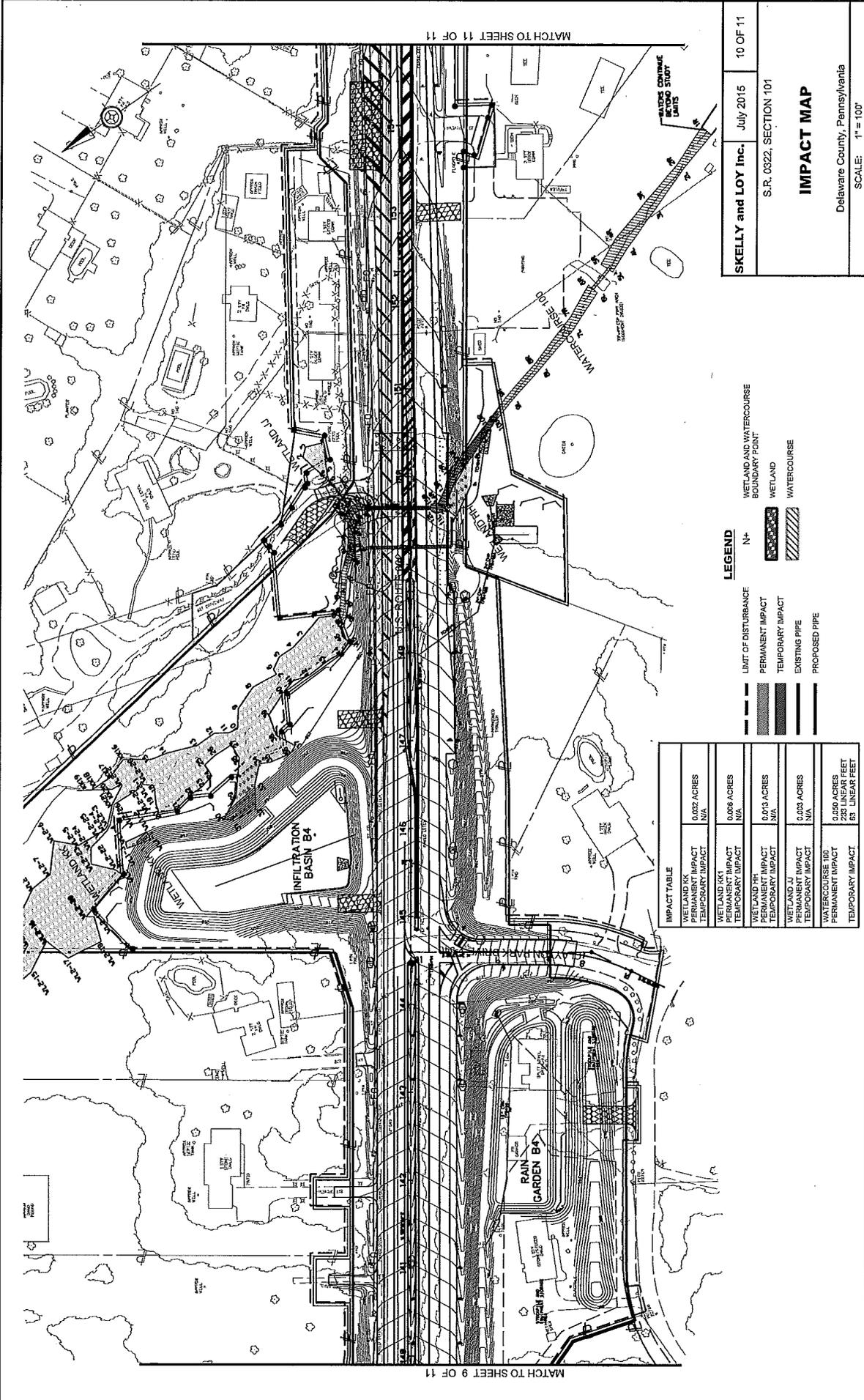
LEGEND	
--- N+	WETLAND AND WATERCOURSE BOUNDARY POINT
[Pattern]	WETLAND
[Pattern]	WATERCOURSE
---	LIMIT OF DISTURBANCE
[Pattern]	PERMANENT IMPACT
[Pattern]	TEMPORARY IMPACT
[Pattern]	EXISTING PIPE
[Pattern]	PROPOSED PIPE

7-11



<p><b>SKELLY and LOY Inc.</b> S.R. 0322, SECTION 101</p>	<p>July 2015</p>	<p>9 OF 11</p>
<p><b>IMPACT MAP</b></p>		
<p>Delaware County, Pennsylvania SCALE: 1" = 100'</p>		

WA893-0144\CAD\IMPACT MAPS 2013 (7-19-15).DGN



MATCH TO SHEET 11 OF 11

MATCH TO SHEET 9 OF 11

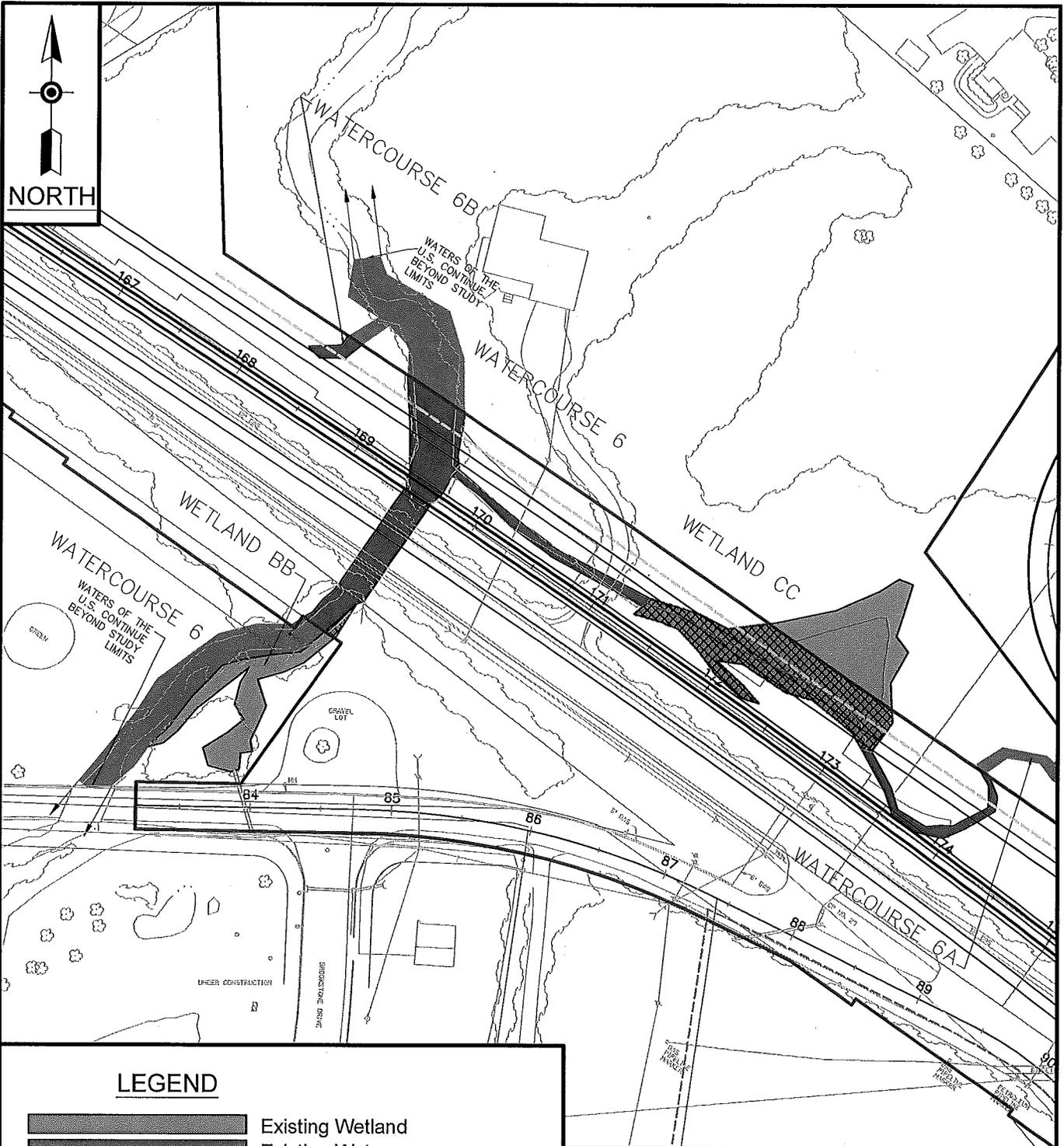
**SKELLY and LOY Inc.**, July 2015, 10 OF 11  
 S.R. 0322, SECTION 101  
**IMPACT MAP**  
 Delaware County, Pennsylvania  
 SCALE: 1" = 100'

W:\993-0144\CAD\IMPACT MAPS 2013 (7-13-15).DGN

- LEGEND**
- WETLAND AND WATERCOURSE BOUNDARY POINT
  - ▨ WETLAND
  - ▧ WATERCOURSE
  - LIMIT OF DISTURBANCE
  - ▨ PERMANENT IMPACT
  - ▧ TEMPORARY IMPACT
  - ▬ EXISTING PIPE
  - ▬ PROPOSED PIPE

IMPACT TABLE	
WETLAND BK	0.032 ACRES
PERMANENT IMPACT	N/A
TEMPORARY IMPACT	N/A
WETLAND BK1	0.006 ACRES
PERMANENT IMPACT	N/A
TEMPORARY IMPACT	N/A
WETLAND BK	0.013 ACRES
PERMANENT IMPACT	N/A
TEMPORARY IMPACT	N/A
WETLAND LJ	0.003 ACRES
PERMANENT IMPACT	N/A
TEMPORARY IMPACT	N/A
WATERCOURSE 100	0.050 ACRES
PERMANENT IMPACT	283 LINEAR FEET
TEMPORARY IMPACT	85' LINEAR FEET





**LEGEND**

-  Existing Wetland
-  Existing Watercourse
-  Proposed Wetland Impact
-  Proposed Watercourse Impact
-  Proposed Limit of Disturbance
-  Historic Lands
-  Proposed Retaining Wall

SKELLY and LOY, Inc.

July 2015

1 of 13

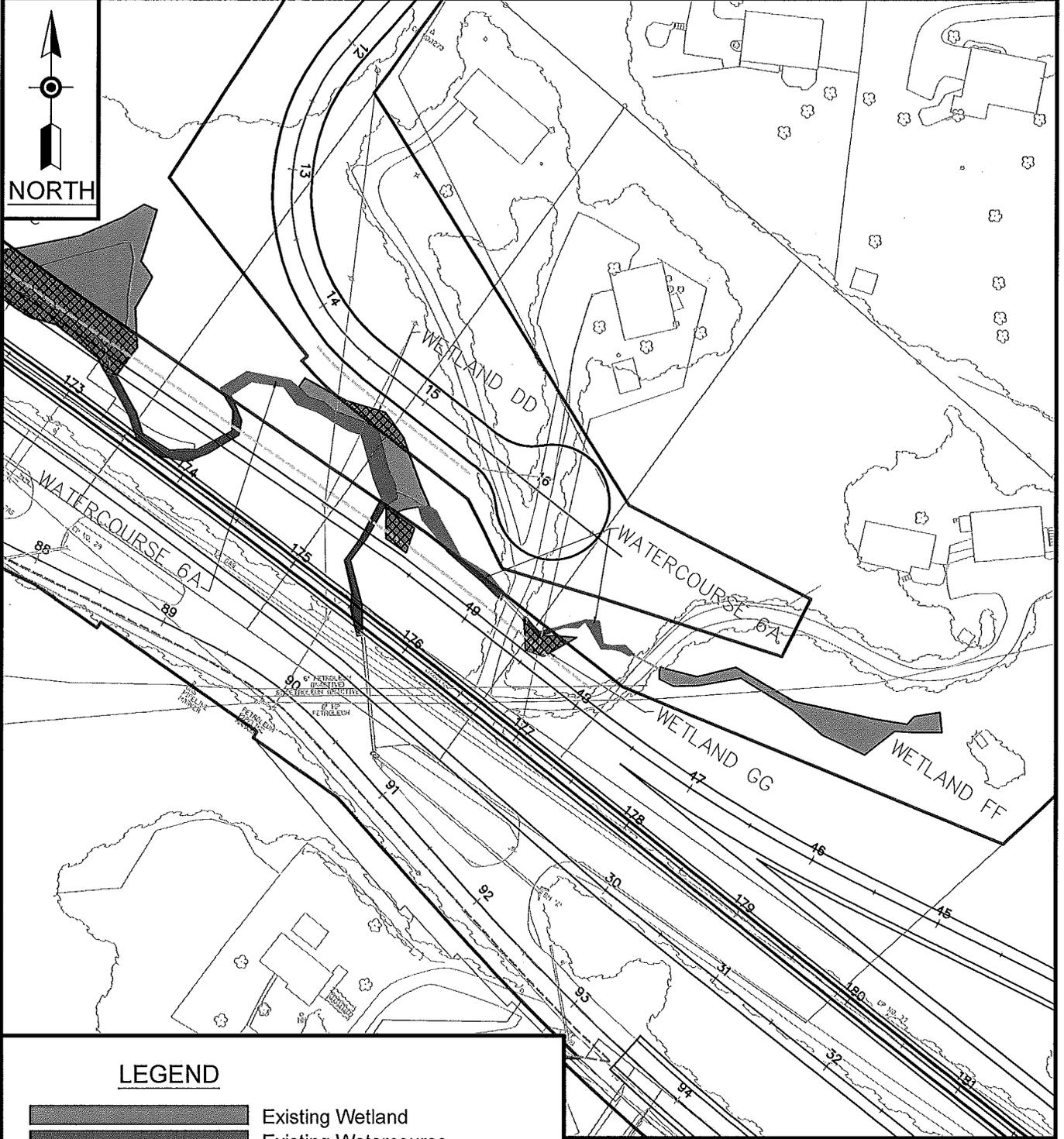
S.R. 0322, SECTION 102

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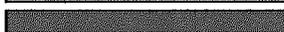
Delaware County, Pennsylvania

Job No.: R93-0144.000

Scale: 1"=100'



**LEGEND**

-  Existing Wetland
-  Existing Watercourse
-  Proposed Wetland Impact
-  Proposed Watercourse Impact
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SKELLY and LOY, Inc.	July 2015	2 of 13
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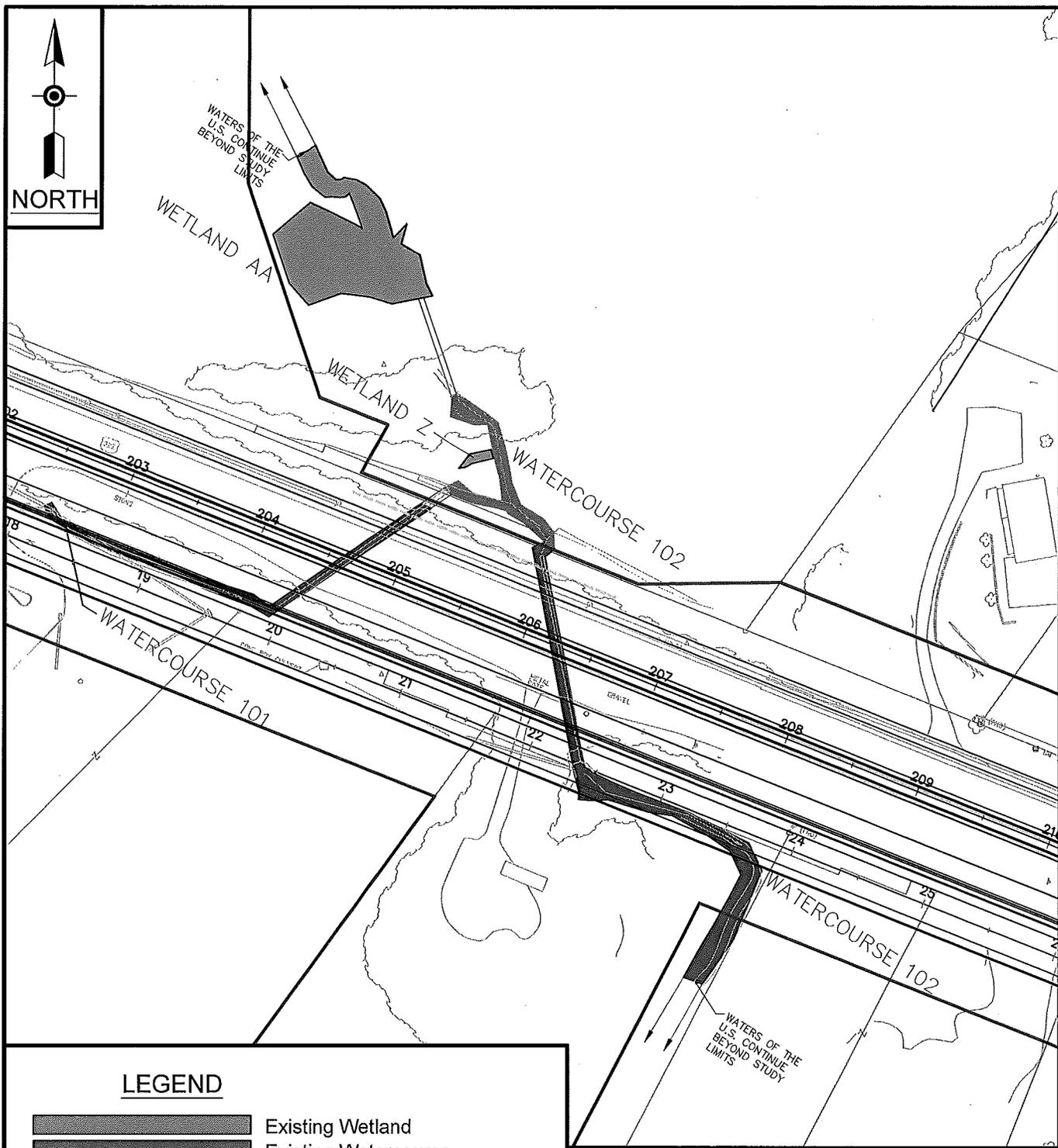
S.R. 0322, SECTION 102

**IMPACT MAP**

Delaware County, Pennsylvania

Job No.: R93-0144.000

Scale: 1"=100'



**LEGEND**

-  Existing Wetland
-  Existing Watercourse
-  Proposed Wetland Impact
-  Proposed Watercourse Impact
-  Proposed Limit of Disturbance
-  Historic Lands
-  Proposed Retaining Wall

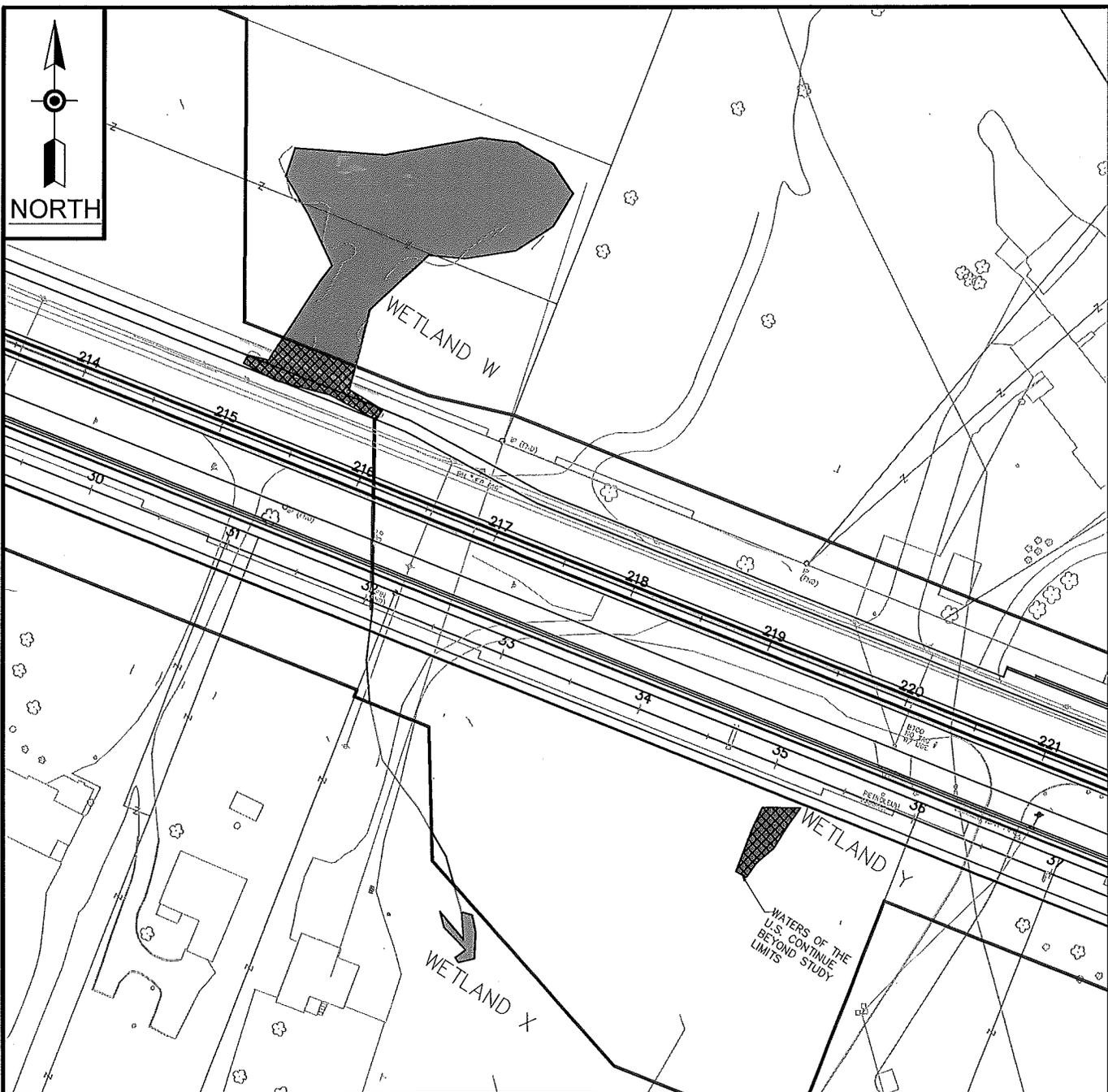
SKELLY and LOY, Inc.	July 2015	3 of 13
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S.R. 0322, SECTION 102

**IMPACT MAP**

Delaware County, Pennsylvania

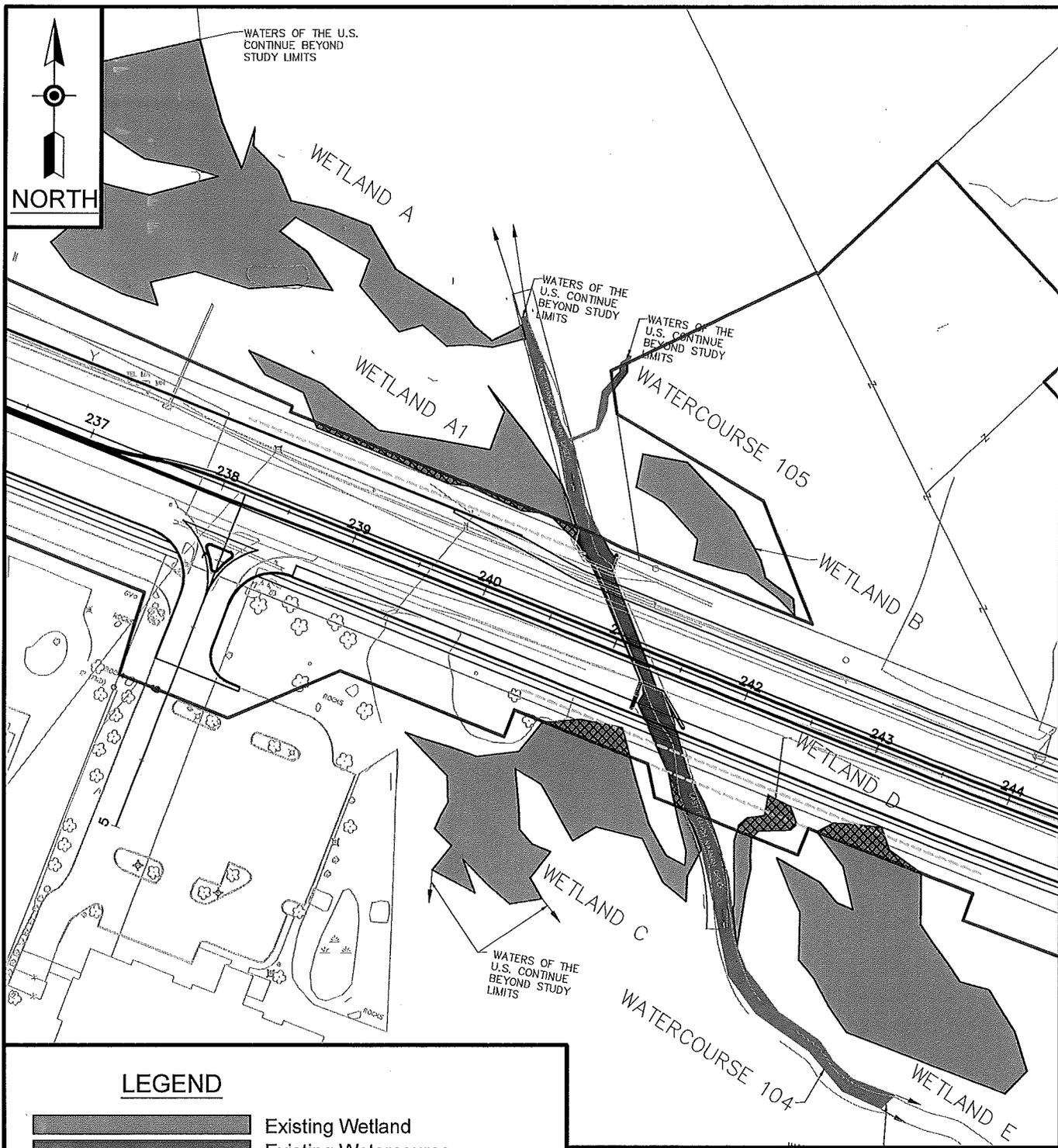
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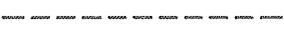
**LEGEND**

- Existing Wetland
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- Proposed Watercourse Impact
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SKELLY and LOY, Inc.	July 2015	4 of 13
S.R. 0322, SECTION 102		
<b>IMPACT MAP</b>		
Delaware County, Pennsylvania		
Job No.: R93-0144.000	Scale: 1"=100'	



### LEGEND

-  Existing Wetland
-  Existing Watercourse
-  Proposed Wetland Impact
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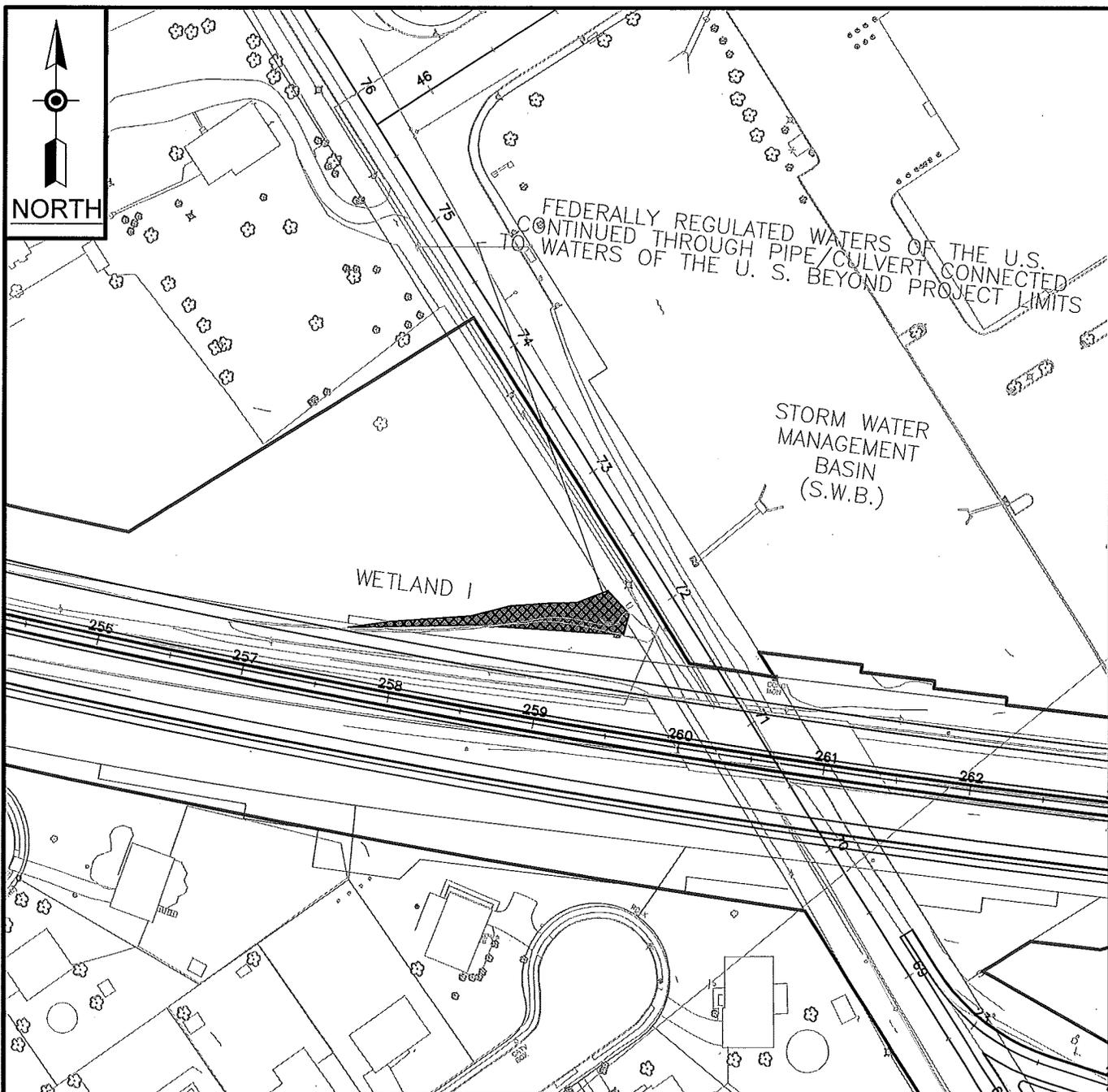
SKELLY and LOY, Inc.	July 2015	5 of 13
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S.R. 0322, SECTION 102

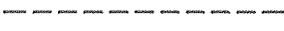
### IMPACT MAP

Delaware County, Pennsylvania

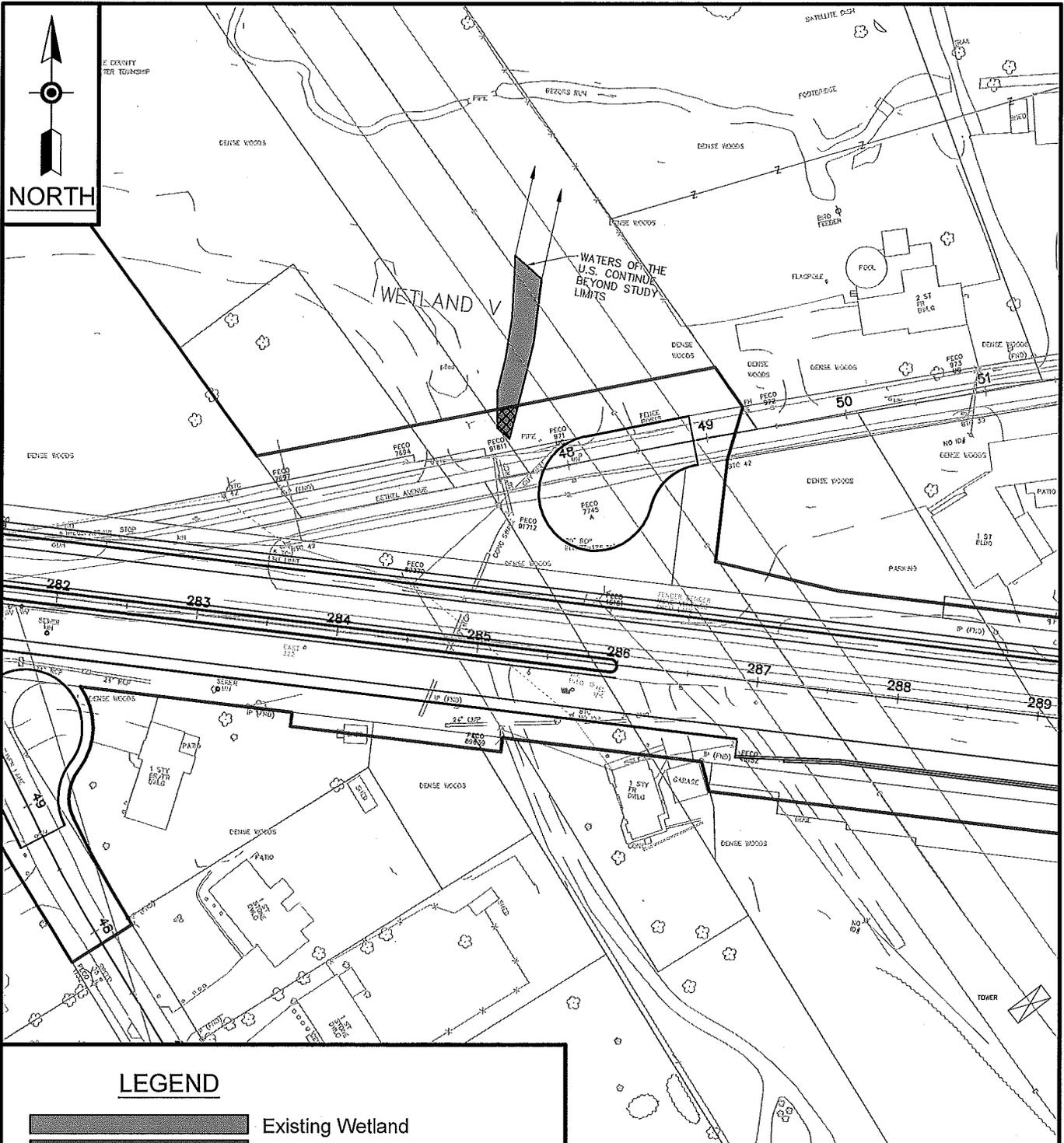
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SKELLY and LOY, Inc.	July 2015	6 of 13
S.R. 0322, SECTION 102		
<b>IMPACT MAP</b>		
Delaware County, Pennsylvania		
Job No.: R93-0144.000	Scale: 1"=100'	



**LEGEND**

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SKELLY and LOY, Inc.

July 2015

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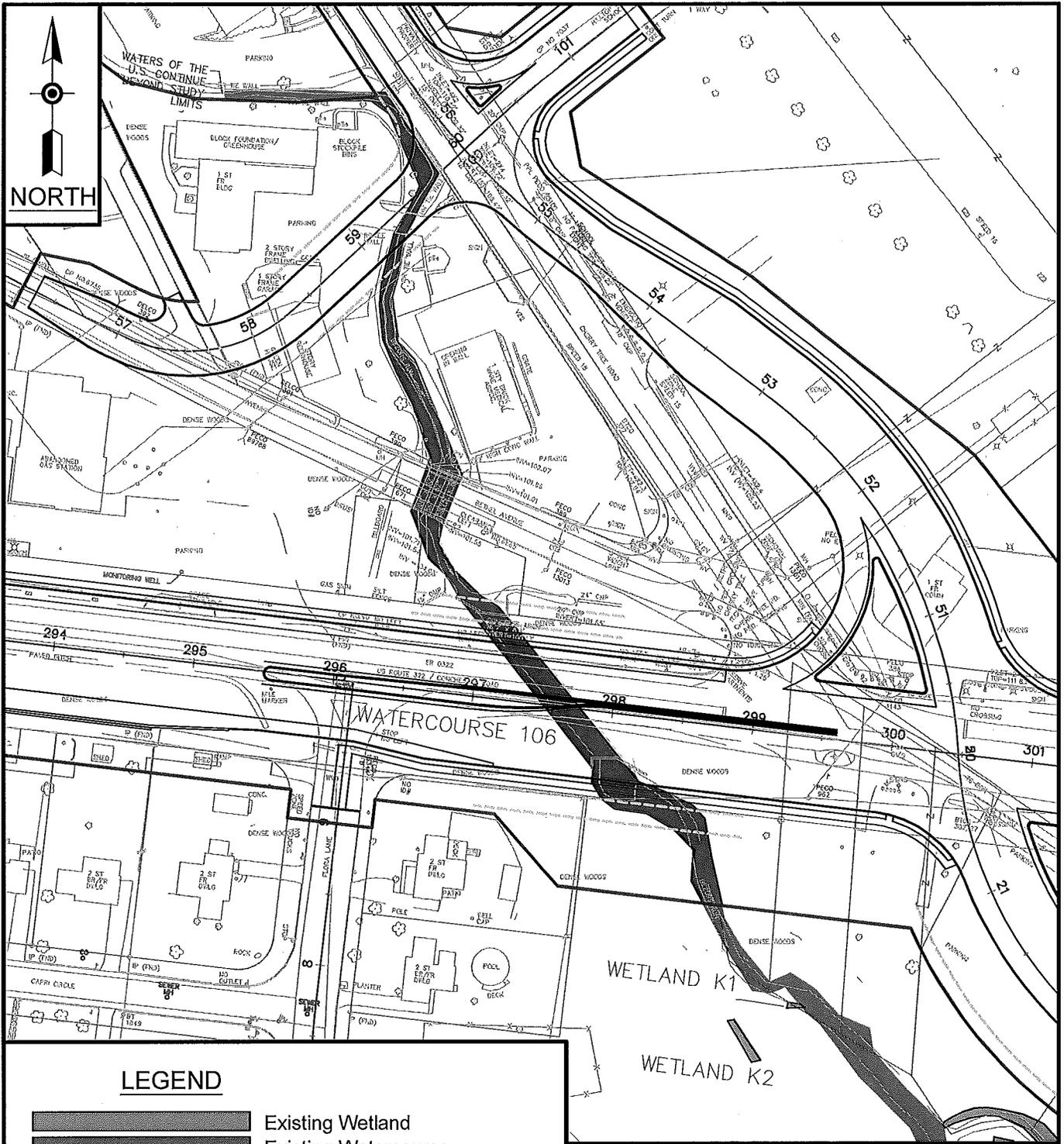
S.R. 0322, SECTION 102

**IMPACT MAP**

Delaware County, Pennsylvania

Job No.: R93-0144.000

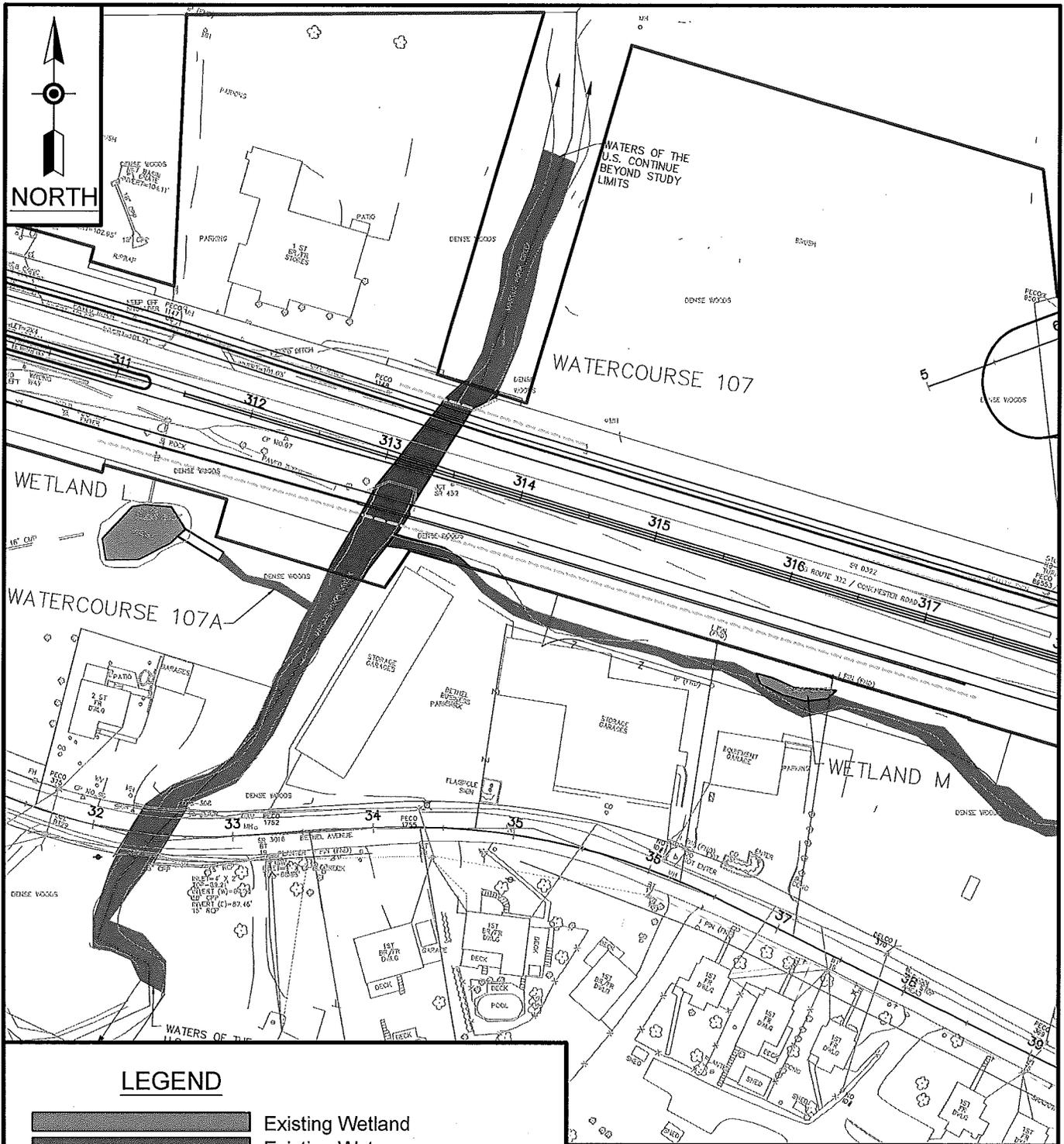
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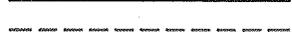
**LEGEND**

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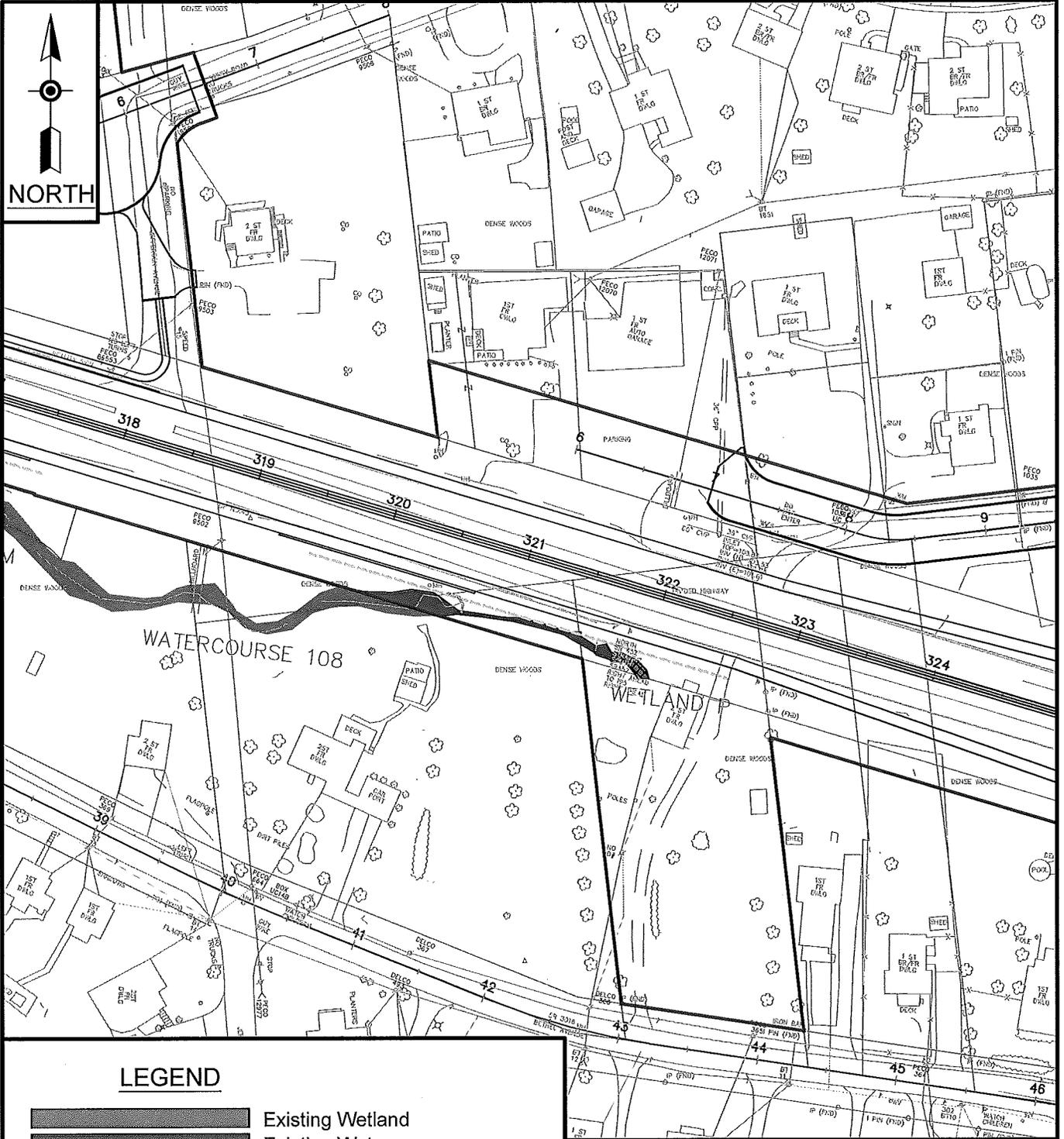
SKELLY and LOY, Inc.	July 2015	8 of 13
S.R. 0322, SECTION 102		
<b>IMPACT MAP</b>		
Delaware County, Pennsylvania		
Job No.: R93-0144.000	Scale: 1"=100'	



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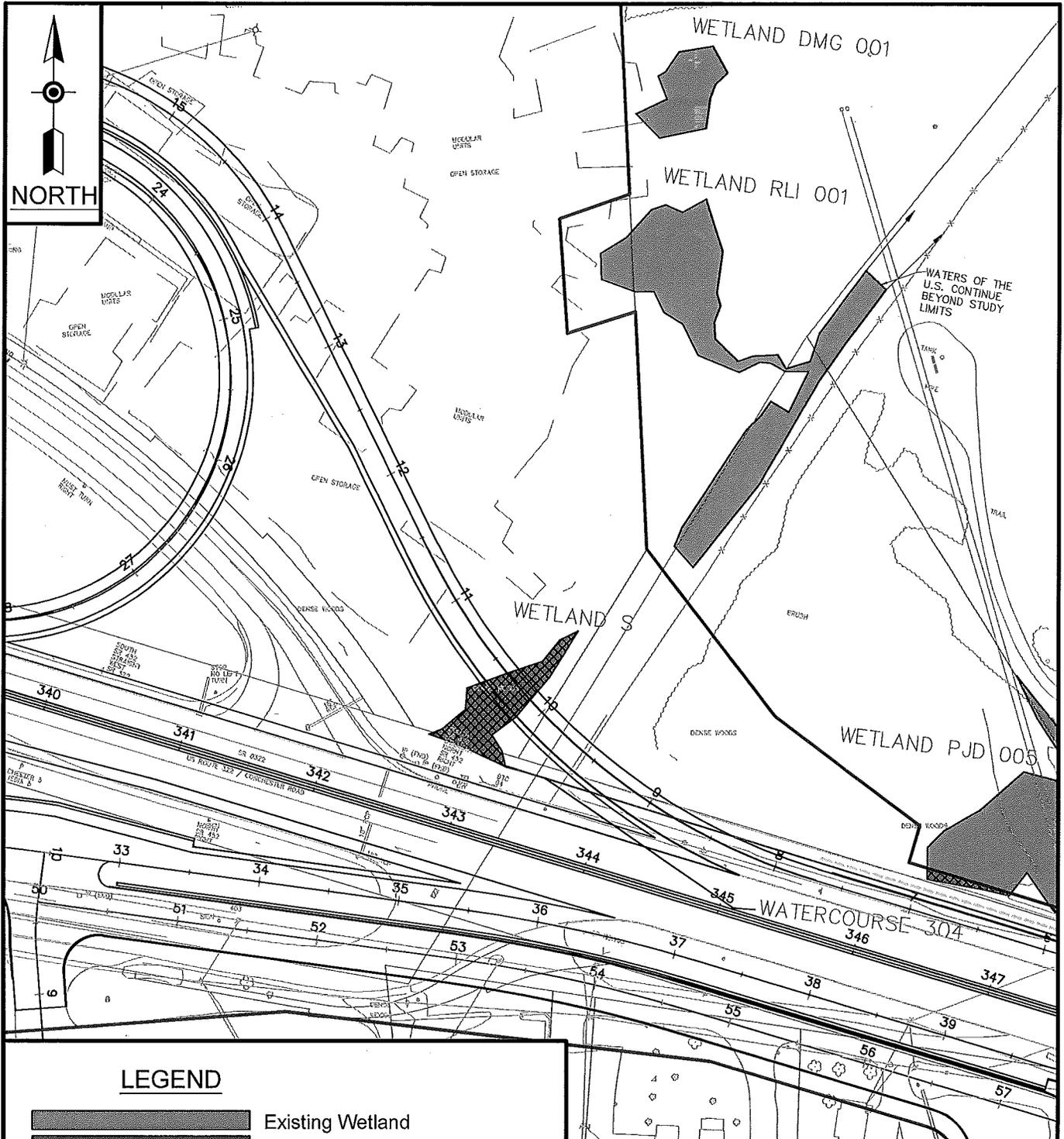
SKELLY and LOY, Inc.	July 2015	9 of 13
S.R. 0322, SECTION 102		
<b>IMPACT MAP</b>		
Delaware County, Pennsylvania		
Job No.: R93-0144.000	Scale: 1"=100'	



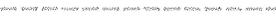
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SKELLY and LOY, Inc.	July 2015	10 of 13
S.R. 0322, SECTION 102		
<b>IMPACT MAP</b>		
Delaware County, Pennsylvania		
Job No.: R93-0144.000	Scale: 1"=100'	



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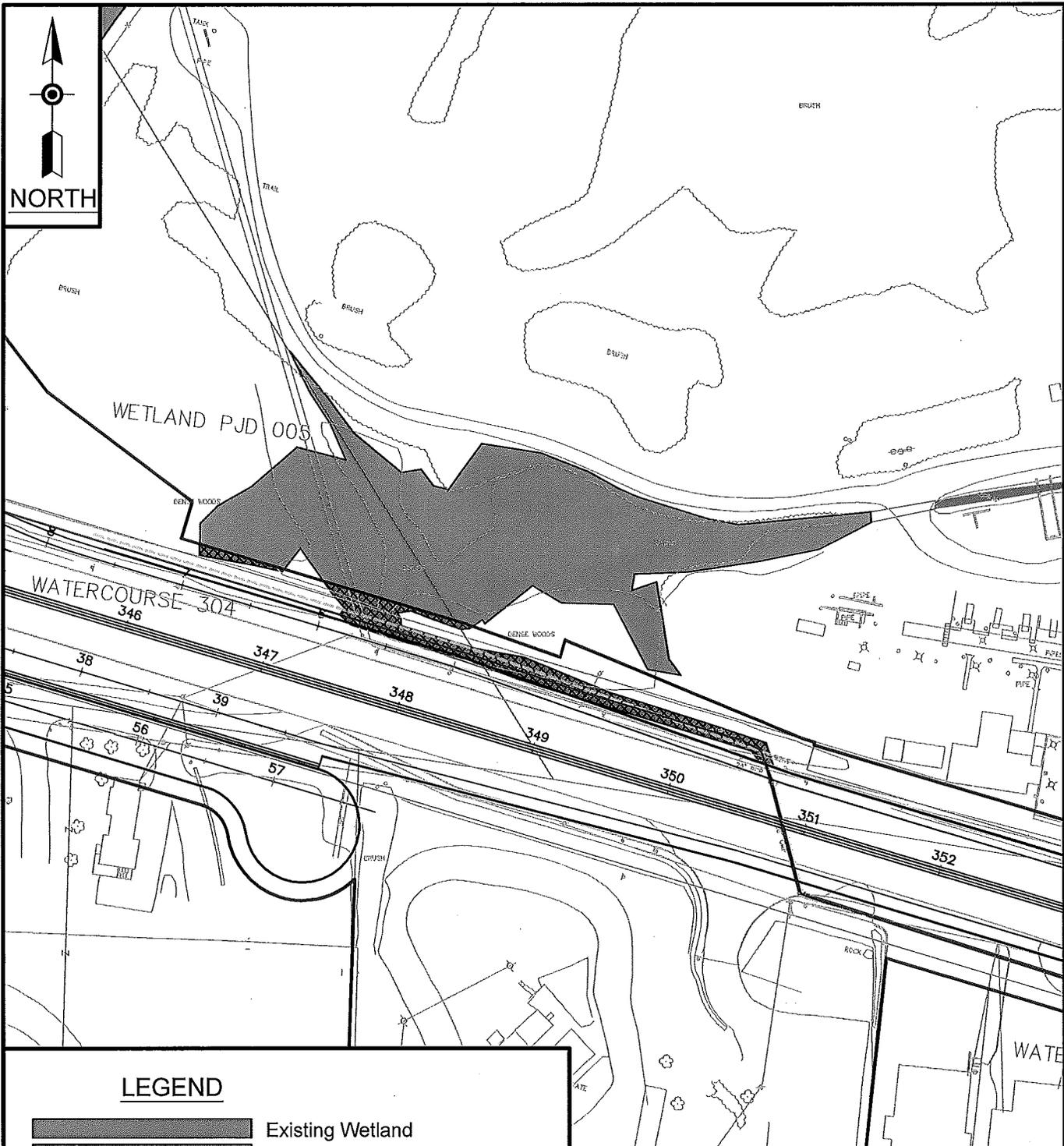
SKELLY and LOY, Inc.	July 2015	11 of 13
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S.R. 0322, SECTION 102

**IMPACT MAP**

Delaware County, Pennsylvania

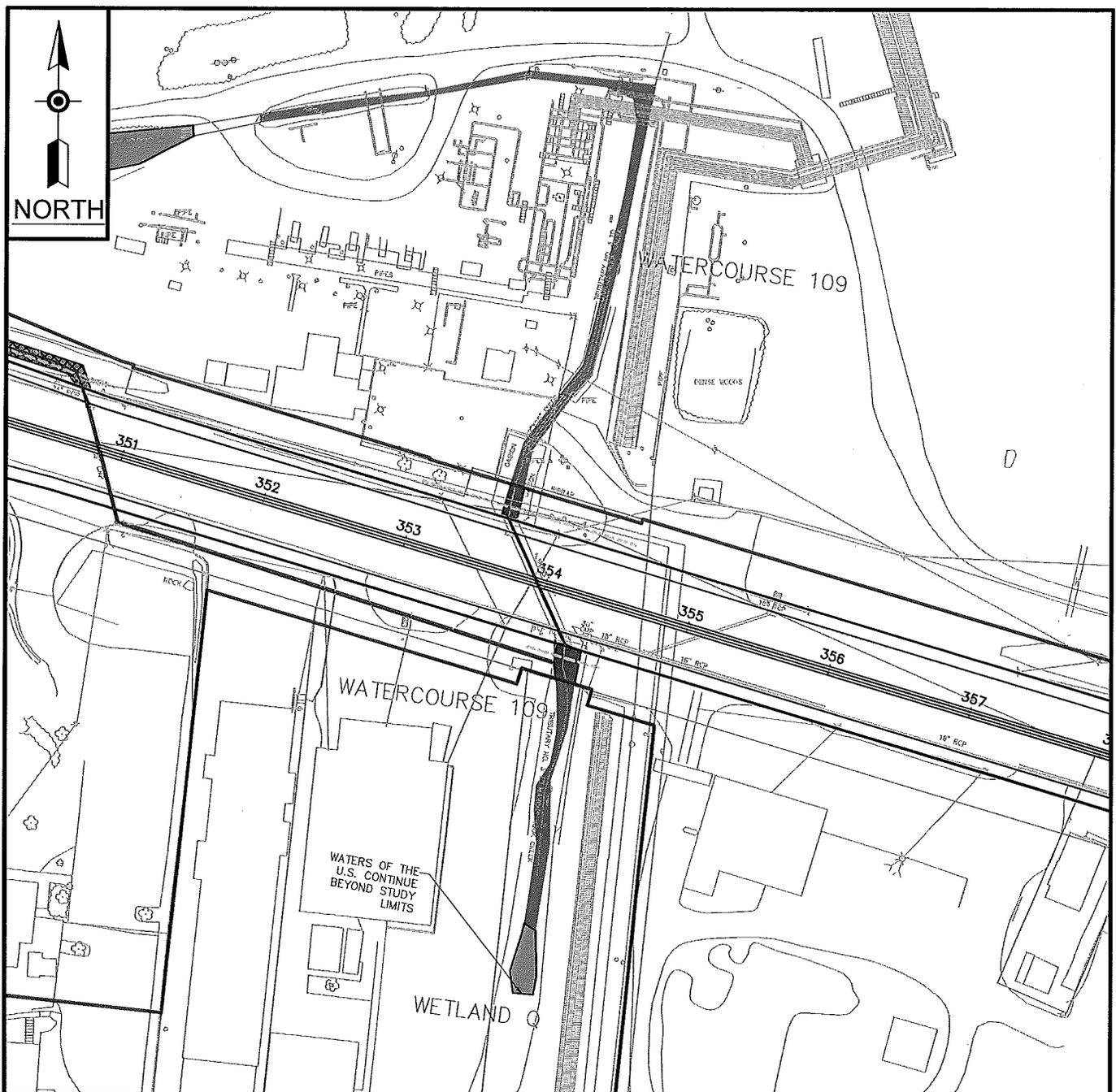
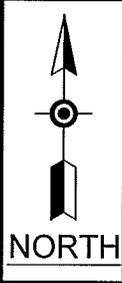
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SKELLY and LOY, Inc.	July 2015	12 of 13
S.R. 0322, SECTION 102		
<b>IMPACT MAP</b>		
Delaware County, Pennsylvania		
Job No.: R93-0144.000	Scale: 1"=100'	



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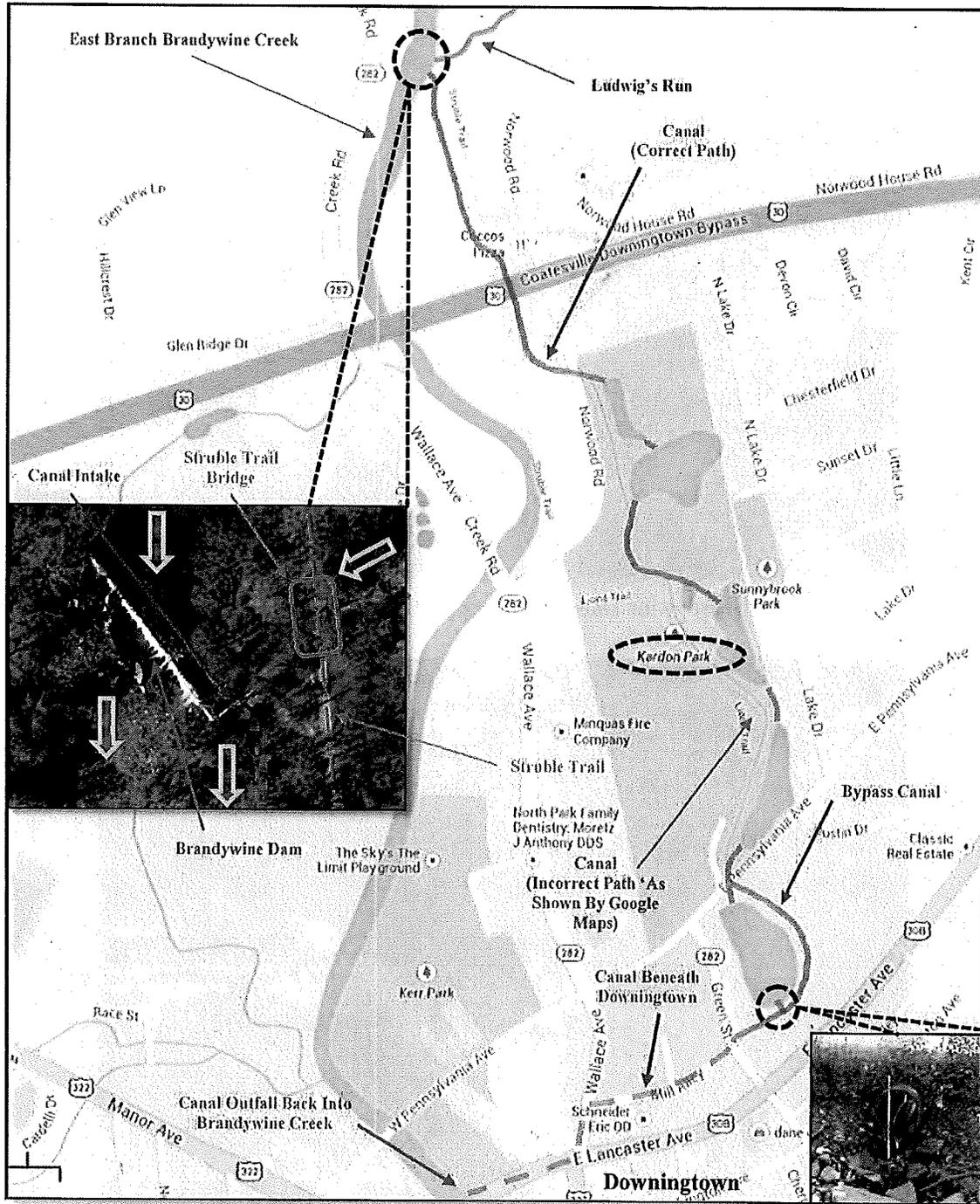
SKELLY and LOY, Inc. July 2015 13 of 13

S.R. 0322, SECTION 102

**IMPACT MAP**

Delaware County, Pennsylvania

Job No.: R93-0144.000 Scale: 1"=100'



Location Map

**Downing Ridge Dam Removal Project for SR 0322, Section 100  
Project Conceptual Plan**

The Downing Ridge Dam (aka Brandywine Dam) is located on East Branch Brandywine Creek in Caln and East Caln Townships, approximately 0.25 miles upstream of where U.S. 30 (Coatesville Downingtown Bypass) crosses over East Branch Brandywine Creek. The dam is a 5.25-foot high, 182-foot long concrete structure constructed in 1917 to provide water for two paper mills owned by the S. Austin Bicking Paper Manufacturing Company. Based on information presented in the original plan map for the dam dated June 20, 1917, the concrete dam replaced an existing dam at the site. The features of the previous dam were not specified, except that it appears to have been constructed of loose stone with a relatively long profile spanning over 200 feet (upstream – downstream). The riffle that exists downstream of the existing concrete dam appears to consist of remnants of the previous dam. Ludwig's Run confluences with the East Branch of the Brandywine Creek immediately upstream of the dam.

The Downing Ridge Dam Removal Project for SR 0322, Section 100 will involve complete removal of the 182-foot long concrete dam and the 44-foot long right (west) concrete abutment wall located on the west stream bank. The left concrete abutment wall on the east stream bank may remain to buttress the stream bank and protect the head of the mill race but will depend on final design plans. The demolition of the dam will require a staging area on the west stream bank. Once demolition is complete East Branch Brandywine Creek will be allowed to establish a natural flow regime through the former impoundment. Project partners expect that active sediment management will not be necessary and the accumulated sediment will be allowed to redistribute downstream via natural processes. Disturbed areas will be graded and seeded and allowed to naturally revegetate once construction is finished.

There is not sufficient evidence to suggest that managing flow to the mill race will positively benefit ponds located in Kardon Park. Therefore, water diversion options will not be pursued as part of this project. PFBC will work with project partners to directly address water quality impairments in the ponds since project objectives cannot be met by supplementing flow to the mill race.