

Pennsylvania Senate Veterans Affairs & Emergency Preparedness Committee

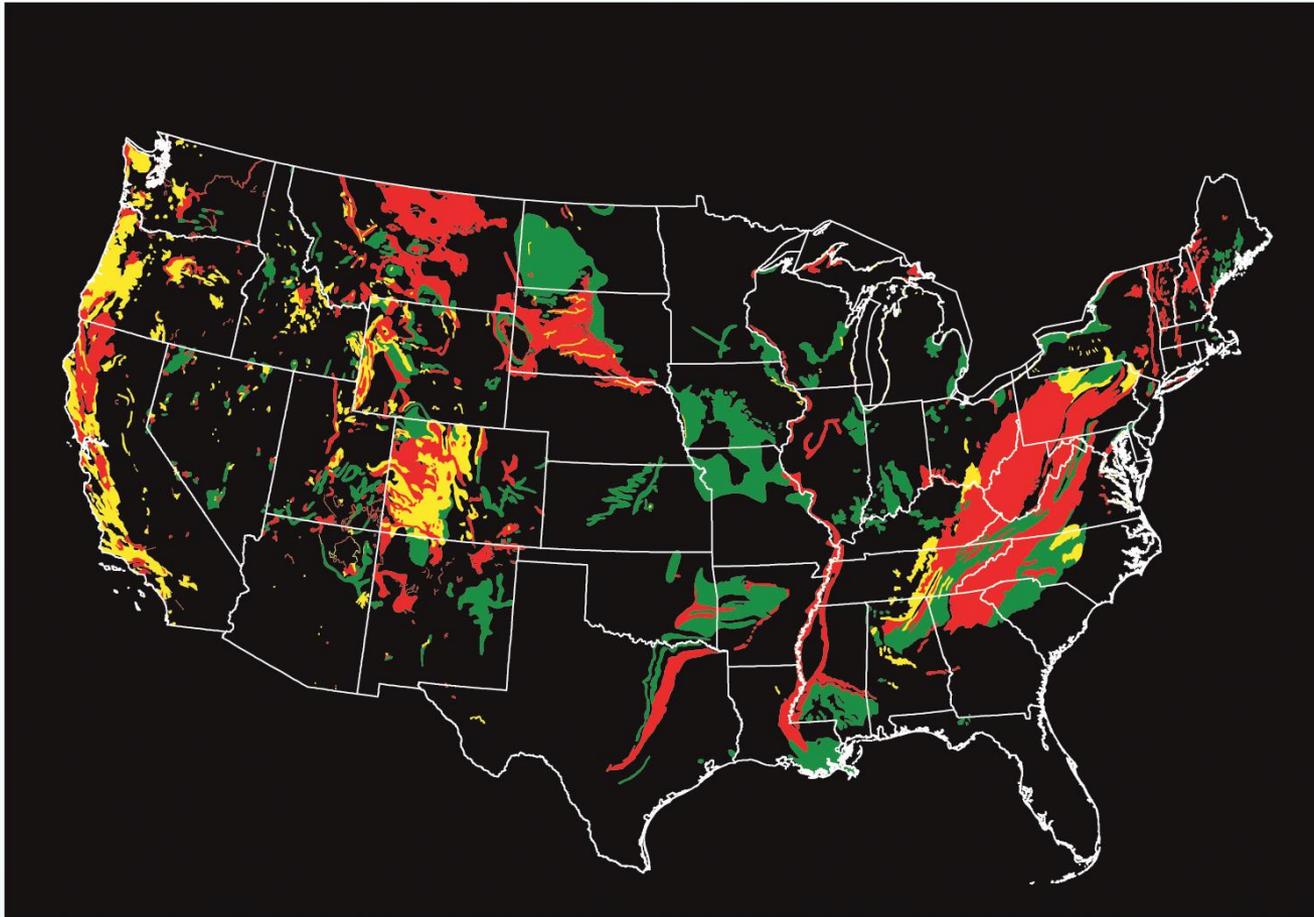
September 18, 2018



Cheryl L. Moon-Sirianni, P.E.
District Executive – District 11

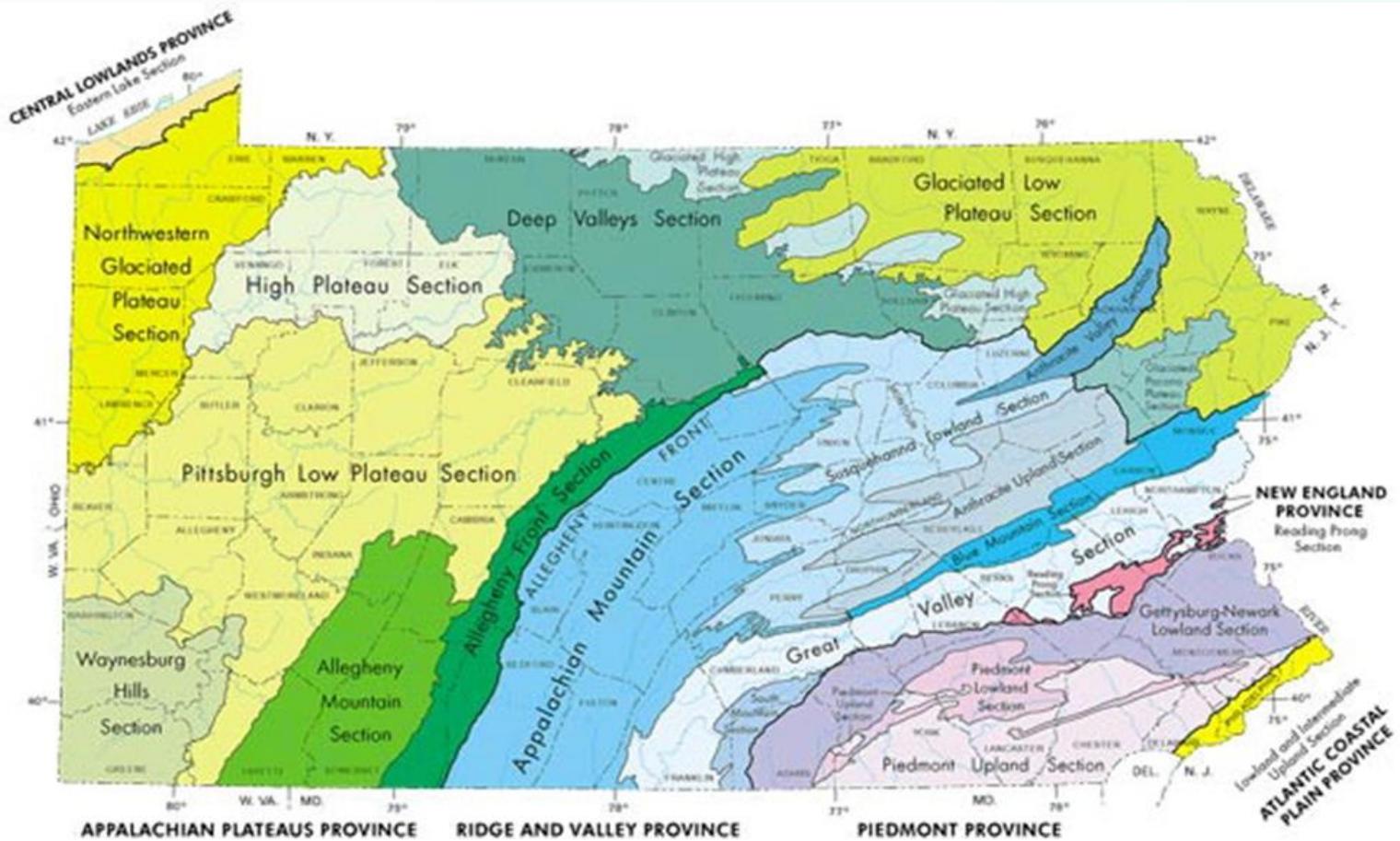
Joseph J. Szczur, P.E.
District Executive – District 12

USGS Landslide Susceptibility Map



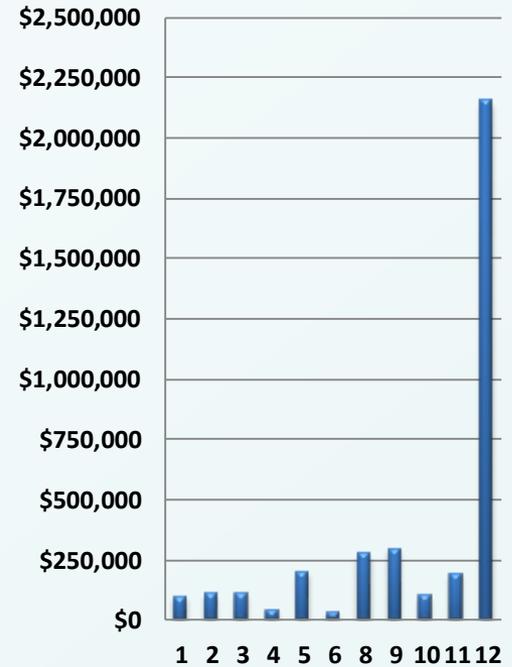
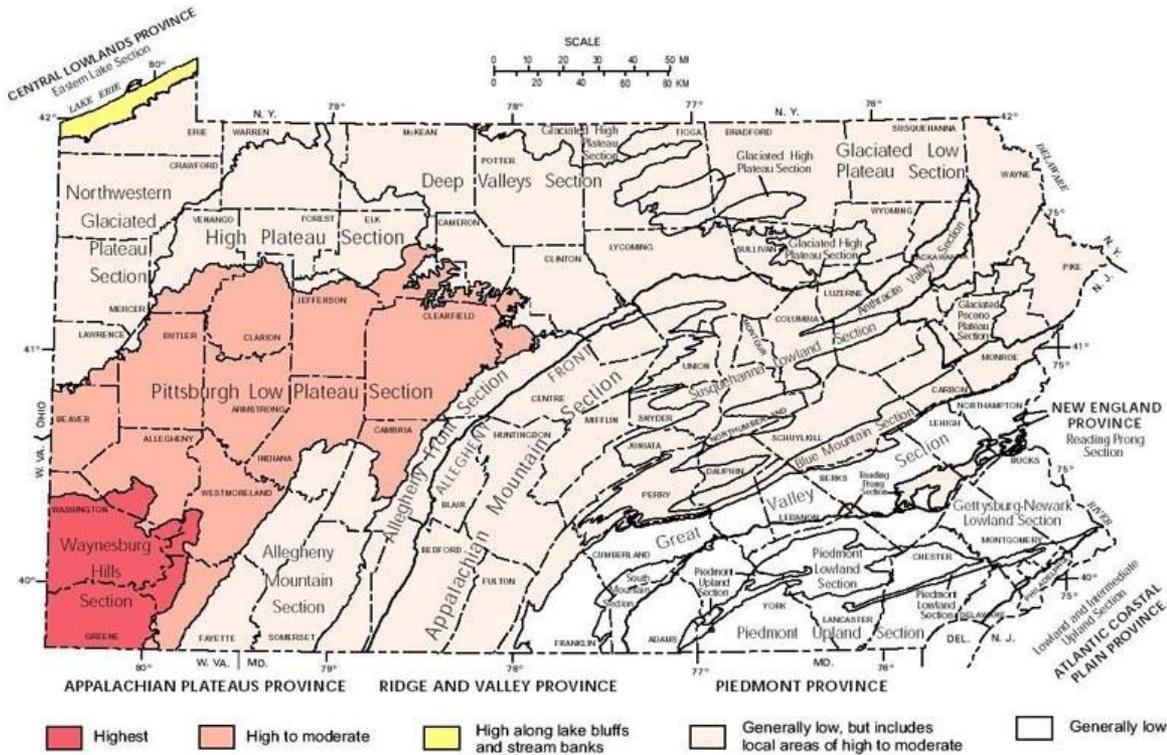
United State Geological Society (USGS)

DCNR Bureau of Topographic & Geologic Survey Map

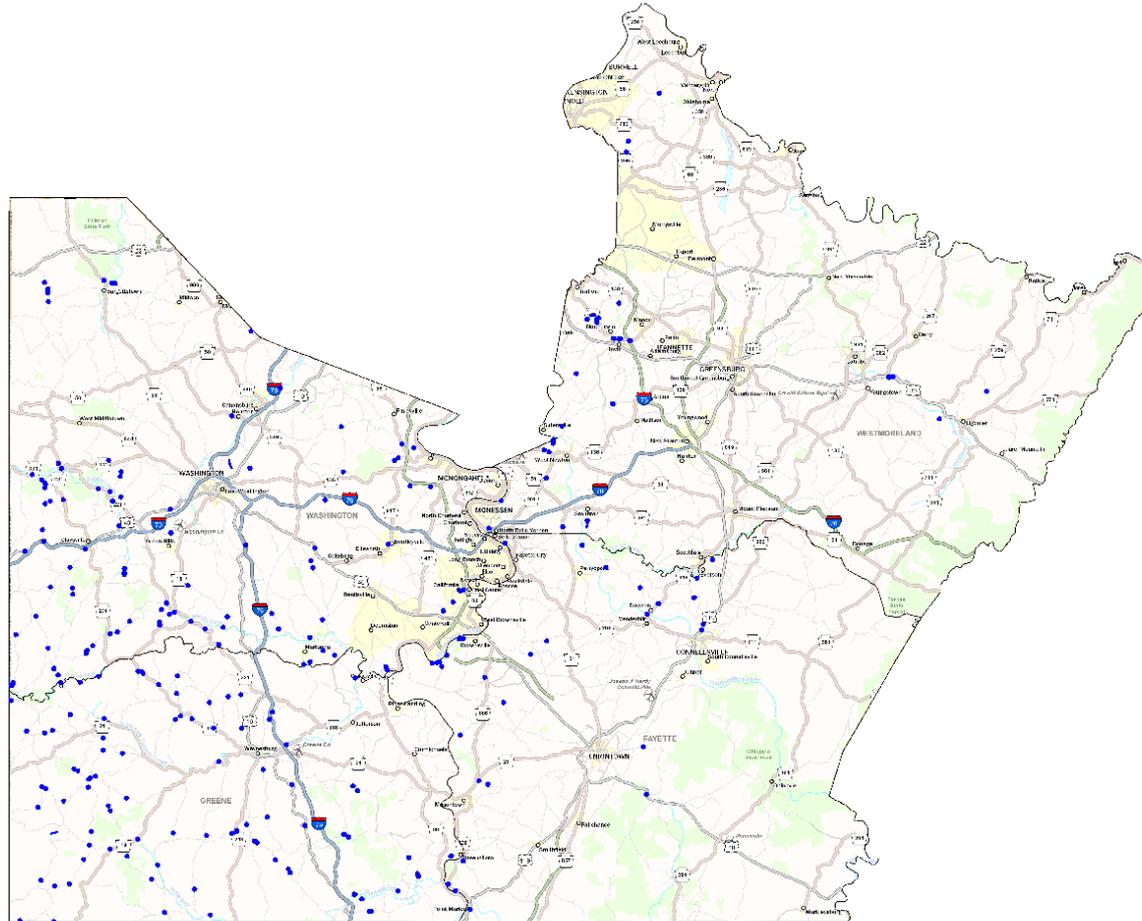


Department Of Conservation And Natural Resources (DCNR)

I-79 Challenge- Slides / Embankment Failures



I-79 Challenge- Slides / Embankment Failures



Precipitation Amounts

PRECIPITATION By Month (inches)	DISTRICT - 12 - ACTUAL PRECIPITATION (inches)			DISTRICT - 12 - 30-YEAR NORMAL PRECIP. (inches)					DISTRICT - 12 - DEPARTURE from NORMAL (percent)					EQUALLY WEIGHTED AVERAGE
	GREENE	WASHINGTON	WESTMORELAND	FAYETTE	FAYETTE	GREENE	WASHINGTON	WESTMORELAND	FAYETTE	FAYETTE	GREENE	WASHINGTON	WESTMORELAND	
	KMGW	KAFJ	KLBE	KMGW	KLBE	KMGW	KAFJ	KLBE	KMGW	KLBE	KMGW	KAFJ	KLBE	
Dec-2016	8.10	3.31	16.54	6.20	7.44	6.20	3.52	7.44	131%	222%	131%	94%	222%	160%
Jan-2017	8.10	3.61	15.94	6.18	7.40	6.18	3.68	7.40	131%	215%	131%	98%	215%	158%
Feb-2017	5.70	1.26	10.84	5.34	6.16	5.34	3.09	6.16	107%	176%	107%	41%	176%	121%
Mar-2017	10.56	4.36	23.16	7.32	7.24	7.32	3.87	7.24	144%	320%	144%	113%	320%	208%
Apr-2017	10.80	3.14	12.58	7.40	6.60	7.40	3.65	6.60	146%	191%	146%	86%	191%	152%
May-2017	11.02	5.69	6.16	8.64	7.34	8.64	4.52	7.34	128%	84%	128%	126%	84%	110%
Jun-2017	7.98	7.12	12.14	8.54	7.20	8.54	4.50	7.20	93%	169%	93%	158%	169%	136%
Jul-2017	18.00	5.20	13.62	9.74	7.16	9.74	4.43	7.16	185%	190%	185%	117%	190%	173%
Aug-2017	5.06	4.52	5.52	7.76	5.30	7.76	4.64	5.30	65%	104%	65%	97%	104%	87%
Sep-2017	3.70	0.76	5.54	7.08	5.80	7.08	3.85	5.80	52%	96%	52%	20%	96%	63%
Oct-2017	8.72	3.71	14.14	6.40	5.36	6.40	3.14	5.36	136%	264%	136%	118%	264%	184%
Nov-2017	6.12	4.55	11.46	6.00	6.28	6.00	3.20	6.28	102%	182%	102%	142%	182%	142%
Dec-2017	3.08	1.17	18.58	6.20	7.44	6.20	3.52	7.44	50%	250%	50%	33%	250%	126%
Jan-2018	5.56	3.19	20.38	6.18	7.40	6.18	3.68	7.40	90%	275%	90%	87%	275%	163%
Feb-2018	12.76	6.50	22.54	5.34	6.16	5.34	3.09	6.16	239%	366%	239%	210%	366%	284%
Mar-2018	6.12	2.55	15.24	7.32	7.24	7.32	3.87	7.24	84%	210%	84%	66%	210%	131%
Apr-2018	11.36	5.40	16.74	7.40	6.60	7.40	3.65	6.60	154%	254%	154%	148%	254%	192%
May-2018	11.66	4.84	11.06	8.64	7.34	8.64	4.52	7.34	135%	151%	135%	107%	151%	136%
Jun-2018	7.34	8.19	10.86	8.54	7.20	8.54	4.50	7.20	86%	151%	86%	182%	151%	131%
Jul-2018	7.96	4.05	7.58	9.74	7.16	9.74	4.43	7.16	82%	106%	82%	91%	106%	93%
Aug-2018	6.72	3.93	6.98	7.76	5.30	7.76	4.64	5.30	87%	132%	87%	85%	132%	104%
Sep-2018	10.10	6.33	6.50	7.08	5.80	7.08	3.85	5.80	143%	112%	143%	164%	112%	135%

(SEPT 2018 = Part
OBSERVED, Part
Predicted)

▶ Landslide Status and Funding Needs

- District 11 gets roughly 30 – 40 significant new slides per year
- Repair about 20 slides per year
- Current slide funding = \$6M/year
- Funding only keeps the number of active sites at 80-90
- Projected Current Need = \$53.6M
- 75% of slides are drainage related
- The District meets regularly to identify, evaluate, and inventory large scale landslides while providing recommendations for remediation and funding eligibility. Depending on size, sites are fixed with Maintenance Forces, on-call contractor, or full design. In conjunction with Geotechnical, Maintenance and Construction, priorities are continually adjusted due to how rapidly the site is moving, traffic impacts, and weather events. Due to steep slopes and rock outcrops from the Pittsburgh Red Beds, this region is more susceptible to severe landslides and rock falls.

Types of Slides



Pipe Failure



Stream Scour



True Landslide



Sheet Flow

Landslide Project Breakout

Emergency (Y/N)	GEOTECH MAINTENANCE CONTRACTOR (Y/N)	MAINTENANCE FORCES	Consultant Designed	In-house Designed	S.R.	Sec	County	MPMS#	Municipality	Estimated Construction Cost	Local Road Name	Location Map Link
Y	N	N		Y	1037	A03	Allegheny	107983	Harrison Township	\$750,000.00	Saxonburg Rd	https://www.google.com/maps/@40.6482768,-79.7228728,843m/data=!3m2!1e3!4b1!4m2!6m1!1sz5w aIV 1W s .HUA.kRMvrQ-utB-E?hl=en

Segment	Offset	Segment	Offset	Lane (e.g. NB)	Road Status	Length ±	Date Informed	Informed by	ADT	Truck %	DOI (Y/N)	Federal Aid Route	Appropriation	Construction MPMS Program	TIP (Y/N)	Permits Needed (Y/N)	DRILLED (Y/N)
20	1369	20	1728	south	1 Lane Closure	400'	12/30/2015	email from Mike Zimmerman	4,921	7%	N	17 - Urban Collector - Federal Aid-Other (STP)			N	Y	N

Remarks

SS sent email on 2/8/16. Issues include broken/separated cross pipes, washouts and shoulder erosion. Recommended key into stream to establish scour protection and rebuild the slope with R-rock, replace/repair cross pipes and utilize the shoulder backup/reconstruct details. On 2/4/16 MZ said down to 1 lane. GMM and SS field viewed again on 1/29/16. GMM and SS field viewed on 1/22/16. 2 locations of barrels on the shoulder. Need clarification on what areas were included in Geotech Maintenance contract price.

Allegheny County - Landslides Since 1/1/18

Flooding/Landslide Costs - By Contractor	
Geotech Contract	
SR 19/51 West End	\$125,000
SR 30	\$40,000
SR 30 - Landslide	\$140,000
Thompson Run Road	\$70,000
SR 65	\$20,000
Bunola River Road	\$100,000
Guys Run Road	\$112,000
Glass Run Road	\$55,000
SR 51	\$10,000
Banksville Road Ramp	\$31,000
Babcock/Peoples Road	\$180,000
Group Job	
Rochester Road	\$400,000
BOD Contract	
I376 Bathtub 2/25/18	\$50,000
I376 Bathtub 9/10/18	\$50,000
Total	\$1,338,000

➤ Allegheny County - Landslides Since 1/1/18

Total # of Landslides in Allegheny County since January 1, 2018:
77 landslides

Total Cost:
\$11,654,534.00

Total # of Landslides addressed: **30**
Cost: **\$1,964,734**

Total # of Landslides not addressed: **47**
Expected Cost:
\$9,689,800

ST_RT_NO	CTY_CODE	SEG_BGN	OFFSET_BGN	SEG_END	OFFSET_END	Street Name	Date of Occurrence	Cost	Addressed (Y/N)
4053	02	0070	2127	0070	2130	Wexford Run Rd	1/3/2018	\$75,000	N
4011	02	0160	1500	0160	1500	Rochester Rd	1/4/2018	\$50,000	N
4011	02	0140	989	0160	2764	Rochester Rd	1/4/2018	\$900,000	N
4011	02	0150	1730	0160	1730	Rochester Rd	1/4/2018	\$1,200,000	N
3035	02	0020	1800	0020	2000	Weyman Rd	1/12/2018	\$10,000	Y
2005	04	0040	380	0040	455	Conway Wallrose Rd.	1/19/2018	\$143,893	Y
0028	02	0300	2640	0300	2703	Hite Rd above 28	1/23/2018	\$30,000	N
3096	02	0020	1445	0020	1614	Harper Road	1/24/2018	\$300,000	N
4076	02	0020	1826	0020	2016	Valencia Rd	1/30/2018	\$200,000	N
0008	02	0351	2140	0351	2160	William Finn Highway	2/13/2018	\$100,000	N
2028	02	0020	0	0020	1700	Ridge Road	2/14/2018	\$400,000	N
4028	02	0020	1975	0020	2038	Hedgate Rd.	2/15/2018	\$230,000	N
2045	02	300	2400	30	2471	Pittsburgh McKeesport BLVD	2/15/2018	\$1,800	Y
0065	02	0030	184	0030	353	Ohio River Blvd.	2/15/2018	\$1,350	Y
1001	03	0340	1188	0340	1330	Freesport Rd.	2/15/2018	\$30,000	Y
136	02	90	300	90	300	Rainbow Run Road	2/15/2018	\$1,200	Y
2001	02	0010	2400	0010	2500	Bunola River Road	2/15/2018	\$1,700	Y
2001	02	0110	73	0110	95	Bunola River Road	2/15/2018	\$2,200	Y
2001	02	0120	1412	0120	1489	Bunola River Road	2/15/2018	\$2,000	Y
2017	02	0030	1774	0030	1774	Long Hollow Road	2/15/2018	\$100,000	N
3057	02	0010	496	0010	654	Whitengale Rd	2/19/2018	\$75,000	N
3057	02	0010	950	0010	1140	Whitengale Rd	2/19/2018	\$150,000	N
837	02	230	528	230	2400	Washington St	2/19/2018	\$1,000	Y
2003	02	0020	193	0020	299	Church Hollow Road	2/20/2018	\$300,000	N
3024	02	0080	1500	0080	1700	Battleridge Road	2/20/2018	\$25,000	Y
3048	02	0100	3100	0100	3180	Noblestown Rd.	2/22/2018	\$5,820	Y
3089	02	0170	3150	0170	3300	Flaugherty Run Rd.	2/22/2018	\$50,000	Y
2037	02	20	0	20	300	Westinghouse av	2/22/2018	\$2,500	Y
2058	02	0210	1788	0210	1914	Hulton Rd	2/23/2018	\$1,250,000	N
51	2	440	1300	440	1700	Saw Mill Run - West End	2/25/2018	\$125,000	Y
0030	02	0231	1903	0231	2188	Route 30	2/26/2018	\$1,107,789	Y
2018	02	10	0	40	2800	West Smithfield Street	2/26/2018	\$1,200	Y
0376	02	0690	0	0690	83	Fort Pitt Tunnel	2/27/2018	\$100,000	N
4064	02	0040	1920	0040	2050	Feebles Road	3/6/2018	\$5,800	Y
2032	02	10	0	30	2858	Lewis Run Road	3/6/2018	\$1,500	Y
2082	02	0120	1500	0120	2006	Coxcomb Hill Rd	3/8/2018	\$50,000	N
3093	03	0030	2100	0030	2200	Ewing Road	3/8/2018	\$300,000	N
2031	03	0030	1563	0030	1563	Lincoln Way	3/9/2018	\$75,000	N
2008	02	10	0	10	100	Hill Hill Road	3/9/2018	\$1,400	Y
2085	2	40	2400	40	2600	Thompson Run Road	3/9/2018	\$68,847	Y
2046	02	0030	36	0030	163	Streets Run Road	3/9/2018	\$75,000	N
51	02	151	0	151	1573	SR 31	3/9/2018	\$2,800	Y
2035	02	0020	268	0020	417	McKee Road	3/9/2018	\$75,000	N
885	02	170	1056	170	1070	Lebanon Road	3/19/2018	\$2,000	Y
2080	02	0060	820	0060	960	Hunter Rd	3/19/2018	\$600,000	N
3028	02	0010	1540	0010	1650	Presto-Sygan Rd	3/20/2018	\$200,000	N
3028	2	30	2133	30	2173	Boyd's Run Road	3/20/2018	\$75,000	N
0048	02	0100	3380	0100	3480	Boston Hollow Road	3/20/2018	\$125,000	N
4032	02	0040	131	0040	216	Little Sewickley Creek Road	3/20/2018	\$400,000	N
1020	02	0060	1100	0060	1150	Campbell Rd	3/20/2018	\$125,000	N
4022	02	0060	971	0060	1562	Mt. Nebo	3/22/2018	\$100,000	N
4034	02	0020	2729	0020	2941	Little Sewickley Creek Road	4/2/2018	\$30,000	N
1009	02	0010	359	0010	485	Powers Run Rd	4/3/2018	\$3,500	Y
2048	2	15	0	15	80	Bus 22 WB	4/3/2018	\$2,000	N
3077	02	0180	2966	0180	3177	Broodhead Rd.	4/3/2018	\$20,650	Y
0085	02	0180	317	0180	482	Ohio River Blvd.	4/4/2018	\$18,355	Y
2063	02	0020	448	0020	512	Frey Rd.	4/6/2018	\$100,000	N
2063	02	0010	195	0010	216	Frey Rd.	4/6/2018	\$50,000	N
4022	03	0130	2400	0130	2500	Reis Run Rd	4/8/2018	\$75,000	N
2001	02	0010	2050	0010	2200	Bunola River Rd	4/8/2018	\$83,000	Y
376	2	332	751	0	751	SR 376 Parkway East	4/8/2018	\$5,200	N
376	2	835	1935	0	841	SR 376 Parkway East	4/8/2018	\$5,100	N
3048	02	0080	105	0080	147	Noblestown Road	4/9/2018	\$125,000	Y
2001	02	0270	1180	0270	1180	Lincoln Blvd	4/9/2018	\$150,000	N
3054	02	0010	1588	0010	1741	Baldwin Road	4/11/2018	\$150,000	N
1028	02	0160	1647	0170	374	Bakerstown Road	4/12/2018	\$250,000	N
0060	02	0030	739	0030	2386	Main Street	4/12/2018	\$450,000	N
4080	2	40	2818	80	2818	Tom's Run Road	4/15/2018	\$25,000	N
1011	02	0020	194	0020	194	Guys Run Rd	4/16/2018	\$125,000	Y
130	2	273	2617	273	3042	SR 130/Tri Boro	4/16/2018	\$2,500	N
2024	02	0010	1224	0010	1330	McClintock Rd	4/16/2018	\$500,000	N
2033	02	10	1300	10	2000	McClintock Rd	4/16/2018	\$200,000	N
0910	02	0070	1285	0070	1470	Salem Hollow Road	4/16/2018	\$150,000	N
51	2	550	990	550	1050	Robinson Boulevard	4/16/2018	\$150,000	N
2007	02	0030	348	0030	411	River Hill Rd	4/16/2018	\$125,000	N
2076	2	90	0	90	0	Old Leechburg Road	4/19/2018	\$150,000	N
837	02	351	0	351	355	Eight Av	4/19/2018	\$1,250	Y

▶ Beaver County Landslides since January 1, 2018

Beaver County - Landslides Since 1/1/18

ST_RT_NO	CTY_CODE	SEG_BGN	OFFSET_BGN	SEG_END	OFFSET_END	Street Name	Date of Occurrence	Cost	Addressed (Y/N)
1008	4	40	1400	40	1600	Shadyrest Road	1/23/2018	\$27,500	Y
3010	4	80	3400	80	3600	Moffett Run Road	2/2/2018	\$167,219	Y
0030	04	0180	2900	0180	3300	Lincoln Highway	2/26/2018	\$1,248	Y
3013	04	0030	2920	0030	3050	Gringo-Clinton Road	2/26/2018	\$500,000	N
2003	4	60	1320	60	1350	Hoening Road	2/26/2018	\$5,200	Y
0018	04	0060	1161	0060	1520	Frankfort Road	3/8/2018	\$250,000	N
2003	4	10	500	10	2166	Hoening Road	3/14/2018	\$18,919	Y
2003	4	10	1080	20	1000	Hoening Road	3/14/2018	\$18,919	Y
4027	04	0022	1098	0022	1309	Darlington Rd.	4/5/2018	\$25,000	Y
0068	04	0130	2492	0130	2492	Midland Beaver Rd	4/16/2018	\$300,000	N
68	4	150	0	150	100	Midland Beaver Rd	4/16/2018	\$13,671	Y
0051	04	0270	2090	0270	2154	Constitution Blvd	4/17/2018	\$200,000	Y
Total Cost:								\$1,527,676	

Flooding/Landslide Costs - By Contract

Geotech Contract	
SR 51/Darlington Road	\$256,000
Conway Wallrose Road	\$115,000
SR 68 Midland	\$25,000

Guys Run Road- 04/16/2018



S.R. 48-09/10/2018



Peoples @ Babcock – 07/05/2018



SR 2023-Harrison Hollow Road



SR 2040 – Lebanon Church Road



SR 30 – Major Landslide (4/7/18)

Directly Affected

- 30,000 vehicles/day
- 2 Municipalities

- 15' high concrete wall, 80' downhill failed
- 300' Long x 50' Depth landslide



SR 30 -4/7/18 - Major Landslide



SR 30 -4/7/18 – Major Landslide

Destroyed

- Two apartment buildings
- One residential house



- Displaced 31 people

SR 30 06/27/2018 & 9/11/2018



District 11-0 Slope Stability Inventory & Rating

Site Identification									
County	Road name	SR	Begin SEG	Begin OFFSET	End SEG	End OFFSET	Primary Problem Type	Repair Type	Repair Crew
Allegheny	Rochester Road	4011	0220	2691	0220	2796	Slide susceptible soil, Stream near toe, Sheet flow	Rock Slope	Geotech Maintenance

Site Information (inputs)					
Stream @ Toe? (Y/N)	ADT	Type of Slide	Length Along Roadway	Height of Slope	Roadway Impact
Y	1362	Sheet flow	30	30	Into Lane

Rating						
TOTAL RATING	ADT	Type of Slide	Length Along Roadway	Height of Slope	Roadway Impact	Surrounding Area Impact
108	9	3	3	9	81	3



District 11-0 Slope Stability Inventory & Rating

PennDOT District 11-0 SLOPE STABILITY INVENTORY & RATING (SSIR)

Site Identification										Site Information (inputs)							Rating					
County	Road name	SR	Begin SEG	Begin OFFSET	End SEG	End OFFSET	Primary Problem Type	Repair Type	Repair Crew	Utility Info	Stream @ Toe? (Y/N)	ADT	Type of Slide	Length Along Roadway	Height of Slope	Roadway Impact	TOTAL RATING	ADT	Type of Slide	Length Along Roadway	Height of Slope	Roadway Impact
Allegheny	Way Hollow Rd	4037	0020	0350	0020	0800						857				Lane Distress	#N/A	3	#N/A	#N/A	#N/A	?
Allegheny	First Street	2024	0014				Bin wall failures					392					#N/A	3	#N/A	#N/A	#N/A	#N/A
Allegheny	Freeport Road	1001	0171		0181		Proposed rockfall fence					8353					#N/A	27	#N/A	#N/A	#N/A	#N/A
Allegheny	Ridge Road	2028	0020	0500	0020	1000						3005					#N/A	?	#N/A	#N/A	#N/A	#N/A
Allegheny	Long Hollow Road	2017	0030	1774	0030	1774						1414					#N/A	?	#N/A	#N/A	#N/A	#N/A
Allegheny	Lincoln Way	2031	0030	1543	0030	1543						13019					#N/A	81	#N/A	#N/A	#N/A	#N/A
Allegheny	Ewing Road	3093	0030	2200	0030	2200						733					#N/A	3	#N/A	#N/A	#N/A	#N/A
Allegheny	Baldwin Road	3054	0010	1588	0010	1741						1454				Shoulder failing	#N/A	?	#N/A	#N/A	#N/A	?
Allegheny	McClintock Rd	2033	0010	1300	0010	2000		gabions or durahold wall		overhead and water	Y	2224	Sheet flow	275		Shoulder backup failing	#N/A	?	3	27	#N/A	3
Beaver	Bennetts Run Road	588	0100	0500	0100	0600	sheetflow	RSS or midslope		Overhead lines		4547	Sheet flow	100		to white line	#N/A	?	3	?	#N/A	27
Beaver	Brady's Run Road	4012	0070	2800					Let project			159		75		into lane	#N/A	3	#N/A	3	#N/A	81
Beaver	Blockhouse Run Road	1016	0050	1490	0050	1750	failing gabions				Y	3925			10	Shoulder backup failing	#N/A	?	#N/A	#N/A	?	3
Beaver	Raccoon Creek Road	3019	0010	2200			erosion channels	band aid repair instead of larger fix.		overhead lines	N	158		100	90	To White Line	#N/A	3	#N/A	?	27	27
Beaver	Achortown Road	4010	0120	0070								274				to white line	#N/A	3	#N/A	#N/A	#N/A	27
Beaver	Lake Road	1010	0010				some failing gabions	put No. 1s against the good gabions, do midslope repair where gabions failed		no overhead		907			10	shoulder backup failing	#N/A	3	#N/A	#N/A	?	3
Beaver	Reno Street	1024	0020	1300				extend rock slope, soil nails		overhead lines	Y	1292		200	20	Shoulder failing	#N/A	?	#N/A	?	?	?
Beaver	Millerstown/Bakersdale Rd	48	0130	2494	0130	2494						9045					#N/A	27	#N/A	#N/A	#N/A	#N/A
Beaver	Independence Road	3013	0030	2920	0030	3050					N	248					#N/A	3	#N/A	#N/A	#N/A	#N/A
Allegheny	Hunter Road	2080	0040	0820	0040	0940	significant claystone layers present.	soil Nails	Geo Maint	Overhead lines	N	1824	True Landslide	200	200	Into Lane	264	?	81	?	81	81
Allegheny	Chartiers Street	3034	0010	2471	0010	2574	sheet flow and over steepened slope, drainage channel	soil nails. Too steep and tall for anything	Let Project		N	9088	Oversteepening	105	120	Into Lane	228	27	27	?	81	81

District 11 Slope Stability Inventory Rating

ADT		Type of Slide		Length along Roadway		Height of Slope		Roadway Impact		Surrounding Area Impact	
Threshold	Value	Threshold	Value	Threshold	Value	Threshold	Value	Threshold	Value	Threshold	Value
1	3	Sheet flow	3	1	3	1	3	Shoulder backup failing	3	Rural road with low ADT	3
1000	9	Pipe outlet	9	99	9	10	9	Shoulder failing	9	Periodic maintenance	9
5000	27	Slide from above	9	249	27	50	27	Lane distress	9	Frequent maintenance	9
10000	81	Stream Scour	27	500	81	100	81	Dip in road	27	School, EMS, Police, Fire impacts	27
		Creep Failure	27					To white line	27	Maintenance costs of closure	81
		Oversteepening	27					Lane undermined	27	Political implications	81
		True Landslide	81					Into lane	81		
		Redbeds	81					Both Lanes	243		

Low Priority
15-45
Medium Priority
46-135
High Priority

▶ Flooding Events 7/02/2018 & 9/10/2018

Summary of Costs Associated with Events on 7/2 and 9/10		
Department Force		
Various Cleanup Efforts		\$ 65,000
Bathtub - DF		\$ 40,000
Bathtub - Contractor		\$ 50,000
Geotech Contractor		
Glass Run Road	Wall Failure Repair	\$ 55,000
Peoples/Babcock Road	Repair	\$ 180,000
Peoples/Babcock Road	Culvert Replacement	\$ 5,000,000
Stewart Avenue/SR 51	Culvert Replacement	\$ 900,000
SR 51	Erosion Repair	\$ 10,000
Banksville Interchange	Landslide Repair	\$ 35,000
SR 48 Mosside Boulevard	Landslide Repair	\$ 100,000
SR 30 - Beaver County	Landslide Repair	\$ 25,000
Additional Damages		
SR 4011 Achortown Road	Landslide	\$ 1,000,000
	Total	\$ 7,460,000

It costs District 11 approximately \$90,000 in just clean-up costs (Department force & Contractors) each time the Bathtub floods

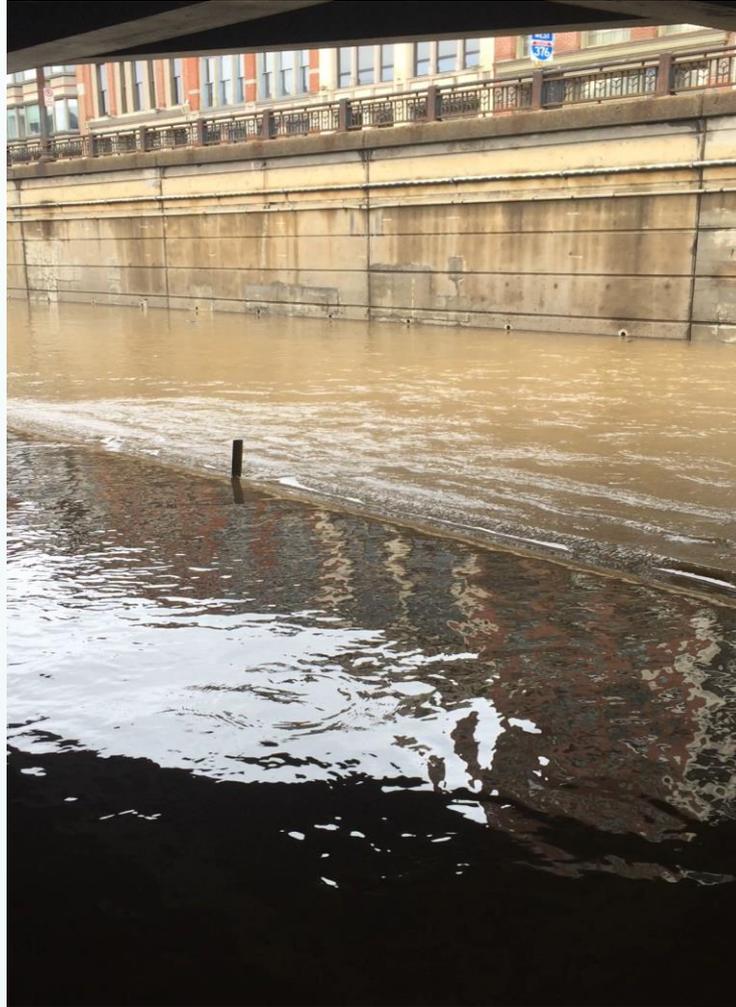
I 376 Bathtub Flooding



I 376 Bathtub Flooding



I376 Bathtub Flooding



▶ Tenth Street Bypass



▶ July 4, 2018 Flooding-South Hills



▶ July 4, 2018 Flooding-South Hills



▶ Piney Fork





QUESTIONS??