Map Unit Properties Table—Gettysburg National Military Park and Eisenhower National Historic Site

Age	Map Unit (Symbol)	Unit Description	Erosion Resistance	Suitability for Development	Hazards	Paleontologic Resources	Cultural Resources	Mineral Specimens	Mineral Resources	Habitat	Recreation	Global Significance
QUATERNARY	Alluvium (Qal); Terraces gravel and alluvial cones (QTt)	Qal lines most valleys and small ravines; contains fine silt, limestone, chert, and slate fragments, rounded fragments of rhyolite, sandstone, and quartz in sand, clay, and humus material. Depth depends on resistance of underlying bedrock. QTt is present along steep slopes and accumulates as wash deposits; may be perched on benches at various elevations as high as 300 m (980 ft) above the stream marking former stream courses; contains abundant gravel, cobbles, boulders, and pebbles of various lithologies including rhyolite, greenstone, quartzite, and conglomerate.	Very low	Suitable for light development; high permeability renders units poor for wastewater treatment	Prone to slumping if present on incised banks; floods associated with Qal; slope processes such as slumping, washes, and landslides in QTt	Contains humus and modern remains	May contain battlefield artifacts, Native American campsites	Larger clasts record provenance	Sand, gravel, silt, clay, cobbles, boulders	Riparian habitat lining all valleys and ravines	Suitable for most recreation unless incised or present on steep slopes	Records modern fluvial patterns and stream evolution
TRIASSIC	Diabase (TRdb); Diabase building stone (TRdbd); Basalt flow (TRb)	TRdb is present as larger bodies and thin sills identical in chemical composition, but larger bodies are coarse-grained, granular with white or gray plagioclase, black pyroxene, and accessory quartz, magnetite, hypersthene, biotite, and olivine. Units appear dark-gray to black in fresh exposures, but gray or light buff in weathered outcrops. Larger units display contact-metamorphism aureoles with interesting minerals (e.g., opals, garnets, sericite) and marble. TRb is composed of surface basalt flows interlayered with basin sediments; flows consist of mixed rounded masses or boulders.	Moderate to high	Coarse grained bodies weather to crumbly material that may be unstable as a base	Associated with ridges and may be susceptible to rockfall	None	Large crystals may have provided tool and trade material; ridges of these units played a significant role in battles	Magnetite, garnet, lime-iron garnet (contact metamorphism) chlorite, some columnar structure	Diabase (building stone), garnet (abrasives), marble (dimension stone), railroad ballast	May provide vugs for burrow habitat; supports deep rich red clay soils	Crumbly nature of units may be unstable base for trails or climbing	Records extension that produced large rift basins throughout the area; diabase intruded basin sediments
TRIASSIC	Limestone conglomerate lentil (TRl); Limestone conglomerate lentil: magnetite possible (TRlm); Arentdtsville Fanglomerate lentil (TRa); Arentdtsville Fanglomerate lentil: magnetite possible (Tram)	TRl is a conglomerate containing abundant limestone pebbles in sandstone. Pebbles are a few cm in diameter composed of light and dark gray to pink marble, gray dolomite, and laminated limestone. TRa contains coarse conglomerate of rounded cobbles and boulders of sandstone, quartzite, aporhyolite, and quartz in a red, sandy matrix; poorly cemented in areas and contains large (1 m [3.3 ft]) boulders.	Moderate	Suitable for most development unless present on a slope or highly fractured and/or weathered	Prone to mass wasting; dissolution of calcareous cements may render unit susceptible to rockfall as large boulders weather out	Possible fossils in pebbles	May have provided trade material; possible ornamental stone in historic structures	Saccharoidal marble; larger clasts record provenance	Quarried as ornamental stone where present in thick, compact layers; field lime, magnetite	May provide nesting pockets where boulders weathered out	May be too friable for heavy recreational use	Records rapid erosion and deposition into Triassic rift basin
TRIASSIC	Heidlersburg Member (TRh); Heidlersburg Member: magnetite possible (TRhm)	TRh contains sandstone and red shale with cyclically interlayered green, gray, and black shales. Some layers of gray to white sandstone are more resistant and form ledges	Moderate to high for sandstones	Heterogeneous nature of unit may prove unstable for heavy development if slopes are present	Prone to rockfall where weathered shale is beneath resistant sandstone ledges; black shale units may contain arsenic that could be released to groundwater and soils	None documented	None documented	White porcelanite, purple argillite, glauberite salt casts	Magnetite; gray quartzite may have provided ornamental stone	May form ledges for bird habitat	Suitable for most recreation unless undercut	Widespread member with abundant contact metamorphism records Triassic basin sedimentation and igneous intrusion
TRIASSIC	Gettysburg Shale (TRg); Gettysburg Shale: magnetite possible (TRgm); Gettysburg Shale: magnetite mined (TRgmm)	TRg is widespread, ~5,000 m (16,400 ft) thick, red shales interbedded with soft red sandstones; cut by a thick diabase sill and other small igneous bodies. Igneous intrusions are marked by contact-metamorphic aureoles of purple argillite. Some exposures contain conglomerate lenses, gray to white sandstones, green and yellow shale, impure limestone, and dark shale.	Moderate to high for argillite	Friable and brittle in some areas which may prove undesirable for heavy development	Splintery nature of weathered fragments are sharp for trail bases; heterogeneous layers may render unit susceptible to landslides and rockfalls on slopes	Organic material and residue	Sharp fragments may have provided tool material; historic mines may be associated with this unit	Argillite, white porcelanite	Magnetite mined locally	Supports hardwood forests	Suitable for most recreation unless sharp fragments are present	Described and named for exposures around Gettysburg; contains widespread record of basin depositional environments
TRIASSIC	New Oxford Formation (TRno); Lower part of New Oxford Formation (TRna); Quartzose conglomerate (TRnc)	Red shale and sandstone with interlayered micaceous sandstone, arkose, and conglomerate of light color; >2,000 m (6,560 ft) thick. Pebbles and boulders are quartzose in a red sandy matrix. Lower beds are rich in soft red shales and calcareous mudstone.	High to moderate for shale layers	Heterogeneous nature of unit may render unit unstable on slopes but suitable for most light development	Unit forms resistant ridges that may be prone to rockfall and landslides, especially where resistant sandstone layers are underlain by weathered red shales	Fossils possible in calcareous layers; shale contains shells of small freshwater animals	None documented	Mica	Red sandstone quarried for building stone	Forms ledges for bird habitat and supports ridgetop forests	Suitable for most recreation unless highly weathered and/or fractured	Records depositional environments from longstanding Triassic basin

Age	Map Unit (Symbol)	Unit Description	Erosion Resistance	Suitability for Development	Hazards	Paleontologic Resources	Cultural Resources	Mineral Specimens	Mineral Resources	Habitat	Recreation	Global Significance
ORDOVICIAN	Beekmantown Limestone (Ob); Beekmantown Limestone: garnet possible (Obg); Beekmantown Limestone: garnet abrasive mine (Obgm)	Mostly pure blue limestone with finely laminated impure layers, locally contains white to pink marble; weathers to buff shaly fragments and tripolite.	Moderate	May be highly dissolved in areas rendering it unsuitable for wastewater treatment facilities	May be associated with karst dissolution and processes; susceptible to rockfall if undercut on slope	Fossils possible	Garnet may have provided trade material and fueled historic mining activity	Garnet	Quarried and burned for lime locally; ornamental stone, garnet (abrasives), marble	Produces fertile residual soil	Suitable for most recreation; may attract speleologists if caves are present	Records calm depositional environment with intermittent igneous intrusions
ORDOVICIAN	Conestoga Limestone (Oc); Conestoga Limestone: impure limestone (Ocil); Shale and sandstone (Ocsd); Shale and sandstone: building sand (Ocsds); Sandy beds (Ocs)	Oc is impure blue limestone that appears buff colored on weathered outcrops; black to dark-gray shale and limestone dominate lower beds; middle beds are primarily hard blue dolomite and coarse white and pink marble with siliceous limestone interbedded; upper beds are light-gray sandy limestone interlayered with impure blue limestone and scant beds of black shale; maximum thickness ~300 m (980 ft); weathers to sand, chert nodules, and yellow sandy clay soils.	Moderate to moderately high for hard dolomite layers	Weathers easily to sand which may render it too permeable for septic systems or too unstable for heavy development	Associated with rockfalls and slumps when exposed on slopes, alternating resistant and weaker layers are prone to fail if undercut; black shale units may contain arsenic that could be released to groundwater and soils	Fossils possible	Hard white chert may have provided tool material	Pink marble	Limestone and sandstone for building stone, ornamental marble, building sand mined locally	Underlies deep sandy, well-drained soils	Friable which may be unstable base for trails on slopes	Records varied depositional environments
CAMBRIAN	Waynesboro Formation (Cwb); Tomstown Dolomite (Ct); Tomstown Dolomite: iron ore, paper clay, and building sand (Ctics)	Cwb is a ~300-m- (980-ft-) thick series of gray calcareous sandstones interbedded with hard purple to red shiny shale and limestone; lower beds are siliceous gray limestone; weathers to slabby porous sandstone. Ct contains coarse grained gray dolomite and limestone with shale interbedded in the lower portions. Limestone is dark blue in the middle portion. Some siliceous sericitic slate or schist is present locally.	Moderate to high for sandstone layers	Cwb forms hills and ridges that may be unstable if undercut. Ct is prone to dissolution and may be ill-suited for septic systems.	Disseminated slabs of sandstone from weathered units pose rockfall hazard; dissolution of calcareous units may lead to karst hazards	Early Cambrian fossils possible	Iron stained and rugose chert may have provided tool material	Cavities filled with drusy quartz, white vein quartz	Sandstone slabs for flagstones, magnesian limestone, iron ore, paper and tile clay, building sand	Contains cavities that may provide burrow habitat	Forms hills and ridges attractive for hikers and bikers	Contains ripple marks and cyclic deposits recording ancient Cambrian seas
CAMBRIAN	Antietam Sandstone (Ca); Antietam Sandstone: building sand and quartzite building stone (Casq); Harpers Schist (Ch); Harpers Schist: iron ore (Chi); Montalto Quartzite Member (Cma)	Ca caps ridges with pure coarse-grained sandstone with lower beds of dense quartzite of bluish to pink color and upper granular white or pinkish quartzite; siliceous sericite schist present in scant layers; upper layers weather to sands, siliceous clays, and pebbles. Ch contains gray hackly sandy phyllite and schist but is locally dominated with quartzite (Cma) in massive beds. Quartzite contains lower white vitreous quartzite with upper massive beds of softer white sadnstone. Weathered exposures show hackly clack slate, banded with white and gray schistose sandstone with darker ferruginous sandstone layers. Some green schist is present locally.	High	Caps ridges and is suitable for most development unless highly fractured and/or steep	Associated with steep slopes and rockfall	Skolithus tubes, fossil molds in rusty partings	Ca would have been significant for landmarks and trade routes	Bean shaped quartz pebbles, white vein quartz, octahedrons of magnetite, sericitic mica	Building sand mined from weathered exposures, quartzite building stone, iron ore in Chi	Forms ridges that provide nesting habitat and underlie sandy soils	Forms ridges attractive to climbers	Contains evidence of Early Cambrian age life; widespread throughout the area
CAMBRIAN	Weverton Sandstone (Cw); Loudoun Formation (Cl)	Cw contains ~250 m (820 ft) of gray to purple feldspathic sandstones, quartzites, and conglomerates; lower beds steeply dip and are dominated by massive quartzitic conglomerate ranging in color from purple to red and gray; fragments include rhyolite and vitreous quartz; thinner beds of sandstone and shale overly the conglomerate. Cl contains purplish arkosic conglomerate and sandstone interlayered with fine sericitic slate. Lower beds are dominated by purple schist and phyllite. Upper layers are dominated by schistose arkosic conglomerates and sandstone. Some layers contain large and small fragments of volcanic rhyolitic/tuff rocks, vitreous quartz grains and pebbles.	High to moderate for weathered shale-rich layers, Cl is low to moderate	Caps ridges; suitable for most development unless highly fractured and/or steep	Associated with block fall hazards on ridges overlying steep slopes. Rockfall is acerbated where resistant quartzites are underlain by weathered shales. Cl is extremely prone to mass wasting on slopes and is frequently mantled with slope debris.	None documented	Vitreous pebbles may have provided trade material, unit likely influenced trade routes	Vitreous white to pink quartz pebbles	Building stone, slabby quartz sandstone	Forms ridges that provide nesting habitat	Forms ridges attractive to climbers	Records depositional environments
CAMBRIAN	Ledger Dolomite (Clg); Ledger Dolomite: pure limestone (Clgpl); Limestone marble (Clm); Limestone marble: marble mined (Clmmb)	Clg contains hard, knotty dark gray dolomite overlain by pure limestone and dolomite. Pure, crystalline gray dolomite merges laterally with high-calcium mottled blue and white marble.	Moderate	Suitable for most development unless highly dissolved and/or fractured	May be associated with karst hazards if dissolution is prevalent. When undercut, unit poses rockfall hazard.	None documented	Historic mining activities in the area	Mottled marble, pure dolomite and limestone	Lime, marble mined locally	Mantled by thick soils	Suitable for most recreation	Records longstanding quiet, marine deposition
CAMBRIAN	Kinzers Formation (Ck); Vintage Dolomite (Cv)	Ck is soft, slightly greenish gray calcareous shale; sericite present in fine layers; weathers to buff and pink colored porous sandy shale. Cv contains light-blue limestone and dolomite in thin, impure layers.	Moderate	Unstable on slopes and should be avoided for heavy development	Forms low hills; weathered shale layers prone to mass wasting and landslides	None documented	May be associated with historic quarries	Sericite	Dolomite and limestone quarried locally	Weathers to well-drained sandy soils with abundant clay clasts	Suitable for most recreation unless steep slopes are present	Records deepwater to nearshore depositional environments

Age	Map Unit (Symbol)	Unit Description	Erosion Resistance	Suitability for Development	Hazards	Paleontologic Resources	Cultural Resources	Mineral Specimens	Mineral Resources	Habitat	Recreation	Global Significance
CAMBRIAN	Chickies Quartzite (Cc); Hellam Conglomerate Member (Chl)	Cc is hard white quartzite in massive beds interlayered with less pure sand and clay in lenticular masses; lower beds contain coarse conglomerate, arkose, and black slate (Chl) with upper layers dominated by sandstone; maximum thickness ~300 m (980 ft).	High	Avoid for development if highly fractured and/or weathered	Associated with rockfall	Skolithus tubes	May be associated with historic quarries	Pure white quartzite	Building stone	Weathers to produce well-drained soils	Suitable for most recreation unless steep slopes are present	Records beach and nearshore depositional environments
PRECAMBRIAN (ALGONKIAN)	Metabasalt (PCmb); Metabasalt: greenstone (PCbgs); Metabasalt: copper (PCbc); Metabasalt: monumental and jewelry stone (PCbsaj)	PCmb occurs in narrow belts in interlayered flows of greenstone composition; some areas are purplish to gray in color and aphanitic tuff beds are interbedded. Flows are either massive, schistose, or slaty with compact or amygdaloidal textures, and porphyritic or nonporphyritic habits.	Moderate	Suitable for most light development unless highly weathered	Where highly weathered and/or fractured, rockfall hazards exist	None documented	Amygdules may have provided trade material	Amygdules of quartz, epidote, lustrous chlorite	Greenstone, copper, monumental stone, jewelry stone	Weathers to Fe- and Mg-rich soils	May form ridges attractive to climbers; suitable for most recreation	Records extensional event of pervasive lava flows
PRECAMBRIAN (ALGONKIAN)	Rhyolitic breccia (PCrb); Rhyolitic breccia: monumental and jewelry stone (PCrbsaj); Rhyolitic breccia: whetstone (PCrbw)	PCrb is composed of flow breccia, tuff breccia, and layered tuffs. Flow breccias contain angular fragments up to several cm in diameter of high-silica rhyolitic magma. Tuff breccia appears bluish purple to red fragments in a tuff, fine grained matrix. Most of these beds have been metamorphosed to slate. Tuffs contain pyroclastic sediment.	Moderate to high	Suitable for most development unless K-rich clays are present, which could pose a radon problem for basements	May pose mass-wasting hazard if undercut on steep slopes and/or fractured and weathered	None documented	None documented	Sericite schist, breccia	Tuff whetstone, monumental and jewelry stone	Weathers to produce clast-rich clays	Suitable for most recreation	Records widespread volcanic activity
PRECAMBRIAN (ALGONKIAN)	Aporhyolite (PCrh); Aporhyolite: monumental and jewelry stone (PCrhsaj)	PCrh occurs as a belt of fine grained lavas, amygdaloidal flows, and pyroclastic rocks with sericite schists. Unit is dominated by hackly fractured, hard, dense lava of fine-grained, purple felsitic rhyolite; weathers to whitish gray, purple, pink, brick-red, buff, and light green color. Lavas are brittle with conchoidal fractures. Red, blue, and silvery green schists are associated with deformation and heating of the unit.	Moderate	Highly weathered and may pose a radon problem for basements if extensive clays are present; shrink and swell clays possible	May be susceptible to landslides and block falls if undercut or exposed on steep slopes	None documented	May have provided tool and trade material	Porphyritic feldspar crystals, pink and white phenocrysts, lithophysae	Monument stone, jewelry stone, copper ore	Weathers to produce silica-rich soils	Contains sharp, conchoidal fractures and edges that may be unsafe for recreation	Records widespread rhyolitic lava volcanic activity during the Precambrian and later deformation and metamorphism
PRECAMBRIAN (ALGONKIAN)	Sericite schist and vein quartz (PCsq); Sericite schist (PCsqss)	Largely altered to slate, epidosite and chlorite schist, and sericite schist. PCsqss contains altered volcanic rocks ranging from lavas to pyroclastic sediments. Lavas are rhyolitic to basalt, now altered to aporhyolite to metabasalt (greenstone). Original textures are preserved. Pyroclastic materials include breccias, tuff, flow breccias, and pumiceous bombs.	Moderate	Highly altered and may produce radon; shrink and swell clays; avoid heavily fractured areas for development	Slaty cleavage causes the rock to break apart in great slabs that are prone to rockfall and landslides	None documented	None documented	Vein quartz, piedmonite, sericite, epidote, hematite, leucoxene, kaolin, porphyritic feldspar crystals	Garden stones	Tilted beds may provide nest and burrow habitat	Suitable for most recreation unless present on undercut slope and/or highly altered	Records volcanic events; preserves remarkable original volcanic and flow textures