Geologic and Karst Features Map of the Maryland Portions of the Clear-Spring and Hedgesville Quadrangles, Washington County, Maryland

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DESCRIPTION OF MAP UNITS

**Mauch Chunk Formation**
- Light gray to medium gray, fine- to medium-grained sandstone. The unit is planar- to wavy-bedded.
- Locally, bedded limestone and dolomite are present.

**Keefer Formation**
- Light gray to yellowish gray, fine- to medium-grained sandstone. The unit is planar- to wavy-bedded.
- Depending on the location, the Keefer varies in thickness from 30 to 50 feet (10 to 15 m).

**Marcellus Formation**
- Medium to dark gray, fossiliferous argillaceous, thin- to nodular-bedded limestone. Weathers to tan, yellow, or orange-brown.
- The Marcellus weathers to medium gray chips that characteristically exhibit mud cracks, ripple-marks, and salt and gypsum crystal casts.

**Mahantango Formation**
- Medium to dark gray, fossiliferous, argillaceous, thin- to nodular-bedded limestone. Weathers to pale-gray shales.
- The Mahantango Formation is limited to the Hedgesville Quadrangle.

**Juniata Formation**
- Light gray to medium gray, fine- to medium-grained sandstone. The unit is planar- to wavy-bedded, locally fossiliferous, calcareous sandstone. Weathers to pale-gray sandstone, may be altered to pink to orange sandy clay.

**Wills Creek-Tonoloway Formation**
- Quartzitic sandstone or argillaceous sandstone. The Wills Creek-Tonoloway Formation is approximately 400 feet (120 m) thick.

**Tioga Bentonite**
- Unconsolidated and unsorted deposits of sand, cobbles, and boulders that accumulate on the slopes below outcrops of the sandstone and quartzite units. The occurrence of this unit can be traced on Abe Mills Mountain quadrangle is 300 feet (90 m).

**St. Paul Group (undivided)**
- Light gray to dark gray, fine- to medium-grained sandstone. The St. Paul Group is predominantly sandstone, with minor amounts of grayish yellow, fine-grained siltstone and calcitic shale.

**Conococheague Formation**
- Light gray to dark gray, fine- to medium-grained sandstone. The unit is planar- to wavy-bedded, calcareous sandstone. Weathers to wavy-bedded sandstone, may be altered to pink to orange sandy clay.

**Juniper Formation**
- Light gray to medium gray, fine- to medium-grained sandstone. The Juniper Formation is fine-grained sandstone or siltstone.

**Oswego Sandstone**
- Medium to dark gray, fossiliferous argillaceous, thin- to nodular-bedded limestone. Weathers to light olive-gray shale chips.

**Claytor Formation**
- Light gray to medium gray, fine- to medium-grained sandstone. The unit is planar- to wavy-bedded.

**Maryland Group**
- Light gray to medium gray, fine- to medium-grained sandstone. The Maryland Group is sandstone, with minor amounts of grayish yellow, fine-grained siltstone and calcitic shale.

**Keystone Formation**
- Medium to dark gray, fossiliferous argillaceous, thin- to nodular-bedded limestone. Weathers to light gray to yellowish tan. The Keefer is about 30 feet (10 m) thick at maximum thickness.

**Mount Vernon Formation**
- Light gray to yellowish gray, fine- to medium-grained sandstone. The Mount Vernon Formation is fine-grained sandstone or siltstone.

**Kensington Formation**
- Light gray to dark gray, fine- to medium-grained sandstone. The Kensington Formation is predominantly sandstone, with minor amounts of grayish yellow, fine-grained siltstone and calcitic shale.

**Catoctin Formation**
- Light gray to medium gray, fine- to medium-grained sandstone. The Catoctin Formation is fine-grained sandstone or siltstone.

**Big Spring Station Member**
- Dark gray to black shale at base equivalent to the Seneca Formation. The Big Spring Station Member forms a low, discontinuous ridge. Thickness varies from 230 to 295 feet (70 to 90 m).

**Seneca Formation**
- Dark gray to black shale at base equivalent to the Big Spring Station Member. The Seneca Formation weathers into thin, brown and orange chips, which litter overlying soil.

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