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Exploring Remote Sensing & Other Geospatial Technologies for BMP Verification

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Background & Importance

- Best Management Practices (BMPs) all have creditable lifespans in the model and need to be verified/re-verified for their appropriate nutrient and sediment reductions to be registered by the model
- The location of previous project implementation is not widely known by all stakeholders involved in watershed planning and project implementation
    - Much of this data cannot be more broadly shared due to current privacy restrictions
- Limited capacity among field staff performing in-field BMP Verification
- Agreed upon Verification protocols

Ongoing Efforts & Lessons Learned

Conservancy's Active Role:

- EPA Geospatial Support Cooperative Agreement Objective 3: BMP Planning, Tracking and Reporting
- Conowingo Watershed Implementation Plan Activity 3: Tracking, Verifying, and Reporting Implementation of Conowingo WIP and Two-year Milestones
- Local & state-level support throughout PA

- Assessment of NRCS Remote Sensing Pilot in Potomac River Basin of Pennsylvania
  - Remote identification of management actions & alignment of identified features with BMP requirements
  - Alignment of data generation with CBP Verification requirements
  - Data validation through in-field assessment
- Advancing the Use of Remotely Sensed Data for BMP Cataloging, Verification, and Prospecting for PA Phase III WIP and County Action Plan Success
  - White Paper from HRG to PA DEP

Potential Avenues

Annual Practices
(cover crop, conservation tillage)

- Classification through spectral analysis and other ancillary data
  - Needs high-resolution, multi-spectral satellite/airborne imagery
- Deep learning applied to gridded photos to classify in-field data

Landscape Practices
(forest buffers, grassed waterways/buffers, stream restoration)

- Land cover classification using satellite imagery and elevation data
  - Could be expanded using spectral analyses

Structural Practices

- Cataloging potential sites of likely implementation
- Deep learning neural networks to create 3D spatial data from cameras (Matterport Cortex AI)