October 13, 2025

VIA ELECTRONIC MAIL

Jessica Shirley, Secretary
Pennsylvania Department of Environmental Protection
Rachel Carson State Office Building
P.O. Box 2063
Harrisburg, PA 17105-2063
jesshirley@pa.gov

Re: Petition to Redesignate Shades Creek, Luzerne County to Exceptional Value (EV) Status

Dear Ms. Shirley,

On behalf of the Delaware Riverkeeper Network (DRN), Natural Lands (NL), and North Pocono Citizens Alert Regarding the Environment (NPCARE), we respectfully submit the enclosed redesignation and upgrade petition to the Pennsylvania Department of Environmental Protection (DEP) to request an upgrade to redesignate the entire Shades Creek Watershed in Luzerne County from High Quality (HQ) to Exceptional Value (EV) status, from the headwaters to the mouth and including all tributaries.

We look forward to working with DEP on this important effort to provide Shades Creek its proper designation. Please do not hesitate to reach out to us directly so we can assist with this evaluation. The co-petitioners can attend the Wednesday, November 12, 2025 EQB meeting if warranted. If you need any other information or data please reach out to Faith Zerbe, DRN's Water Watch Director at faith@delawareriverkeeper.org or 215-369-1188 ext. 110 or 610-291-1403 (cell). Thank you for your attention to this upgrade petition and the beautiful forested tributary that flows through the Poconos.

Sincerely,

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215-369-1188 ext. 102

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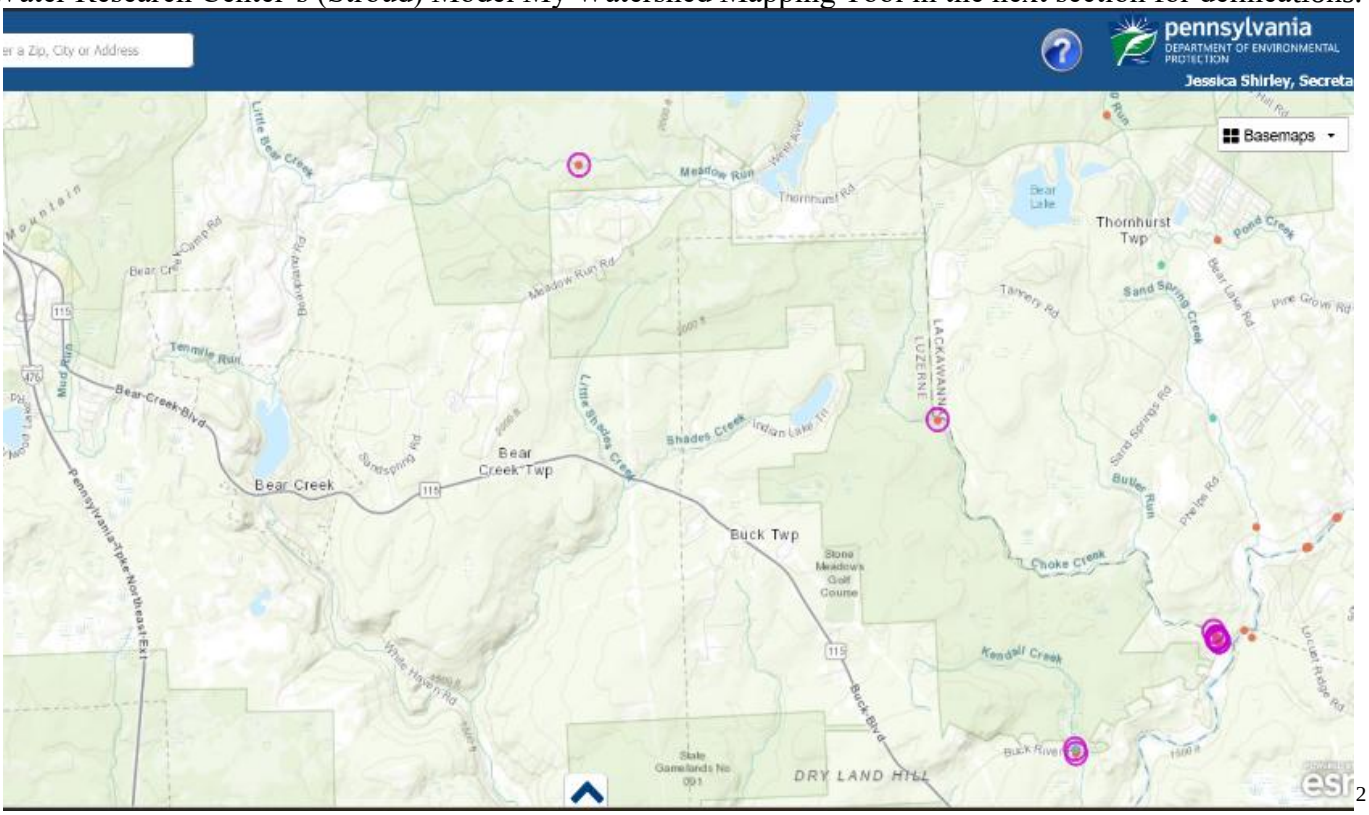
Shades Creek Community Stream Upgrade Petition

Shades Creek flowing through Bear Creek Preserve Photo Credit: B. Meyer

Delineation of the Shades Creek Watershed and Current and Requested Designated Uses (No. 1, 2, and 3 in Petition Form)

Shades Creek (HUC 02040106) is located in Bear Creek and Buck Townships in Luzerne County and is designated a HQ-CWF. It is a tributary to the Lehigh River that feeds into the Delaware River. There is one main stem and three main tributaries of Shades Creek including Little Shades Creek (HQ-CWF) as the western most tributary, that intersect near Rt. 115, totaling approximately 13 miles of stream. Shades Creek is a tributary to Bear Creek (HQ-CWF), which in turn flows into the 1961 artificial Army Corps impoundment of the Francis E. Walter Dam and then the Lehigh River (HQ-CWF, MF) that drains into the Delaware River (Wild & Scenic River). Shades Creek flows for approximately 5 miles (8 km) through property owned by Natural Lands (NL) which is preserved and protected by permanent conservation easement in perpetuity, in what is known as the Bear Creek Preserve. NL created a Shades Creek Coldwater Conservation Plan[1] in December of 2016 (Attachment 1) outlining the significance of protecting this water and forest resource. The priorities for management of the Shades Creek as it flows through the Bear Creek Preserve are to protect and enhance the natural and water resources of the stream, wetlands and the Preserve and to support passive recreation founded on the basis of protecting forests and riparian buffers and water resources within the preserve. The Bear Creek Preserve is publicly accessible through trails and educational programs with an address of 47 Rabbit Run Lane, Bear Creek Village, PA 18702 (610-353-5587). Lands surrounding the Bear Creek Preserve are largely forested and rural. See the general vicinity map below courtesy of DEP's Macroinvertebrate Taxa Station Arc GIS Mapping Tool (accessed 10.3.2025) and Stroud Water Research Center's (Stroud) Model My Watershed Mapping Tool in the next section for delineations.

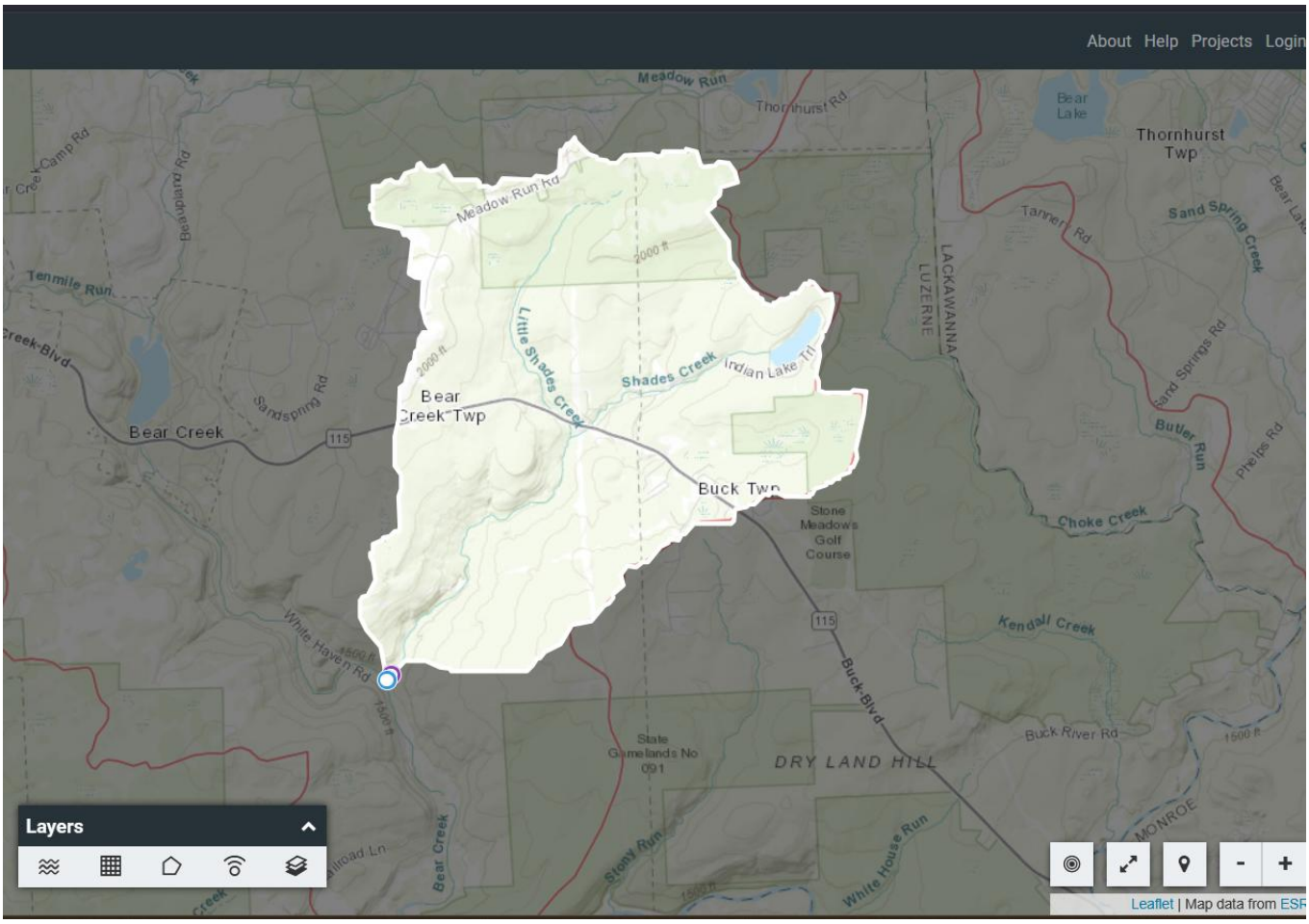

[2]

DEP Macroinvertebrate Taxa Mapping Tool

[1] Natural Lands (2016). Shades Creek Coldwater Conservation Plan.

[2] Economic Costs of the PennEast Pipeline: Effects on Ecosystem Services, Property Value, and the Social Cost of Carbon in PA and NJ. Key-Log Economics LLC. provided to the Delaware Riverkeeper Network Jan 2017. (

The topography of the Shades Creek watershed slopes generally from north to south, with a change in elevation of approximately 600ft (183 km). The area is hilly, and the steepest slopes are along the southern half of Shades Creek.

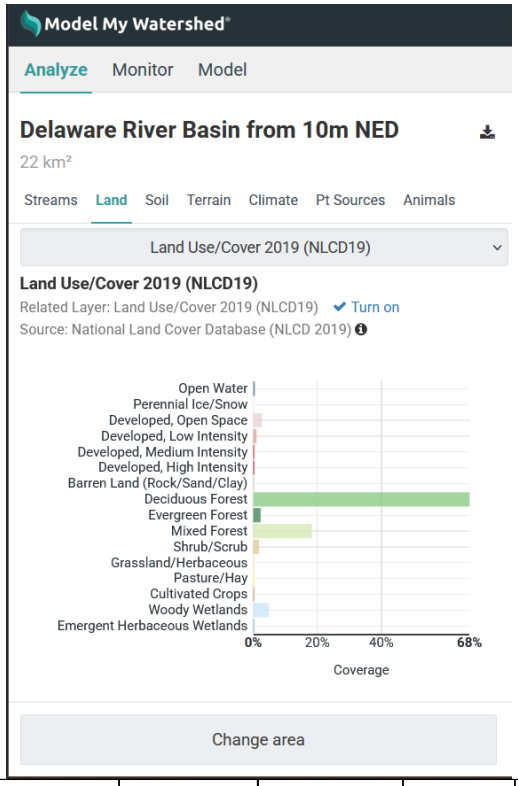


Stroud's Model My Watershed– Shades Creek Delineation to confluence with Bear Creek

General Description of Land Use and Development Patterns in Shades Creek & Point or Non-Point Source Discharges (No. 5 & 7 on petition form)

There are some residential properties within the Shades Creek Watershed. Rt 115 and Indian Lake Rd cross the stream in the northern reaches. There is potential nonpoint source pollution in the form of runoff from impervious surfaces in the residential areas near Indian Lake and from Rt 115. However, the impacts of these potential discharges are minimal as the density of residential development is low compared to the amount of forested buffer, and the water quality data reflect this. Two pipeline rights-of-way (ROW) cross the stream, one near Rt 115 and the other in the center of the Bear Creek Preserve. Natural Lands assists with BMPs for these pipeline corridors and meets regularly to help ensure maintenance issues and better water quality protection measures are employed that protect the stream and habitats cut by the pipelines. This low level of development creates a unique viewshed that is dominated by forests. Noise pollution is minimized by the rural surroundings except near the Rt 115 corridor. This distance from development is beneficial for wildlife and people who visit the watershed. The forested and rural nature of the surrounding area contributes to maintaining pristine water quality, and Shades Creek meets several Exceptional Value (EV) qualifiers as a result.

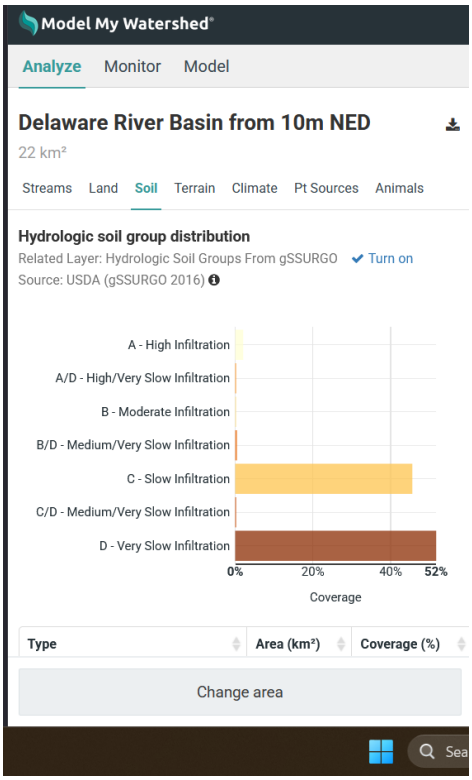
Stroud's Model My Watershed Land Use Mapping (2019) indicates the predominate land uses of Shades Creek sub-watershed is 88.09% forested habitat including an additional 4.88 % as forested wetlands. Another 1.79% is scrub/shrub habitat. There is no cover indicated to be cultivated crops or intensive ag and developed low, mid and high-density residential development combined at a low 1.25% (see table and screenshot below).



Shades Creek - LandUse Type (2019)	NLCD Code	Area (km²)	Coverage (%)	Active River Area (km²)
Open Water	11	0.11	0.53	0.11
Perennial Ice/Snow	12	0	0	0
Developed, Open Space	21	0.59	2.72	0.16
Developed, Low Intensity	22	0.22	1.02	0.09
Developed, Medium Intensity	23	0.04	0.21	0.02
Developed, High Intensity	24	0	0.02	0
Barren Land (Rock/Sand/Clay)	31	0	0.01	0
Deciduous Forest	41	14.6	67.51	2.59
Evergreen Forest	42	0.5	2.31	0.3
Mixed Forest	43	3.95	18.27	1.66
Shrub/Scrub	52	0.39	1.79	0.1
Grassland/Herbaceous	71	0.07	0.34	0.01
Pasture/Hay	81	0.02	0.09	0.01
Cultivated Crops	82	0	0	0
Woody Wetlands	90	1.06	4.88	0.77
Emergent Herbaceous Wetlands	95	0.06	0.29	0.06
Total		**21.63**	**100**	**5.88**

Source: Stroud's Model My Watershed (accessed October, 2025) – 2019 data sources

Stroud's Model My Watershed indicates predominant soil type for Shades Creek are ranked as D for very slow infiltration covering about 51.71% of the subwatershed and another 45.57% considered C-slow infiltration. See the hydrologic soil group distribution table below:

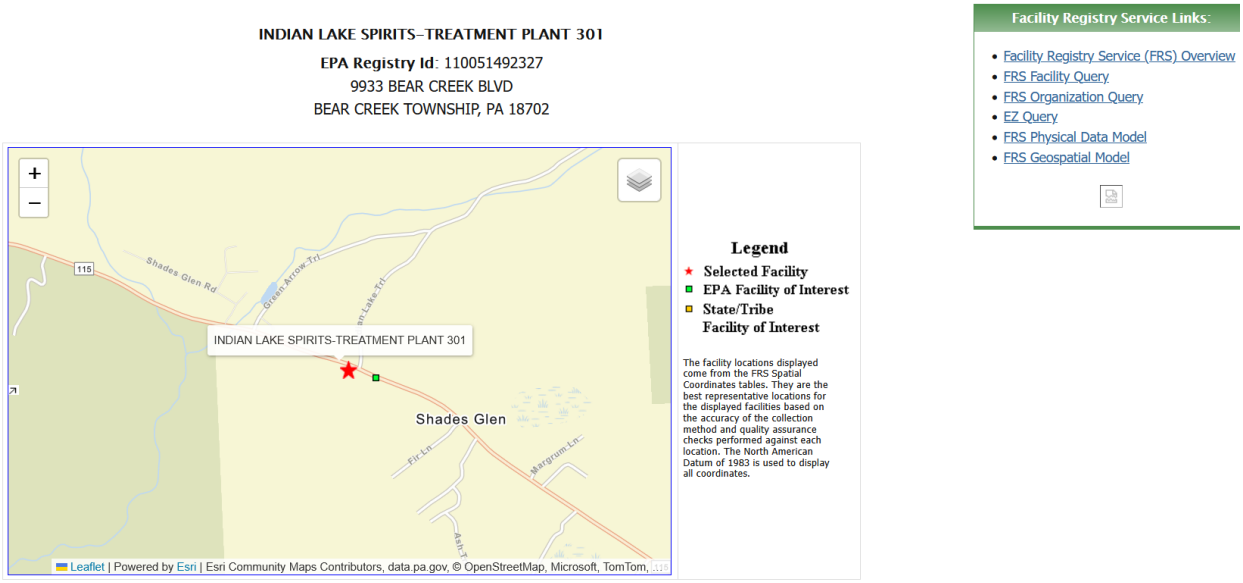


Shades Creek - Hydrologic Soil Type	Area (km²)	Coverage (%)
A - High Infiltration	0.45	2.07
A/D - High/Very Slow Infiltration	0	0
B - Moderate Infiltration	0	0
B/D - Medium/Very Slow Infiltration	0.1	0.48
C - Slow Infiltration	9.86	45.57
C/D - Medium/Very Slow Infiltration	0.04	0.17
D - Very Slow Infiltration	11.19	51.71
Total	**21.63**	**100**

Source: Stroud's Model My Watershed: https://modelmywatershed.org/analyze

Stroud's Model My Watershed that accesses EPA NPDES data indicates no NPDES permits in this subwatershed of Shades Creek. There are no significant point source or non point source discharges in this largely rural and forested watershed per communications with John Levitsky, Luzerne Co. Watershed Specialist. Conservation assistance is underway by Luzerne Co Conservation District to assist the Indian Lake community with better sewage management. DRN conducted a search of EPA's ECHO (Enforcement and Compliance History Online) online system and is providing the screenshot below of Indian Lake Spirits-Treatment Plant (noted as a restaurant) having a SDWA compliance history of 51 informal

enforcement actions that involve total coliform exceedances and impacting their present groundwater service area (Source ID: PA2400972 located at 9933 Bear Creek Blvd, Bear Creek Township, PA 18702) (Latitude 41.179048 Longitude -75.690521).



Known Existing Water Quality Data for Shades Creek (No. 4 on Petition Form)

As part of the 2016 Conservation Plan, NL purchased a Manta 2 Sub 3™ water quality multi-probe (sonde) in 2016. The probe was deployed near the base of the watershed to collect temperature, pH, dissolved oxygen, turbidity, and conductivity readings on a daily, monthly, and seasonal basis to determine the natural fluctuations within the system. The table below includes results from the multi-probe from February 19, 2016 through March 4, 2016. Additional water quality data is available upon request from NL and will be provided as more information is obtained for a supplement.

Eureka_Manta_2	V6.98	17151965					
DATE	TIME	Temp_deg_C	pH_units	SpCond_uS/cm	HDO_mg/l	HDO_%Sat	TurbDig_NTU
2/19/2016	13:00:00	1.25	6.45	42	13.99	100.5	1.5
2/20/2016	1:00:00	1.62	5.97	41.3	13.6	98.8	1
2/20/2016	13:00:00	3.82	6.04	40.7	12.77	98.4	1
2/21/2016	1:00:00	2.9	6.06	40.9	13	97.7	1.2
2/21/2016	13:00:00	3.83	6.14	40.4	12.75	98.3	0.9
2/22/2016	1:00:00	3.36	6.15	40.9	12.86	97.9	1
2/22/2016	13:00:00	4.19	5.95	40.4	12.73	99.1	0.7
2/23/2016	1:00:00	2.46	6.01	41	13.29	98.8	0.7
2/23/2016	13:00:00	2.87	6.05	40.6	13.2	99.2	0.5
2/24/2016	1:00:00	2.8	6.04	54.6	13.11	98.3	0.7
2/24/2016	13:00:00	3.69	6.06	49.8	12.67	97.3	0.8
2/25/2016	1:00:00	4.17	5.76	46.5	12.38	96.3	72.4
2/25/2016	13:00:00	3.86	5.54	46	12.49	96.3	5.9
2/26/2016	1:00:00	2.57	5.65	42.9	13.07	97.4	12.9
2/26/2016	13:00:00	3	5.76	42.6	13.06	98.5	1.7
2/27/2016	1:00:00	1.77	5.8	41.8	13.54	98.8	1.6
2/27/2016	13:00:00	3.13	5.85	41.3	13.06	98.8	1
2/28/2016	1:00:00	2.44	5.87	41.1	13.21	98.1	1
2/28/2016	13:00:00	4.68	5.88	40.5	12.44	98.1	1.1
2/29/2016	1:00:00	3.73	5.9	41	12.61	96.9	1.1
2/29/2016	13:00:00	4.64	5.94	40.6	12.34	97.1	0.8
3/1/2016	1:00:00	3.95	5.95	41.3	12.63	97.7	0.9
3/1/2016	13:00:00	5.12	5.98	40.7	12.36	98.5	0.7
3/2/2016	1:00:00	5.12	5.99	41.1	12.03	95.9	0.9
3/2/2016	13:00:00	4.86	6.03	41.7	12.34	97.7	0.9
3/3/2016	1:00:00	2.31	6.05	41.3	13.28	98.3	0.7
3/3/2016	13:00:00	2.49	6.08	40.9	13.36	99.3	0.6
3/4/2016	1:00:00	2.12	6.07	41.2	13.36	98.4	0.5

The temperature ranged from 1.25-5.12°C, while pH ranged from 5.54-6.45 and aligned with the data collected by Wilkes University. The average specific conductivity was 42.3 uS/ cm, and dissolved oxygen in Shades Creek averaged 98.1%. Finally, the turbidity of Shades Creek is very low. The majority of readings were below 1.7 NTUs, which indicates almost no suspended solids in the water. Shades Creek displays water quality characteristics worthy of EV designation.

DRN conducted a search on DEP's online Macroinvertebrate Taxa GIS system and spoke with the Luzerne County Watershed Specialist. Per the map and discussion with Luzerne Co Watershed Specialist, there are no existing County or DEP macroinvertebrate sample sites located in the Shades Creek watershed. During baseline surveys when PennEast natural gas pipeline was projected to cut across Shades Creek, DRN scientists Dr. Erik Silldorff and Faith Zerbe conducted water and benthic sampling on Dec 17, 2021 for several streams to be cut by the pipeline company, including Shades Creek within NL's Bear Creek Preserve. Of the three streams samples for this pipeline survey, Shades Creek scored the highest for macroinvertebrate diversity. It's important to note that to access the sampling location DRN had to crawl through the dense healthy native riparian buffer and rhododendron understory to access the highly protected and wild Shades Creek. Benthic samples using PA ICE protocol for Shades Creek were preserved for analysis by Cole Ecological Consultants.

Shades Creek meets multiple qualifiers for EV Designation (No. 6 on petition form)

Petitioners lay out multiple considerations below for each of the qualifiers we believe Shades Creek meets. Shades Creek already has HQ designation in its entirety.

Shades Creek supports a diverse aquatic community and is a Surface Water of Exceptional Ecological Significance under § 93.4b (b)(2):

The Shades Creek watershed is part of the Glaciated Pocono Plateau Section of the Appalachian Plateaus Province. This area is characterized by low to moderate relief over broad upland sections with low hills. The watershed was created by glacial deposits. Three formations are found within the watershed; they were deposited during the Late Devonian and Early Mississippian Period. The Duncannon Member of the Catskill Formation is found along Little Shades Creek and the main stem of Shades Creek. It is comprised mainly of sandstone and siltstone with some mudstone and conglomerates. The Spechty Kopf Formation was laid down over the Duncannon Member. It is mainly composed of sandstone and siltstone with some mudstone, shale, and conglomerates. The Pocono Formation is made up of sandstone and siltstone with some conglomerates (Shades Creek Coldwater Conservation Plan, 2016). See the breakout of hydrologic soils above from Model My Watershed.

Shades Creek from the headwaters to the mouth is classified as a naturally reproducing trout stream and has High Quality – CWF designation. Wild brook trout (*Salvelinus fontinalis*) and brown trout (*Salmo tutta*) have reproducing populations in the stream. In August of 2016, the Pennsylvania Fish and Boat Commission (PFBC) conducted an electrofishing survey on a 300-meter stretch of Shades Creek just downstream of Rt. 115 on the main stem of Shades Creek that is fed from Indian Lake. The survey focused on classifying Shades Creek as a Class A trout stream. Brown trout biomass was estimated to be 53.77 kg/ha (Class A) and brook trout was 10.17 kg/ha (Class C). The PFBC currently classifies the 1.7 mile stretch from the downstream side of the Rt. 115 bridge to the pipeline crossing as Class A trout waters. In 2017, Trout Unlimited staff and volunteers visited this wild trout fishery within the borders of Natural Lands Bear Creek Preserve to document fishing for a healthy trio of brook trout; Shades Creekwas highlighted in TU's magazine for its significance (https://www.tu.org/magazine/uncategorized/native-pas-shades-creek-is-tight-fragile-and-fulfilling/).

One-hundred-year forested floodplains buffer the main stem of the stream throughout its entire length. Hydric and partially hydric soils are adjacent to the stream along most of its reach. There are wetlands along the northern half of the main stem and tributaries, as identified by the National Wetland Inventory. This includes 4 Palustrine Forested (PFO) wetlands and 1 Palustrine Scrub-Shrub wetland (PSS) adjacent to Little Shades Creek in the vicinity of Meadow Run Rd, ranging in size from 1.21 to 7.91 acres. There are also 2 PFO wetlands (3.07 acres and 1.88 acres) downstream from Indian Lake along Indian Lake Trail. Additionally, the unnamed tributary to the east has 4 PFO wetlands ranging in size from 0.94 acres to 11.75 acres in the vicinity of Rt. 115. Finally, Shades Creek below Rt. 115 has 2 PFO wetlands (9.26 acres and 1.27 acres).

Altogether, there are 13 wetlands in the floodplain and modeled wetlands mapping predicts the presence of more that are currently unaccounted for. All of these wetlands should be verified in the field and be classified as Exceptional Value (EV) wetlands. Under Chapter 93, wetlands that qualify as EV include:

*"Wetlands that are **located in or along the floodplain of the reach of a wild trout stream** or waters listed as exceptional value under Chapter 93 (relating to water quality standards) and the floodplain of streams tributary thereto, or wetlands within the corridor of a watercourse or body of water that has been*

designated as a National wild or scenic river in accordance with the Wild and Scenic Rivers Act of 1968 (16 U.S.C.A. § § 1271—1287) or designated as wild or scenic under the Pennsylvania Scenic Rivers Act (32 P. S. § § 820.21—820.29)."

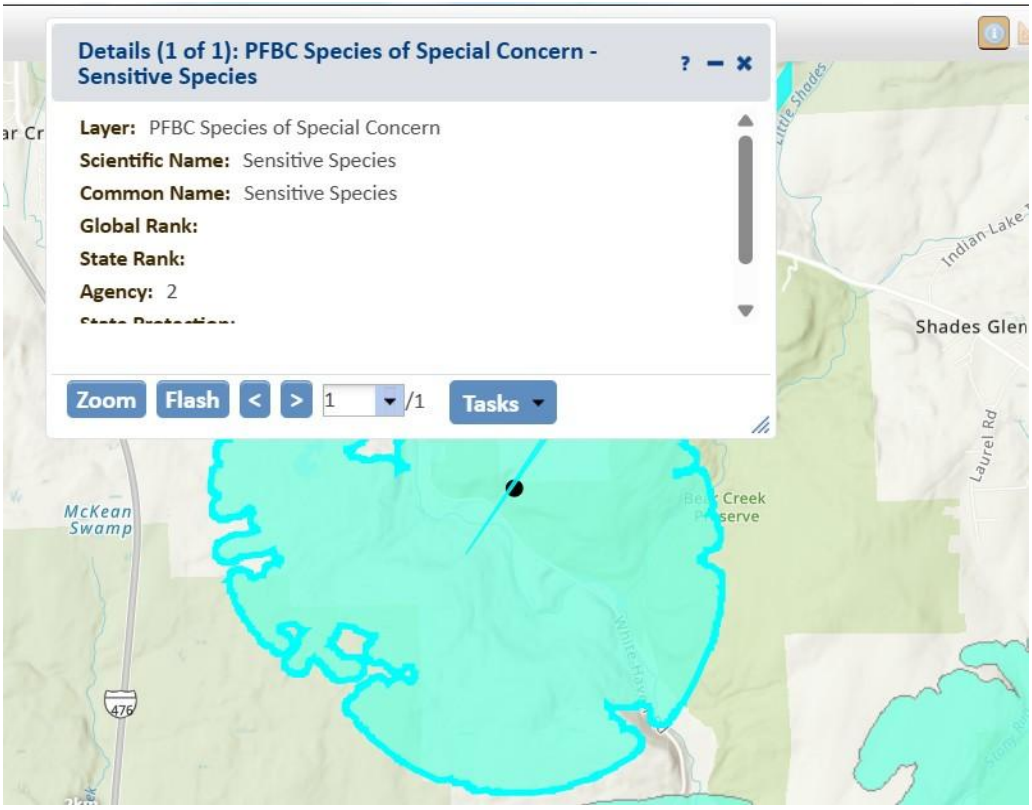
As previously stated, Shades Creek is **a naturally reproducing (wild) trout stream from the headwaters to the mouth**. Since these wetlands are in the floodplain of a wild trout stream, they should be considered EV wetlands. The presence of EV wetlands satisfies the Surface Water of Exceptional Ecological Significance qualifier for the Shades Creek basin according to the Department's own criteria listed at 25 Pa. Code § 93.4b(b)(2) and the definition at § 93.1 of a surface water of exceptional ecological significance, which is defined as:

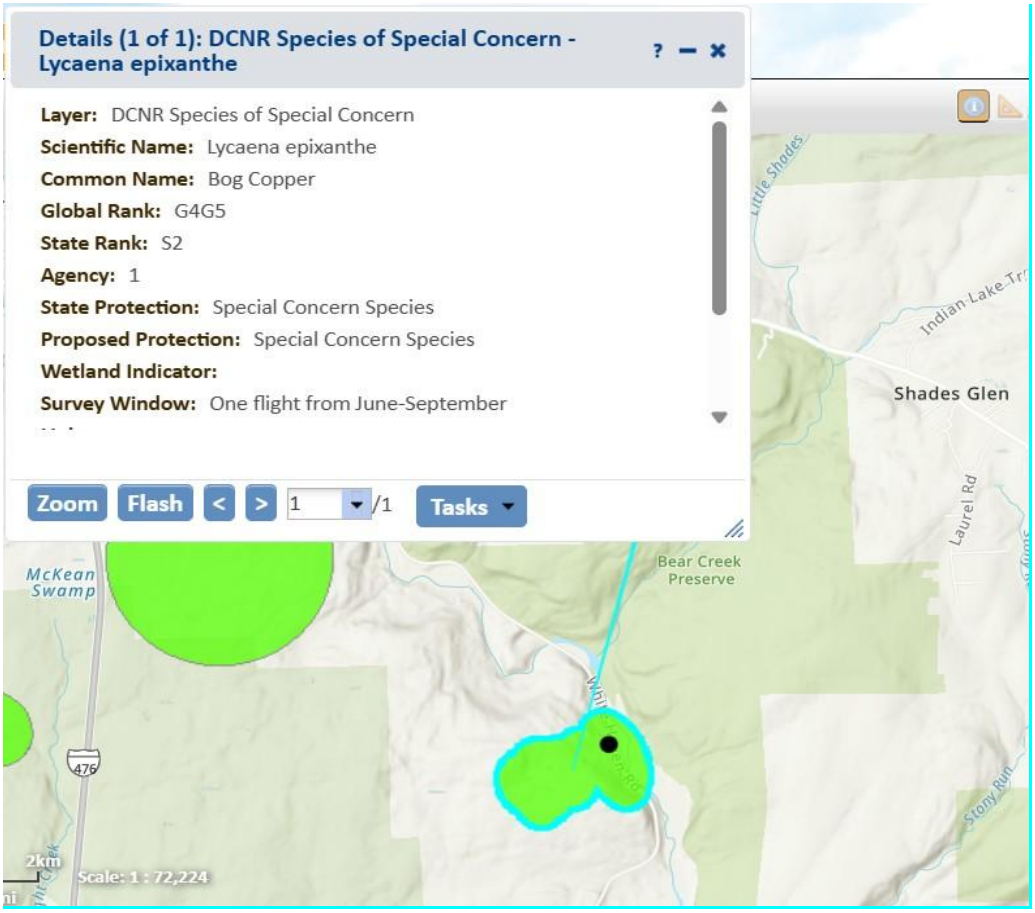
"A surface water which is important, unique or sensitive ecologically, but whose water quality as measured by traditional parameters (for example, chemical, physical or biological) may not be particularly high, or whose character cannot be adequately described by these parameters. These waters include:
i thermal springs.
***ii Wetlands which are exceptional value wetlands under § 105.17(1) (relating to wetlands)**."*

Springs and seeps are also present in the Shades watershed. They are vital headwaters of the watershed and provide important habitat for wildlife and plants. Wildlife species rely on springs during the winter because the movement of the water usually keeps it from freezing. Seeps provide the habitat needed for many wetland plant and animal species. Northern dusky salamanders (*Desmognathus fuscus*) and northern spring salamanders (*Gyrinophilus porphyriticus*) have been documented at the Bear Creek Preserve. Both species require clear, cool running water from springs and seeps to survive. Since they are lungless, they absorb oxygen directly through their skin and are very sensitive to pollutants and water quality changes. Their presence in Shades Creek is indicative of exceptional water quality.

General plant communities within the Shades Creek watershed include upland forests, riparian forests, wetlands, and disturbed areas where the ROWs cross. Based on a 2007 plant survey, the terrestrial forests generally contain white pine, hemlock, pitch pine, oaks, red maple, black and yellow birch, beech, and black cherry. Shrubs in these areas include northern arrow-wood, witch-hazel, blueberries, sheep laurel, blackberry, and greenbrier. The riparian forests contain red maple, black gum, hemlocks, red spruce, blueberry, huckleberry, laurel, and herbaceous plants. It was noted that this could be a favorable habitat for rare and endangered orchids. The wetland plants include seeded sedge, cranberry, ferns, arrowhead, and prickly sedge.

There are rare ecological community types in the Shades Creek drainage including acidic shrub swamps in Buck Township and the Choke Creek Swamp Habitat. A search online indicates the PA Fish and Boat Commission (PFBC) Species of Special Concern. It also showed a DCNR Species of Special Concern, the Bog Copper, which is a butterfly species. *Lycaena epixanthe*, also known as the bog copper or cranberry-bog copper, is a North American species of butterfly in the family *Lycaenidae*. Adults like to sip drops of dew clinging to leaves and almost exclusively nectar on their host plant, cranberries which are a water dependent wetland plant.





Sources of Maps: DCNR & PAFBC

Bear Creek and Shades Creek are rocky, quick-moving streams predominantly shaded by hemlocks (*Tsuga canadensis*). The rocky and coarse sandy substrate of the creeks provides habitat for a good-quality population of a PA-Rare plant species (SP537). The dominant herbaceous plant species include turtlehead (*Chelone glabra*), sedges (*Carex* sp.), bulrush (*Scirpus* sp.), and bent grass (*Agrostis* sp.). The adjacent riverbanks have hemlock (*Tsuga canadensis*), beech (*Fagus grandifolia*), swamp azalea *(Rhododendron viscosum*), mountain laurel (*Kalmia latifolia*), aster (*Aster* sp.), panic grass (*Panicum* sp.), a sedge (*Carex* stricta), New York fern (*Thelypteris noveboracensis*), water horehound (*Lycopus uniflorus*), marsh St. Johns wort (*Triadenum* sp.), and a small amount of Japanese knotweed (*Polygonum cuspidatum*). The knotweed is not currently impacting the plant species of concern. No deer browsing of the plants was observed and NL as well as SGL conduct deer management to help protect a diverse riparian corridor and forests. "The water quality and the present hydrology of the streams should be maintained, as well as a forested buffer along the stream banks." (Natural Inventory of Luzerne Co.).

Shades Glen Headwaters (Bear Creek Twp.) NC533, SP534, SP535 is a heathdominated shrubland with patches of scrub oak (*Quercus ilicifolia*) and occasional pitch pine (*Pinus rigida*). In 2000, this site was mapped as a fair occurrence of a Mesic Scrub Oak-Heath-Pitch Pine Barrens (NC533). Sheep laurel (*Kalmia angustifolia*) and rhodora (*Rhodora canadense*) are co-dominant plant species along with serviceberry (*Amelanchier sp*.), pitch pine (*Pinus rigida*), wintergreen (*Gaultheria procumbens*), sweet fern (*Comptonia peregrina*) and raspberries and blackberries (*Rubus sp.)*. The sparse (estimated 10-15%) herbaceous plant layer includes fly poison (*Amianthium muscaetoxicum*), ricegrass (*Oryzopsis asperifolia*), poverty grass (*Danthonia spicata*), hairgrass (*Deschampsia flexuosa*), and bracken fern (*Pteridium aquilinum*). The soil is a stony silt loam (Morris series) formed in acidic glacial till and poorly drained with a fragipan. Therefore, the "barrens" vegetation appears to be due to factors (e.g., fire history, site function as a frost pocket) other than xeric soil conditions. The barrens should be revisited for more thorough vegetation and soil sampling, and to determine its relation to the till barrens of Long Pond. Additionally, Lepidopteran surveys are needed. A PA-Threatened plant species (SP534) and a PA-Rare plant species (SP535) were identified in a swamp at this site. The habitat containing the species of concern has a few, stunted trees (*Acer rubrum*, *Picea rubens*, *Pinus strobus*, and *Betula populifolia*) and occasional tall shrubs (*Alnus sp*., *Spiraea latifolia*, and *Chamaedaphne calyculata*) but is largely unshaded and dominated by herbaceous plants and low shrubs. The groundcover is dominated by sphagnum moss (*Sphagnum sp*.), a sedge (*Carex trisperma*), and cinnamon fern (*Osmunda cinnamomea*). The substrate is shallow sphagnous peat. To protect the site and species of concern, the hydrology of the site should be preserved." (Natural Inventory of Luzerne Co.)

Timber rattlesnakes (*Crotalus horridus*) are found within the Shades Creek watershed. This species was recently removed from the list of candidate species. Historically, timber rattlesnakes experienced population decline from habitat degradation and fragmentation as well as hunting by people. Though recently delisted in Pennsylvania, protective regulations remain in place to protect population levels. On a broader scale, timber rattlesnakes are critically imperiled in the northeast and are threatened in New York and endangered in New Jersey, Connecticut, Massachusetts, Vermont, and New Hampshire. The species has been completely extirpated from Rhode Island and Maine. The Shades Creek Watershed also supports cerulean warblers (*Setophaga cerulea*), which are a Species of Concern in Pennsylvania. They depend on mature hardwood forests with a diverse forest structure. Population decline has been noted since the 1960s, due in large part to habitat loss. Other species found in the watershed include osprey, bald eagles, black bears, coyotes, grey fox, bobcats, and the state-endangered northern flying squirrel. EV designation would be more protective of these rare wildlife and plant communities found in this largely forested watershed and would prevent future degradation that may cause harm to populations.

Shades Creek is an outstanding local resource water and a surface water of exceptional recreational significance

Shades Creek is a crucial resource to the local community and provides a multitude of recreational and educational opportunities. Wilkes University has conducted numerous studies of the stream, investigating the abundance of macroinvertebrates and water quality parameters, including specific conductivity, pH, and turbidity. Bear Creek Community Charter School has also played an integral part in monitoring water quality and has taught children the importance of environmental conservation. Exposing children early on to nature can instill a lifelong love of nature and nurture future stewards. The clear, cool water provides excellent opportunities for trout fishing.

The 3,986-acre Bear Creek Preserve (47 Rabbit Run Lane, Bear Creek, PA 18702) provides many recreational opportunities to the public including hiking, bird watching, and wildlife viewing. Bear Creek Preserve is a vast expanse of forests and steep stream valleys in the Lehigh River Watershed. Larger than many state parks, the preserve is a mosaic of diverse, thriving habitats and plant communities, including several rare species. Visitors can enjoy over 9 miles of trails, scenic views, and waterfalls. The three streams that run through Bear Creek Preserve—Shades Creek, Bear Creek, and Stony Run—are all classified as "high quality, cold water fisheries," with crystal clear water and abundant native fish species. The quality of these waterways is due in large part to the many protected lands that surround Bear Creek Preserve. As tributaries to the river flow through intact natural areas, the plants and soils filter out contaminants and slow stormwater runoff. As a result, the water is cleaner and flooding is reduced, saving millions of dollars each year in water treatment and flood control measures.[3]

History of Bear Creek Preserve In 1960, F. Otto and Dorothy Haas—members of one of Philadelphia's most philanthropic families—purchased a spectacular 6,400-acre expanse of forest in the village of Bear Creek and established a wilderness retreat for their family. When their three sons—John, Bill, and Tom—inherited the property nearly two decades later, they began to explore ways to preserve the land so it would forever remain the wild and special place they'd come to treasure. The Haas family placed nearly half of the land under conservation easement with North Branch Land Trust and donated the remaining acreage to Natural Lands, thus establishing Bear Creek Preserve. **The transaction is the largest single land acquisition in Natural Lands' history**.

The outstanding resource waters EV criterion may be applied to the petitioned waters since they already have the prerequisite HQ designation. To qualify for outstanding regional and local resource waters, a regional or local government must adopt "coordinated water quality protection measures," as that phrase is defined in 25 Pa. Code Section 93.1, along a watershed corridor. Municipally-owned lands or other municipal real estate interests in land, such as conservation easements, are located along the watershed corridor. These properties are "coupled with" sound land use water quality protective measures. Such water quality protective measures have been applied through management activities implemented on lands owned by Natural Lands as outlined in the Shades Creek Coldwater Conservation Plan and the legal binding agreements Natural Lands has in place for its eased property including its Bear Creek Preserve through which Shades Creek flows. Natural Land's conducts many water quality protective measures at the preserve including seasonal deer management to work to protect and restore the vital forest, riparian buffers, and understory habitats that help reduce stormwater and cool and shade the tributaries that run through the Preserve; it conducts riparian buffer restoration; invasive plant controls and supplemental indigenous plantings to increase buffer and forest diversity, and enforces protective passive rec use rules and

[3] Natural Lands Bear Creek Preserve, https://www.natlands.org/visit/bear-creek-preserve/

prohibition of use of ATVs and other threats that would otherwise decrease the forest, water and riparian areas that are a key part of easement protection for the Bear Creek Preserve.
Local township ordinances and county protections provide additional coordinated water quality protective measures. The protective measures provided by these ordinances, Acts, easements, and other preserved lands enhance water quality protection over the long-term, are situated along the Shades Creek watershed corridor in a manner that provides protection to substantial reaches of the corridor and meet regulations that require that such measures be "coupled with" an interest in real estate, as described at § 93.1.

North Pocono CARE attended a township Supervisors Meeting in September to share the news of the pending upgrade petition, how the petition can benefit the community, and request their support of the petition as the public comment period proceeds. According to the Bear Creek Township's website, Bear Creek has a detailed completed Act 537 Plan[4] that was developed and out for public comment in 2011 which includes: Base mapping; Hydrological feature mapping; Soils and wetlands mapping; Zoning maps; Potable water system analysis; Sewage disposal alternatives and cost estimates. This plan was developed to address sewage disposal issues and future development needs, aligning with Pennsylvania's requirements for municipal planning. Bear Creek Township also has a 5-member Planning Commission that meets the third Monday of each month at 6:30pm and a 3-person Zoning Board that meets the last Tuesday of each month at 7pm to help protect natural resources within the township. Bear Creek Township's Major Subdivision Application (revised 3-6-08) includes required mapping provisions and appropriate DEP sewage planning modules under DEP regulations and a requirement for applicants to list all the existing or proposed easement and deed restrictions to further protect eased land in the area if a threat were to arise with a new land development application not appropriate for existing easements.[5] Bear Creek Township also has a 2011 detailed zoning boundary map that delineates waterbodies in and beyond the township, Conservation Districts C-1 in the region, and delineates SGL boundaries.[6] The 2025 Bear Creek Township budget allots funding for recreation and public park improvements as well as improvements to their existing salt storage shed for better BMP of road salts and budget allocations for sewage and code enforcement and permitting to better protect water resources.[7]

Bear Creek Codes and Ordinances indicate Chapter 104 Stormwater management plan adoptions for the township as well as Maintenance requirements, prohibited discharges, and enforcement, inspection, and recordkeeping schedules for on lot septic systems.

Furthermore, under Article 1 §127 of Bear Creek Township Zoning ordinance enacted from Section 604 of the PA Municipal Planning Code Act 247 there are multiple Bear Creek Zoning codes to protect water resources including preservation of wetlands, forests, aquifers and the rural character of Bear Creek Township as well as code to protect and maintain rural character and natural resources that bring ecotourism to this conserved township. We are including selected excerpts[8] below as examples of coordinated water quality protected measures:

> §127 -2 - *To promote, protect and facilitate one or more of the following: the public health, safety, morals, general welfare, coordinated and practical community development, proper density of*

[4] Link to Bear Creek Township Act 537 Draft Plan https://bearcreektownship.org/act-537/
[5] Link to major subdivision form for Bear Creek Township, https://bearcreektownship.org/wp-content/uploads/2018/07/majorsubdivision.pdf
[6] Link to Bear Creek Zoning Map, https://bearcreektownship.org/wp-content/uploads/2025/04/Bear-Creek-Township-Zoning-Map-2011.pdf
[7] Link to Bear Creek Township 2005 Budget, https://bearcreektownship.org/wp-content/uploads/2024/12/2025-adopted-budget.pdf
[8] Link to Bear Creek PA Chapter 127 Zoning Code, https://ecode360.com/27175953#27175955

*population, emergency management preparedness, airports and national defense facilities, the provisions of adequate light and air, access to incident solar energy, police protection, vehicle parking and loading space, transportation**, water, sewage, schools, recreational facilities, public grounds, the provision of a safe, reliable and adequate water supply for domestic, commercial, agricultural or industrial use, and other public requirements; as well as reservation of natural, scenic and historic values in the environment and preservation of forests, wetlands, aquifers and floodplains**.*

*To prevent one or more of the following: overcrowding of land, blight, **danger and congestion** in travel and transportation, loss of health, life or property from fire**, flood**, panic or other dangers.*

*To preserve prime **agriculture and farmland considering topography, soil type** and classification, and present use.*

§127 -3 **Community Development objectives and Goals -** *Goal 1**: Maintain the Township's Existing Rural Community Character. The Township's physical environment, regional location and past development practices have shaped its character. The Township is perceived as an attractive rural/residential community offering a high quality of life and has long been known as a tourism-recreation area. Future development must be controlled and managed with an overriding concern to sustain the Township's rural community character and preserve the tourism-recreation based economy.***

Objectives --- Objectives. (excerpts)

(a) Develop local land use controls including flexible zoning performance standards to control density and minimize conflicts between existing and future development, and update the controls periodically to address changing conditions.

(b) Carefully control the location and scale of commercial and industrial establishments while recognizing the importance of such development to the tax base.

(c) Encourage the use of soil-based methods for sewage disposal; that is, on-site subsurface disposal and land application, instead of collection and treatment facilities with surface water discharge unless necessary to address documented problems.

(d) Consider the use of "open land" zoning to cluster residential development away from important natural, scenic and cultural features, and preserve the resulting open space.

(e) Cooperate with local historic preservation groups to identify and preserve the remaining historic structures and sites in the Township.

(f) Control commonlaw nuisances and threats to public health and safety resulting from, among others, noise, lack of property maintenance, poor building practices, junk accumulation, odors and uncontrolled burning.

(g) Provide for adequate community facilities including sewage disposal and water supply via

Goal 2: Conserve Open Land and Tourism-Recreation as an Important Element of the Local Economy.

(1) Open land was the cornerstone of the foundation of the Township when its earliest settlers arrived, and has played a key role in the growth and development of the Township. Without this open land and the natural resources it offered, followed by the recreation opportunities it now offers, the character of the Township would be dramatically different. From the time of the tourism development associated with the railroad, through the time of tremendous increase in the number of second homes, tourism and recreation have remained an important part of the economy.

Objectives.
(a) In the Township Zoning Ordinance, continue to provide for tourism and recreation-related businesses in all areas where conflicts with residential uses will not occur.
(b) Encourage the use of Act 319 "Clean and Green" and other tax incentive programs as a means of forestalling residential development because such development is a "liability" in terms of tax dollars collected versus cost of public services required.
(c) Consider the use of "open land" zoning to cluster residential development away from important natural, scenic and cultural features, and preserve the resulting open space.
(d) Cooperate with local organizations such as the Chamber of Commerce to promote tourism, which will not destroy the qualities of the Township which make it so attractive.
(e) Avoid the construction of growth-inducing community facilities such as central sewage collection and treatment facilities, which would encourage the development of areas with important natural, scenic and cultural features and open land areas; except as needed to correct existing sewage disposal problems.
(f) Evaluate, in cooperation with the County Planning Commission, more progressive means of open and agricultural land preservation including open land zoning, purchase of easements, and transfer of development rights, especially in cooperation with conservancy and land trust organizations.

C. ***Goal 3: Encourage Commercial and Industrial Development Located and Designed to Be Compatible with Existing Land Use and the Tourism Recreation Trade.***
(1)
A healthy economy fosters a healthy community by providing business development and employment opportunities. Local government may choose not to take a direct role in economic development, but can institute land use control and development policies that have a positive effect on the local economy and tax base, while addressing community conservation concerns. While recognizing the importance of the ***tourism-recreation sector of the local economy****, Township Officials recognize the need for economic diversification.*
(2)
Objectives.
(a) *Use the Township Zoning Ordinance to direct new commercial development to areas of existing commercial development and where community facilities are adequate.*
(b) Encourage commercial cluster development to avoid commercial strip development.
(c) Promote local economic viability by allowing home occupations consistent with residential zoning districts and the overall community character.
(d) Recognize the importance of the regional economy and monitor and participate in county and regional business development activities.
(e) ***Adopt, monitor and update commercial and industrial development standards to protect the public health, welfare and safety, to preserve community character, and to minimize conflicts with the tourism-recreation trade****.*
(f) Consider joint municipal zoning as a means of recognizing the regional nature of development patterns and for locating commercial and industrial uses proximate to such existing uses and where community facilities are adequate.

Goal 5: Provide Community Facilities and Services Which Will Be Adequate to Meet Expected Needs.
(1)
Township residents rely on community and public facilities and services to meet their supply, sewage disposal, police protection, emergency response, recreation and other daily living needs. A small

rural Township does not, and cannot, provide all the facilities and services demanded by its residents. Many such services are provided by other levels of government or volunteer organizations. Nevertheless, the Township is responsible for certain community facilities and services, and recognizes the need to prove the same cost effectively.

(2)

Objectives.

(a)

(c) Assess recreation needs of residents and develop a program to provide recreation opportunities which are not adequately provided in the Township, local school district or other organizations; and maintain the existing Township facilities.

(e) ***Assure that adequate and safe water supply and sewage disposal****, well designed and constructed roads, and other facilities are provided by developers as part of any residential development.*

(g) Foster intergovernmental cooperation for community facilities planning and economies of scale from police services, joint purchasing, recreation and other facilities and services.

Goal 7: Conserve the Township's Natural Resources and Open Space and Use the Resources in a Way to Sustain the Area's Economy*.*

(1) Exploitation of the natural resources and sensitive environmental areas in the Township can lead to the decline of the attractive rural character of the area and the quality lifestyle it affords, with eventual direct threats to public health and safety. Of special concern are soil and water resources.

Objectives.

(a) ***Identify sensitive natural areas such as wetlands, groundwater recharge areas, woodlands, steep slopes, poor soils and food plains, and adopt regulations to protect such areas.***

(b) Evaluate Township land use controls in terms of effects ***on open space and modify to maintain open space to the greatest extent possible****.*

(c) Maintain up-to-date standards in Township ordinances ***for stormwater control, soil erosion and sedimentation control, sewage disposal, solid waste disposal and other environmental concerns****.*

(d) Consider the use of land use control incentives, such as density bonus, ***for the preservation of large sensitive areas such as prime agricultural land****.*

(e) ***Consider the use or "open land" zoning to cluster residential development away from important natural, scenic and cultural features, and preserve the resulting* open space.**

§127-31 Provisions pertain to Soil erosion and sedimentation control plans to protect surface waters and state requirements

§127-39 0 C-1 Conservation District protections…including forests, state gamelands, wildlife refuge, public recreational facilities….

Additional outdoor recreational opportunities can be found at the PA Game Commission's (PGC) State Game Lands No. 91, including hiking, fishing, and hunting. The Gamelands have implemented Management Plans that include protection of riparian buffers and wetlands with automatic 150-foot riparian buffers established (pers. comm. Luzerne Co Watershed Specialist). In addition, the PGC and PA Wetland Habitat Initiative (PWHI) is a $6 million investment that aims to replace water control structures with a mission to protect and better manage wetland impoundments located in SGLs. Funding also comes from the

Wildlife and Sport Fish Restoration program and Ducks Unlimited. Furthermore, these projects seek to restore habitats to benefit waterfowl, shorebirds, secretive marsh birds and other water dependent wildlife.[9]

A coalition of local business owners, hunters, anglers, hikers, conservationists and community members dedicated to protecting the clean streams of the Poconos formed the Our Pocono Waters campaign which encompasses Shades Creek and Luzerne County. Our Pocono Waters includes a study region and economics for Poconos counties drained by the Delaware River in Wayne, Pike, Monroe, Carbon, and portions of Luzerne and Lackawanna Counties and summarized in a expert report[10] completed in July 2022 that highlights how EV and HQ streams increase property values and other positive healthy attributes and sustainable amenities and trends for the communities that reside or work or play in these rare and unique special protection watersheds. All in all, EV and HQ watersheds in this study area were found to contribute $3 billion in economic benefits.[11] For example, headwater streams in the region, which include Shades Creek, provide nearly $40,000 per acre in annual ecosystem services. Key Logs statistical analyses of the relationship between economic indicators and stream quality in the Pocono Mountains (or Poconos) study region finds that residential and commercial land value increases for properties closer to an EV or HQ stream, when compared to otherwise similar properties farther away. This reflects landowners' willingness to pay for aesthetic quality, recreational opportunity (including for hunting and fishing), and other ecosystem services that are likely to be better or more available due to the stream protection.

EV designation for Shades Creek also would help fulfill the state's obligations of Pennsylvanian's environmental rights outlined in the PA Constitution and afforded under Article 1 Section 27 of Pennsylvania's Environmental Rights Amendment of the Pennsylvania Constitution, articulated *"the people of Pennsylvania have a right to clean air, pure water, and to the preservation of the natural, scenic, historic, and esthetic values of the environment. Pennsylvania's public natural resources are the common property of all the people, including generations yet to come. As trustee of these resources, the Commonwealth shall conserve and maintain them for the benefit of all the people now and in the future."*

Shades Creek is an outstanding local resource waters qualification under 25 Pa. code § 93.4b(b)(1)(iii). Shades Creek largely flows through lands preserved in perpetuity

The headwaters of Little Shades Creek are located within PGC State Game Lands No. 91, which encompasses 23,237.5 acres in Lackawanna and Luzerne Counties. State Game Lands No. 91 also border Iroquois Trail, which is adjacent to Indian Lake at the headwaters of Shades Creek. The 5 mile stretch of Shades Creek below Rt. 115 to the mouth falls entirely within NL's 3,986-acre Bear Creek Preserve. Overall, half of the watershed is part of Bear Creek Preserve and PGC State Game Lands No. 91, which are lands preserved in perpetuity. Shades Creek in the vicinity of Green Arrow Trail is a Pennsylvania Natural Heritage Program Natural Heritage Area Core Habitat, as is the west side of the creek below Rt. 115 extending to the mouth. Directly downstream from the confluence of Shades Creek and Bear Creek is 1,819 acres of federally owned land that is part of the U.S. Army Corps of Engineers Francis E. Walter Dam

[9]Commonwealth of Pennsylvania, Pennsylvania Wetland Habitat Initiative https://www.pa.gov/agencies/pgc/habitat-management/state-game-lands-management/pennsylvania-wetland-habitat-initiative-

[10] Economic Effects of Special Protection Stream Designations for the Pocono Mountains Region prepared for Our Pocono Waters by Key-Log Economics, July 2022 https://www.pennfuture.org/Files/Admin/OurPoconoWaters_Report_FINAL_WEB-PDF_8.8.22-%28reduced%29.pdf

[11] Study: Poconos' and northeast PA streams account for $3 billion in economic benefits. Pocono Record, August 18, 2022 https://www.poconorecord.com/story/news/environment/2022/08/18/pocono-northeast-pa-exceptional-value-streams-bring-billions-to-area/65404193007/

property. Adjacent to Bear Creek near the mouth of Shades Creek is an additional 3,007 acres of permanently preserved land that is part of the North Land Trust's conservation easement (CE #11).

Traditionally, DEP interpreted that privately held conservation easements did not meet the criteria for stream protection because these protected lands were not owned or held by a government body. However, during the 2018 Triennial Review, DRN and numerous other NGO watershed organizations, land trusts, and Pennsylvania Land Trust Association (PALTA) urged DEP to recognize the fact that these conservation easements have permanently protected hundreds of thousands of riparian acres and forests throughout the state and contributed to water quality improvements. As a result of these advocacy efforts, conservation easements, whether publicly or privately held, now enjoy substantial additional legal protection under PA Act 45, 2018.

As DRN has advocated in the past, preserved lands and private easements bring with them real water quality protections and measures that are formal and enforced. Therefore, private eased lands, held my mission-oriented nonprofits with conservation goals, can be more protective than publicly owned lands through strict legal documents, oversight, and enforcement by the land trusts. For example, in early October, a motion was filed by Citizens for Responsible Development in the Lehigh Valley (pertaining to the Bethlehem Landfill expansion) when Lower Saucon Township in 2023 acted unlawfully when it attempted to release protected scenic and conservation easements of more than 200 acres without obtaining the required approval of the Orphan's Court, as mandated by Pennsylvania Donated or Dedicated Property Act (DDPA). This example shows how political winds of a township holding conservation easements could change over time based on elections where as a nonprofit like Natural Lands with its mission-oriented water and conservation goals and orders, is less likely to fold under such political pressure. Further still, Natural Lands easements would also require similar legally defended easements into perpetuity by courts, just as this township example provided here. It is important that DEP recognize private conservation easements as well as their already municipal or public easements in all new stream evaluations. Doing so ensures that the criteria in all stream evaluations would match and rightly ensure that the conservation land trust community's efforts, which have invested tremendous private funds and planning, and also leveraged state funds through DCNR programs and federal conservation program money to secure easements, are utilized to upgrade streams to Exceptional Value status.

Natural Lands Conservation Easement Meet Coordinated Water Quality Protected Measures
Natural Lands has been protecting lands since the early 1950s. It has over 23,000 acres of land that they steward through strict legally binding conservation easement programs. NL works to restore and conduct ongoing maintenance to ensure that plants, insects, and wildlife thrive at each of their preserves and they have strict rules for visitors who visit the lands for passive enjoyment. Natural Lands is unique among the region's conservation organizations because of their large network of nature preserves. Their network includes over 40 nature preserves across two states. They also help other organizations acquire open space by buying it and then "flipping" the land to them – often assisting state parks, state forests and for municipalities. Many times the land saved by NL remains in private ownership but its placed under legally binding agreements that permanently limits a property's use and bind all present and future owners of the land in that strict conservation easement. NL currently holds over 500 easements on more than 26,000 acres and staff monitor the properties regularly to ensure the terms of the easements are being upheld.
Natural Lands also has a multi-tiered easement structure that if something were to happen to the organization and it were to dissolve, easements would still be binding through back up affiliations and protections.

The entire Shades Creek Watershed warrants Exceptional Value designation

The large forest tract surrounding Shades Creek acts as a healthy diverse forested riparian buffer. Currently the width is more than adequate to provide an effective buffer for most of the watershed. Some areas have been disturbed due to the pipeline ROWs and residential development. Riparian forests are important to the health of the stream as they provide a buffer from adjoining land uses that may generate runoff and cause erosion. They anchor streamside soils, and the root mass is capable of absorbing nutrients, such as nitrogen, that contribute to the eutrophication of surface water. Riparian woodlands provide shade to surface waters, supporting lower water temperatures and permitting a greater diversity of aquatic species to survive. They provide materials, such as twigs and limbs, that when submerged provide structures and shelters for a variety of fish and organisms.

Leaves that fall from riparian trees provide food for aquatic insects that are in turn food for larger aquatic fauna. The Stroud Water Research Center has found that streams bordered by woodlands have a greater width, lower water velocity, and greater benthic surface area than non-wooded streams. Dissolved nutrients, such as phosphorus and nitrogen, can be removed or absorbed by microbial communities attached to the bottom strata of streams, which in turn feed invertebrates, amphibians, and fish higher in the food chain. Non-wooded streams have a narrow channel with deeper, faster waters, and do not support the wealth of biotic life nor have the capacity to absorb or remove dissolved nutrients.

To ensure the functionality of the riparian buffer, the health of the forest should be maintained and improved as necessary. Further fragmentation should be avoided and a redesignation of the entire watershed to EV is the best way to accomplish this. The outstanding water chemistry results and the exceptional ecological significance reflected by the presence of at least 13 EV wetlands in the floodplain provide tangible qualifications for EV designation. Combined with the large portions of permanently preserved lands (both state and privately owned) and the recreational and local community significance, it is clear that Shades Creek meets several additional qualifiers to be redesignated from HQ to EV status.

Contact Information Townships in the Watershed (No. 8 on petition form)

Shades Creek flows through parts of Bear Creek and Buck Townships (Luzerne Co.). Petitioners have attended township meetings to update township supervisors on upgrade petition plans.

Bear Creek Township
https://bearcreektownship.org/
Township Secretary: Paula Weihbrecht
3333 Bear Creek Blvd.
Bear Creek Township, PA 18702
570-822-2260
bct3333@ptd.net
Board of Supervisor Chair: Ruth Ann Koval
Bear Creek township encompasses 67.8 sq miles and is the largest municipality in Luzerne Co.

Buck Township
https://bucktownship.org/
PO Box 273
Bear Creek, PA 18602
Township Secretary: Frank D. Sipple
570-332-7030
570-592-5025 (office)

Secretary@BuckTownship.org
FSipple@aol.com
Buck Township has a population of 435 making it the least populous township in the county according to the township website.

Additional References:

2016 Shades Creek Coldwater Conservation Plan Natural Lands https://coldwaterheritage.org/wp-content/uploads/2020/09/Shades%20Creek%20Conservation%20Plan.pdf

2001. A Natural Areas Inventory Luzerne County Pennsylvania Prepared By: Pennsylvania Science Office Of The Nature Conservancy 208 Airport Drive Middletown, Pennsylvania 17057 Luzerne Co Board of Commissioners

2006. A Natural Areas Inventory of Luzerne County, Pennsylvania, Update 2006. Luzerne County Board of Commissioners
https://www.naturalheritage.state.pa.us/cnai_pdfs/luzerne%20county%20nai%202006%20web.pdf

Upper Lehigh River Water Quality Standards Review Stream Redesignation Evaluation Report, May 2010

Sobers Run DEP Redesignation Report

2021 Lackawanna-Luzerne Joint Comprehensive Plan
https://www.luzernecounty.org/DocumentCenter/View/25983/2021-Comp-Plan-FINAL-digital

PennFuture's Redesignation Handbook -
https://www.google.com/url?q=https://www.pennfuture.org/Files/Admin/PF_StreamHandbook2019_web_2.10.20.pdf&sa=D&source=docs&ust=1759683267817250&usg=AOvVaw3pWAYczs5wx_Zm93mUg2C6