USDA Natural Resources
Conservation Service

Ecological site F127XY100WV
Mine Spoil

Last updated: 9/27/2024
Accessed: 05/21/2025

General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

MLRA notes

Major Land Resource Area (MLRA): 127X–Eastern Allegheny Plateau and Mountains

This ecosite is found in mountains, plateau in MLRA 127: Eastern Allegheny Plateau and Mountains. This site occupies the Allegheny Mountain Section of the Appalachian Highlands of the Appalachian Plateau Province. The deeply dissected plateau in this area terminates in a high escarpment, the Allegheny Front, in the eastern part of the area. Steep slopes are dominant, but level to gently rolling plateau remnants are conspicuous in the northern part of the area. The area is dominantly forest, containing large blocks of state forest, game lands, and national forest. Less than one-tenth of the MLRA consists of urban areas.

Classification relationships

USDA-NRCS (USDA2 2006):
Land Resource Region (LRR): N—East and Central Farming and Forest Region
Major Land Resource Area (MLRA): 127—Eastern Allegheny Plateau and Mountains
USDA-FS (Cleland et al. 2007)
Province: 211 – Northeastern Mixed Forest Province (in Part)
Section: 211G - Northern Unglaciated Allegheny Plateau
Subsection: 211Ga – Allegheny High Plateau
211Gb – Allegheny Deep Valleys
Province: 221 - Eastern Broadleaf Province (in part)
Section: 221E - Southern Unglaciated Allegheny Plateau (in part)
Subsection: 221Ea - Pittsburgh Low Plateau
Province: M221 – Central Appalachian Broadleaf Forest – Coniferous Forest - Meadow

Province (in part)
Section: M221B - Allegheny Mountains
Subsection: M221Ba – Northern High Allegheny Mountains
M221Bb – Western Allegheny Mountains
M221Bc – Southern High Allegheny Mountains
M221Bd – Eastern Allegheny Mountain and Valley
M221Be – Western Allegheny Mountain and Valley
M221Bf – Allegheny Mountain Plateau
Section: M221C - Northern Cumberland Mountains
Subsection: M221Ca – Western Coal Fields

Ecological site concept

Representative named soils include: Bethesda, Briery, Cedarcreek, Fairpoint, Fiveblock, Itmann, Kaymine, Sewell.

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

Mine sites can be varied, occurring on mountain slopes and hillsides.

Table 2. Representative physiographic features

Landforms	(1) Mountains > Mountain slope (2) Plateau > Plateau (3) Hills > Hillslope
Runoff class	Very low to very high
Elevation	91–965 m
Slope	0–80%
Water table depth	46–183 cm
Aspect	Aspect is not a significant factor

Climatic features

The climate is characteristic of of other ecological sites of high elevation areas in the Eastern Allegheny Plateau and Mountains with a warm to hot, humid summers climate with cold winters and moderate snowfall. Rainfall occurs mostly as high intensity convective thunderstorms.

Table 3. Representative climatic features

Frost-free period (characteristic range)	109-131 days
Freeze-free period (characteristic range)	144-164 days
Precipitation total (characteristic range)	1,041-1,245 mm
Frost-free period (actual range)	102-142 days
Freeze-free period (actual range)	139-180 days
Precipitation total (actual range)	991-1,372 mm
Frost-free period (average)	123 days
Freeze-free period (average)	156 days
Precipitation total (average)	1,143 mm

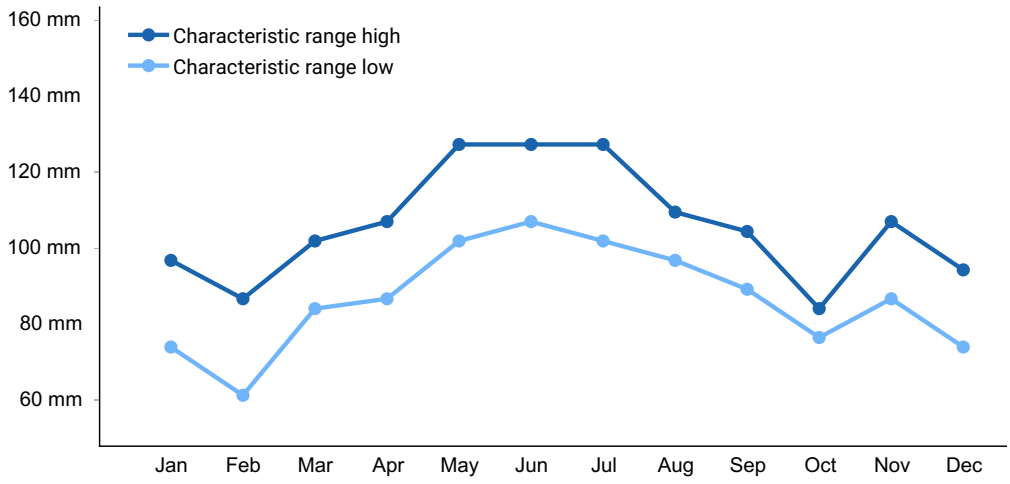


Figure 1. Monthly precipitation range

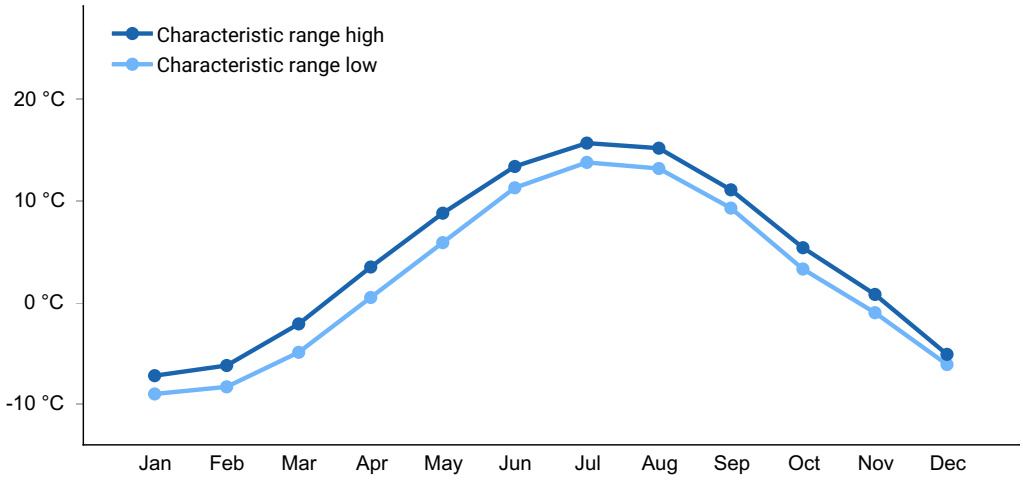


Figure 2. Monthly minimum temperature range

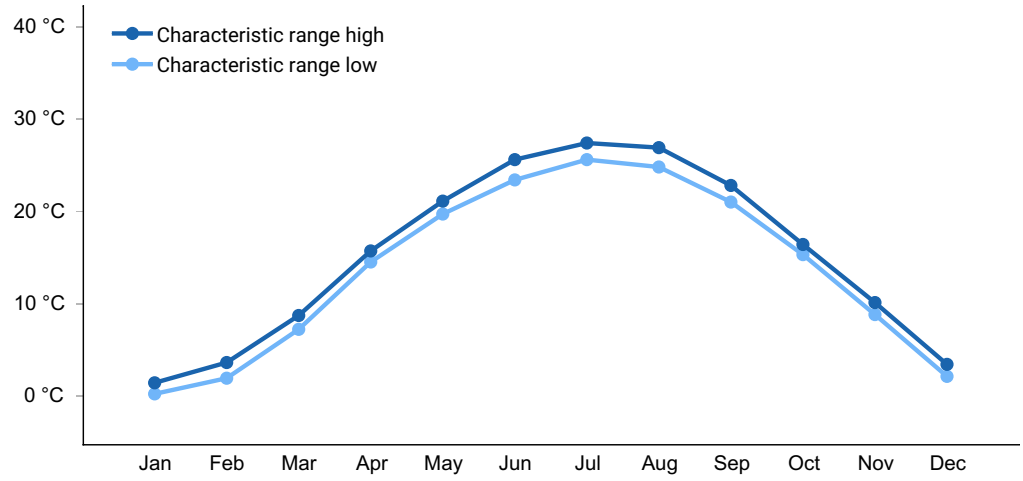


Figure 3. Monthly maximum temperature range

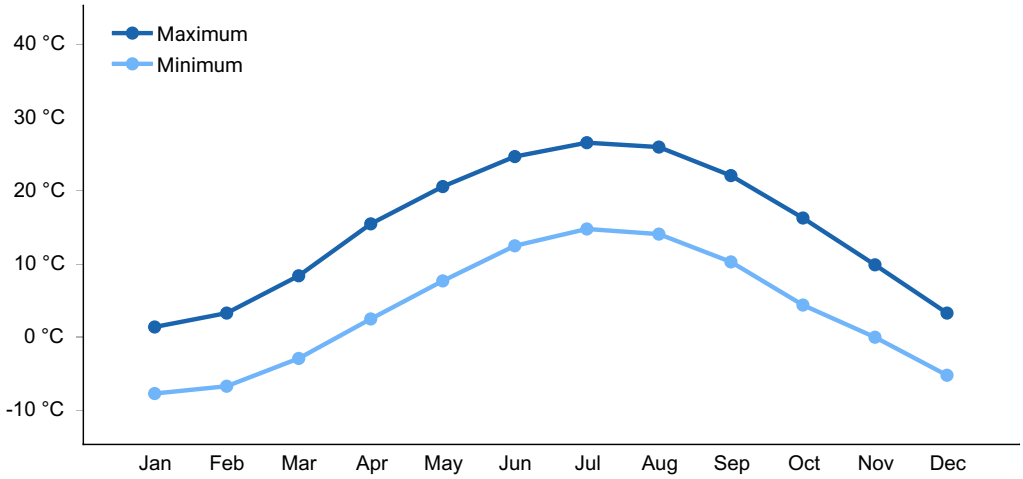


Figure 4. Monthly average minimum and maximum temperature

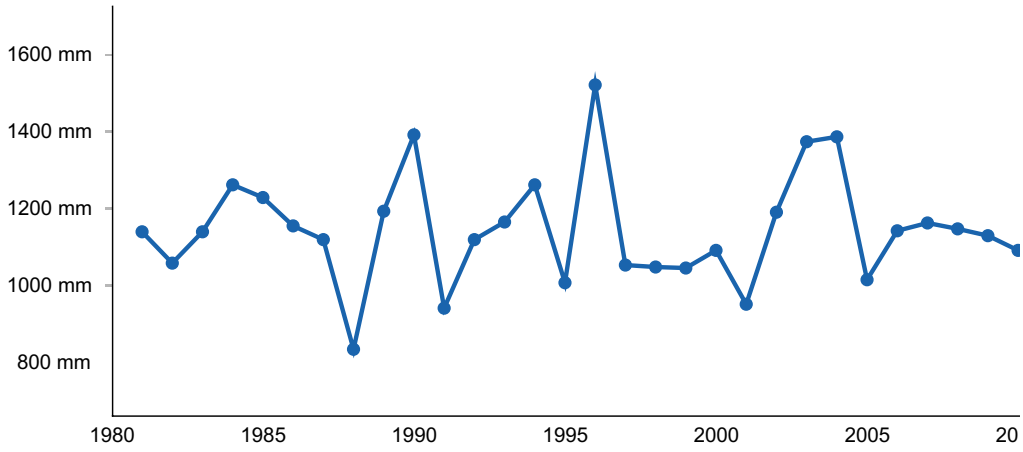


Figure 5. Annual precipitation pattern

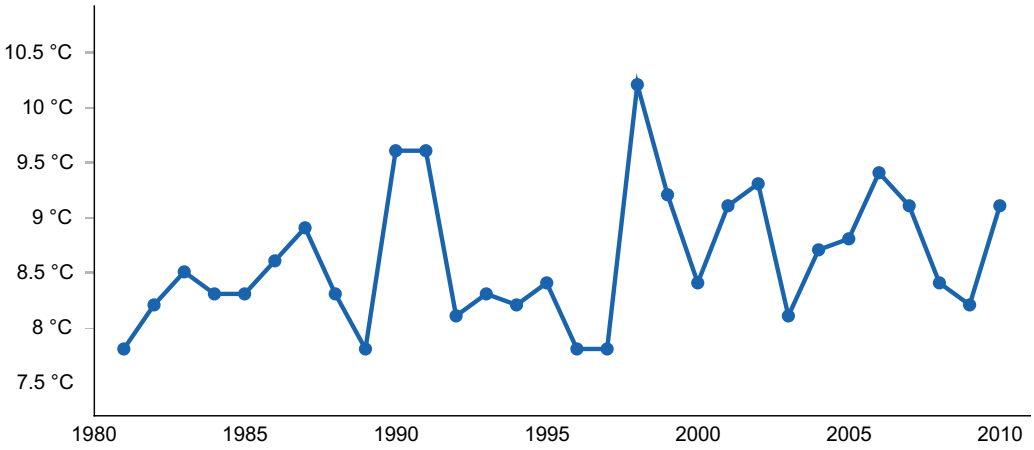


Figure 6. Annual average temperature pattern

Climate stations used

- (1) TIONESTA 2 SE LAKE [USC00368873], Tionesta, PA
- (2) CLARION 3 SW [USC00361485], Shippenville, PA
- (3) BROOKVILLE SEWAGE PLT [USC00361004], Brookville, PA
- (4) DUBOIS JEFFERSON CO AP [USW00004787], Reynoldsville, PA
- (5) CLEARFIELD LAWRENCE AP [USW00054792], Clearfield, PA
- (6) PHILIPSBURG 2 S [USC00366921], Philipsburg, PA
- (7) PRINCE GALLITZIN SP [USC00367167], Patton, PA
- (8) EBENSBURG SEWAGE PLT [USC00362470], Ebensburg, PA
- (9) JOHNSTOWN CAMBRIA CO AP [USW00004726], Johnstown, PA
- (10) COOPERS ROCK SF [USC00461900], Morgantown, WV
- (11) TERRA ALTA #1 [USC00468777], Terra Alta, WV
- (12) OAK HILL [USC00466591], Oak Hill, WV
- (13) BLUEFIELD MERCER CO AP [USW00003859], Bluefield, WV
- (14) MCROSS 3 E [USC00465875], Charmco, WV

Influencing water features

This site may have a high water table under circumstances of reclamation.

Soil features

Representative named soils include: Bethesda, Briery, Cedarcreek, Fairpoint, Fiveblock, Itmann, Kaymine, Sewell.

Table 4. Representative soil features

Parent material	(1) Coal extraction mine spoil
Surface texture	(1) Channery silt loam (2) Channery silt loamChannery loam

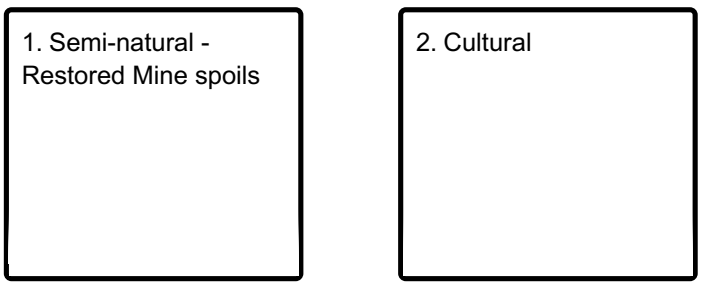
Drainage class	Somewhat poorly drained to somewhat excessively drained
Permeability class	Very slow to moderate
Soil depth	102–183 cm
Surface fragment cover <=3"	0–2%
Surface fragment cover >3"	0–25%
Available water capacity (Depth not specified)	Not specified
Soil reaction (1:1 water) (Depth not specified)	Not specified
Subsurface fragment volume <=3" (Depth not specified)	15–55%
Subsurface fragment volume >3" (Depth not specified)	4–60%

Ecological dynamics

The ecological dynamics of mine spoils requires further study including field investigations. While the extraction of coal, mineral, and other soil materials is a common feature of mine spoil sites, the nature of these sites are still quite variable. Although there is no certain reference condition, following reclaimation/restoration, conditions analogous to native soil conditions can be made ranging from semi-natural conditions supporting native plants to transformed cultural landscapes, such as croplands.

State and transition model

Ecosystem states



State 1
Semi-natural - Restored Mine spoils

The Semi-natural State would expect plant communities where ecological processes are primarily operating with some land conditioning in the past or present, e.g., managed forests, or plant communities that are an artifact of land management e.g.,predominately invasive plants, or restored mine spoils. (to be developed)

State 2

Cultural

The Cultural State would expect the ecological site to be strongly conditioned by land management and completely transformed to Cultivated/Pasture/Plantation. (to be developed)

Inventory data references

Site Development and Testing Plan
Future work is needed, as described in a future project plan, to validate the information presented in this provisional ecological site description. Future work includes field sampling, data collection and analysis by qualified vegetation ecologists and soil scientists. As warranted, annual reviews of the project plan can be conducted by the Ecological Site Technical Team. A final field review, peer review, quality control, and quality assurance reviews of the ESD are necessary to approve a final document.

Other references

Cleland, D.T., J.A. Freeouf, J.E. Keys, G.J. Nowacki, C.A.Carpenter, and W.H. McNab. 2007. Ecological Subregions: Sections and Subsections for the conterminous United States.[Map. presentation scale 1:3,500,000, colored; A.M. Sloan, cartographer] Gen. Tech. Report WO-76D. U.S. Department of Agriculture, Forest Service, Washington, DC. (https://www.fs.fed.us/research/publications/misc/73326-wo-gtr-76d-cleland2007.pdf)

Comer, P., D. Faber-Langendoen, R. Evans, S. Gawler, C. Josse,G. Kittel, S. Menard, M. Pyne, M. Reid, K. Schulz, and K. Snow.2003. Ecological Systems of the United States: A Working Classification of US Terrestrial Systems. NatureServe, Arlington,VA. (https://www.natureserve.org/sites/default/files/pcom_2003_ecol_systems_us.pdf).

NatureServe 2007. NatureServe Explorer: An Online Encyclopediaof Life [web application]. NatureServe, Arlington, Virginia. Available http://explorer.natureserve.org (Accessed: April 2016).

USDA-NRCS [United States Department of Agriculture, Natural Resources Conservation Service]. 2006. Land Resource Regionsand Major Land Resource Areas of the United States, theCaribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296.(
https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051845.pdf).

Approval

Greg Schmidt, 9/27/2024

Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	
Contact for lead author	
Date	05/21/2025
Approved by	Greg Schmidt
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:**

   _____

2. **Presence of water flow patterns:**

   _____

3. **Number and height of erosional pedestals or terracettes:**

   _____

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):**

   _____

5. **Number of gullies and erosion associated with gullies:**

   _____

6. **Extent of wind scoured, blowouts and/or depositional areas:**

   _____

7. **Amount of litter movement (describe size and distance expected to travel):**

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):**

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):**

12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**

    Dominant:

    Sub-dominant:

    Other:

    Additional:

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**

14. **Average percent litter cover (%) and depth (in):**

15. **Expected annual annual-production (this is TOTAL above-ground annual-production,**

not just forage annual-production):

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16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:**

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17. **Perennial plant reproductive capability:**
