

Limiting Soil Characteristics
Sunoco - Pennsylvania Pipeline Project: South Central Region
Construction Spreads 3, 4, and 5

Blair County

MAP UNIT SYMBOL	SOIL NAME	EASILY ERODIBLE	CUTBANKS CAVE	CORROSIVE TO CONCRETE/ STEEL	DEPTH TO SATURATED ZONE/ SEASONAL HIGH WATER TABLE	LOW STRENGTH/ LANDSLIDE PRONE	PIPING	POOR SOURCE OF TOPSOIL	HYDRIC/ HYDRIC INCLUSIONS	POTENTIAL SINKHOLE
AbB, AcB, AcD	Albrights	X	X	C/S	X	X	X	X	X	
Ba	Basher		X	C/S	X	X	X	X	X	
BdD, BeC	Bedington	X	X	C				X	X	
BkB, BkC, BkD, BmC, BmD, BmF	Berks	X	X	C			X	X	X	
BoB, BoC	Blairton	X	X	C/S	X	X	X	X	X	
BrB	Brinkerton	X	X	C/S	X	X	X	X	X	
BuB, BxB, BxD	Buchanan	X	X	C/S	X	X	X	X	X	
CbB, CbC	Clarksburg	X	X	C/S	X	X	X	X	X	X
CyD	Clymer	X	X	C		X	X	X	X	
EdB, EdD, EmC, EmD	Edom	X	X	S		X	X	X		X
ErB, ErC	Ernest	X	X	C/S	X	X	X	X	X	
HeD	Hagerstown	X	X	S	X	X	X	X	X	X
HgB, HgC, HhB, HhC, HhF	Hazleton	X	X	C		X	X	X	X	
Ho	Holly		X	C/S	X	X	X	X	X	
HuB, HuC, HxC2	Hublersburg		X	C/S		X	X	X		
LaC, LaD, LeB, LeD, LeF	Laidig	X	X	C/S	X	X	X	X	X	
LkB, LkC, LkD, LLF	Leck Kill		X	C		X	X	X		
Lo	Linden		X	C	X	X	X		X	
Lp	Lobdell	X	X	C/S	X	X	X		X	
MeB, MeC, MkB, MkD	Meckesville		X	C/S	X	X	X	X		
MnC, MnD	Mertz		X	C/S			X			
MrC, MrD, MsD	Morrison	X	X	C		X				
MuB, MuC, MuD, MxB, MxD	Murrill		X	C/S		X	X	X	X	X
OuC, OuD, OxF	Opequon	X	X	S				X		X
Pu	Purdy	X	X	C/S	X	X	X	X	X	
UD	Udfluvients		X	C/S	X		X		X	
VaC	Vanderlip	X	X	C/S		X		X	X	

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WeC, WeD	Weikert		X	C/S		X	X	X	X	

Actions taken to counteract soil limitations

- (1) Erodible Soils - E&S BMPs will be in place and functional prior to earth disturbance. Prompt stabilization practices will be implemented.
- (2) Cut Banks Caves -Almost all Pennsylvania soils are susceptible to caving of cut banks. Cut slopes will be stabilized as soon as possible with seed and mulch or erosion control blankets to prevent sliding. Slopes are designed to not exceed 2H:1V.
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Huntingdon County

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AbB, AcB	Albrights	X	X	C/S	X	X	X	X	X	
AoB	Andover	X	X	C/S	X	X	X	X	X	
At	Atkins		X	C/S	X	X	X	X	X	
Ba, Bb	Barbour		X	C	X			X	X	
BeB, BeC	Bedington	X	X	C				X	X	
BkB, BkC, B/D, BMF	Berks	X	X	C			X	X	X	
BnB	Birdsboro	X	X	C/S	X		X	X	X	
BoB	Blairton	X	X	C/S	X	X	X	X	X	
BrA, BrB	Brinkerton	X	X	C/S	X	X	X	X	X	
BuB, BxB, BxD	Buchanan	X	X	C/S	X	X	X	X	X	
CaC, CaD	Calvin	X	X	C			X		X	
CbB	Clarksburg	X	X	C/S	X	X	X	X	X	X
EgB, EgC, EgD, EgF	Edom	X	X	S		X	X	X		X
EIC, EID	Elliber		X	C				X		X
ErB, ErC	Ernest	X	X	C/S	X	X	X	X	X	
HcD3	Hagerstown	X	X	S	X	X	X	X	X	X
HhD, HsB, HTD, HTF	Hazleton	X	X	C		X	X	X	X	
HxB, HxC, HxD	Hublersburg		X	C/S		X	X	X		
LcD, LDF	Laidig	X	X	C/S	X	X	X	X	X	
LeB	Leetonia	X	X	C				X	X	
MeC, MkB, MkD	Meckesville		X	C/S	X	X	X	X		
MoB	Monongahela	X	X	C/S	X	X	X		X	
MrB, MrC	Morrison	X	X	C		X				X

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MuC, MuD	Murrill		X	C/S		X	X	X	X	X
Ne	Newark	X	X	S	X	X	X	X	X	X
ORF	Opequon	X	X	S				X		X
Ph	Philo	X	X	C/S	X	X	X	X	X	
VaD, VrF	Vanderlip	X	X	C/S		X		X	X	
WeB, WeC, WeD	Weikert		X	C/S		X	X	X	X	

Actions taken to counteract soil limitations

- (1) Erodible Soils - E&S BMPs will be in place and functional prior to earth disturbance. Prompt stabilization practices will be implemented.
- (2) Cut Banks Caves -Almost all Pennsylvania soils are susceptible to caving of cut banks. Cut slopes will be stabilized as soon as possible with seed and mulch or erosion control blankets to prevent sliding. Slopes are designed to not exceed 2H:1V.
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AoC	Andover	X	X	C/S	X	X	X	X	X	
At	Atkins		X	C/S	X	X	X	X	X	
BkB, BId, BMF	Berks	X	X	C			X	X	X	
BrB	Brinkerton	X	X	C/S	X	X	X	X	X	
EdC, EeC, EeD	Edom	X	X	S		X	X	X		X
ErB, ErC	Ernest	X	X	C/S	X	X	X	X	X	
HTF	Hazleton	X	X	C		X	X	X	X	
LcD, LDF	Laidig	X	X	C/S	X	X	X	X	X	
MoB	Monongahela	X	X	C/S	X	X	X		X	
Ty	Tyler	X	X	C/S	X	X	X	X	X	

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AbB, AbC	Albrights	X	X	C/S	X	X	X	X	X	
AoB	Andover	X	X	C/S	X	X	X	X	X	
Aw	Atkins		X	C/S	X	X	X	X	X	
Bc	Basher									
BeC, BhB, BhD	Berks	X	X	C			X	X	X	
BpB	Blairton									
BrA, BrB	Brinkerton	X	X	C/S	X	X	X	X	X	
BxB, BxC	Buchanan	X	X	C/S	X	X	X	X	X	
CaB, CaC, CaD	Calvin									
DEF	Dekalb		X	C		X	X	X		
Dy	Dystrochrepts	X	X	C/S	X	X	X	X	X	
EtB, EtC	Ernest	X	X	C/S	X	X	X	X	X	
HfB, HfD, HfF	Hazleton	X	X	C		X	X	X	X	
LgB, LgD	Laidig	X	X	C/S	X	X	X	X	X	
LpB, LpD	Lehew		X	C				X		
MdD	Meckesville		X	C/S	X	X	X	X		
Mf	Middlebury		X	S	X		X		X	
SrD	Sideling		X	C/S	X		X	X		
WeC, WeD, WkF	Weikert		X	C/S		X	X	X	X	

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AoB	Andover	X	X	C/S	X	X	X	X	X	
Aw	Atkins		X	C/S	X	X	X	X	X	
BeB, BeC, BeD, BhB, BhD	Berks	X	X	C			X	X	X	
BpB	Blairton	X	X	C/S	X	X	X	X	X	
BrA, BrB	Brinkerton	X	X	C/S	X	X	X	X	X	
BxB, BxC	Buchanan	X	X	C/S	X	X	X	X	X	
DuA, DuB, DuC	Duffield	X	X	C/S		X	X	X	X	X
EdB	Edom	X	X	S		X	X	X		X
EtB	Ernest	X	X	C/S	X	X	X	X	X	
HaA, HaB, HaC, HcB, HcC, HdB, HdD	Hagerstown	X	X	S	X	X	X	X	X	X
HfB, HfD, HfF	Hazleton									
HuA	Huntington		X	C	X	X			X	X
LdC, LgB, LgD	Laidig	X	X	C/S	X	X	X	X	X	
Mf	Middlebury		X	S	X		X		X	
MnB	Monongahela	X	X	C/S	X	X	X		X	
NeB, NeC	Neshaminy		X	C/S	X	X	X	X	X	
Pe	Penlaw	X	X	C/S	X	X	X	X	X	X
Ub	Urban Land and Udorthents	X	X	C/S		X		X		
Wa	Warners			S	X	X		X	X	
WeB, WeC, WeD, WkF	Weikert		X	C/S		X	X	X	X	

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AtC	Athol		X	C			X	X	X	
BrC, BsD	Brecknock		X	C			X	X		
Cm	Codorus		X	C/S	X	X	X		X	
CrA	Croton	X	X	C/S		X	X	X		
KnD, KnE	Klinesville	X	X	C/S				X	X	
LeB, LfC	Landsdale		X	C		X		X		
LgC, LgD	Legore		X	C/S		X	X	X		
LhB, LhC	Lehigh		X	C/S	X		X	X	X	
LrC, LSD	Lewisberry			C			X	X		
MdB, MeB	Mount Lucas		X	C/S	X	X	X	X	X	
NaB, NaC, NdB, NdD, NdE	Neshaminy		X	C/S	X	X	X	X	X	
StD	Steinsburg		X	C				X		
WbB	Watchung	X	X	C/S	X	X	X	X	X	

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AsB2	Athol		X	C			X	X	X	
At	Atkins		X	C/S	X	X	X	X	X	
Bc	Basher		X	C/S	X	X	X	X	X	
BrB2, BrC2	Brecknock		X	C			X	X		
CnB2, CnC2	Chavies	X		C			X	X		
Cr	Croton	X	X	C/S		X	X	X		
KaC2, KaD2	Klinesville	X	X	C/S				X	X	
LeB2, LrB2, LrC2, LrD2, LSD, LsF	Lewisberry			C			X	X		
Lt	Lindside		X	S	X	X	X		X	X
NeC2, NsB, NsD	Neshaminy		X	C/S	X	X	X	X	X	
PeB2, PeC2	Penn		X	C		X	X	X	X	
Tg	Tioga	X	X	C	X				X	
Ua, Ub	Urban Land				X					
Wc	Watchung	X	X	C/S	X	X	X	X	X	

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Lebanon County

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AbB	Abbottstown	X	X	C/S	X	X	X	X	X	
Bm	Bowmansville		X	C/S	X	X	X	X	X	
BnB, BnC	Brecknock		X	C			X	X		
BrB	Brinkerton	X	X	C/S	X	X	X	X	X	
ByB	Bucks		X	C		X	X	X		
CkA, CkB	Clarksburg	X	X	C/S	X	X	X	X	X	X
DfA, DfB, DfC	Duffield	X	X	C/S		X	X	X	X	X
HaB, HbC, HeC	Hagerstown	X	X	S	X	X	X	X	X	X
Ls	Lindside		X	S	X	X	X		X	X
Me	Melvin	X	X	S	X	X	X	X	X	X
NeB, NeC, NhC, NHE	Neshaminy		X	C/S	X	X	X	X	X	
No	Nolin		X	C	X	X	X		X	X
PeC	Penn		X	C		X	X	X	X	
Ro	Rowland	X	X	C/S	X	X	X	X	X	
UnB, UnC, UnD, UoB, UoC, UPE	Ungers	X	X	C		X				
WaA	Watchung	X	X	C/S	X	X	X	X	X	

Actions taken to counteract soil limitations

- (1) Erodible Soils - E&S BMPs will be in place and functional prior to earth disturbance. Prompt stabilization practices will be implemented.
- (2) Cut Banks Caves -Almost all Pennsylvania soils are susceptible to caving of cut banks. Cut slopes will be stabilized as soon as possible with seed and mulch or erosion control blankets to prevent sliding. Slopes are designed to not exceed 2H:1V.
- (3) Corrosive to concrete or steel pipe - Pipes to be used on site shall be either HDPE or coated steel.
- (4) High Water Table -Should a high ground water table be encountered during construction, water will be drained away from disturbed areas to a well vegetated area or a placed compost filter sock prior to being discharged off site. Saturated soils the require compaction will be dried prior to being used on site.
- (5) Low Strength - Most of Pennsylvania soils (73%) have relatively low strength. Precautions will be taken to prevent slope failures due to improper construction practices. Soils will be evaluated during construction to determine whether additional measures will need to be taken.
- (6) Piping Tendencies -Piping is the erosion by percolating waters or seepage in layer of subsoil resulting in caving and the formation of tunnels or pipes thorough which the soluble or granular material is removed. Where necessary, anti-seep collars will be used to prevent piping.
- (7) Poor Topsoil -Soil amendments will be added to site soils to promote vegetative growth.
- (8) Potentially Hydric -A wetland delineation has been performed to determine the presence of wetlands.
- (9) Potential Sinkhole - Should a sinkhole be encountered during construction, repair should be done under the direct observation and supervision of a professional geologist or licensed geotechnical engineer. Site specific sinkhole repairs should be developed on a case by case basis.

Limiting Soil Characteristics
Sunoco - Pennsylvania Pipeline Project: South Central Region
Construction Spreads 3, 4, and 5

Lancaster County

MAP UNIT SYMBOL	SOIL NAME	EASILY ERODIBLE	CUTBANKS CAVE	CORROSIVE TO CONCRETE/ STEEL	DEPTH TO SATURATED ZONE/ SEASONAL HIGH WATER TABLE	LOW STRENGTH/ LANDSLIDE PRONE	PIPING	POOR SOURCE OF TOPSOIL	HYDRIC/ HYDRIC INCLUSIONS	POTENTIAL SINKHOLE
AbB	Abbottstown	X	X	C/S	X	X	X	X	X	
Bo	Bowmansville		X	C/S	X	X	X	X	X	
BuA, BuB, BuC	Bucks		X	C		X	X	X		
Hg	Holly		X	C/S	X	X	X	X	X	
1JnC	Joanna		X	C		X	X		X	
LaB	Landsdale		X	C		X		X		
RaB	Readington	X	X	C/S	X	X	X	X	X	
Rd	Rowland	X	X	C/S	X	X	X	X	X	
UaB, UaC, UaD	Ungers	X	X	C		X				

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Limiting Soil Characteristics
Sunoco - Pennsylvania Pipeline Project: South Central Region
Construction Spreads 3, 4, and 5

Berks County

MAP UNIT SYMBOL	SOIL NAME	EASILY ERODIBLE	CUTBANKS CAVE	CORROSIVE TO CONCRETE/ STEEL	DEPTH TO SATURATED ZONE/ SEASONAL HIGH WATER TABLE	LOW STRENGTH/ LANDSLIDE PRONE	PIPING	POOR SOURCE OF TOPSOIL	HYDRIC/ HYDRIC INCLUSIONS	POTENTIAL SINKHOLE
AbA, AbB	Abbotstown	X	X	C/S	X	X	X	X	X	
Bo	Bowmansville		X	C/S	X	X	X	X	X	
BpB, BpC, BsD	Brecknock		X	C			X	X		
BuB	Buchanan	X	X	C/S	X	X	X	X	X	
CwA, CwB	Croton	X	X	C/S		X	X	X		
DbB, DfC	Duffield	X	X	C/S		X	X	X	X	X
EdB, EhB	Edgemont		X	C				X	X	
HeD, HeF	Hazleton	X	X	C		X	X	X	X	
Ho	Holly		X	C/S	X	X	X	X	X	
JnB, JnC, JnD, JnE, JpB, JpD, JpF	Joanna		X	C		X	X		X	
LaB, LaC, LaD, LbD, LbF	Laidig	X	X	C/S	X	X	X	X	X	
MuA, MuB, MuC	Murrill		X	C/S		X	X	X	X	X
NaB, NaC, NaD, NhD	Neshaminy		X	C/S	X	X	X	X	X	
ReB	Readington	X	X	C/S	X	X	X	X	X	
ToA	Towhee	X	X		X	X	X	X	X	
UmB	Urban Land				X					

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