

Reclamation Division

Memorandum

TO: Zanna Brinkman and John Schuh

FROM: Jonathan Emmer

DATE: August 11, 2022

SUBJECT: Hydrology Modeling for Watersheds 14-14 & 14-15 Related to Case No. RC-22-339

Background Information

In Clyde Eisenbeis' August 4, 2022 complaint, he states that pond water overflowed on his land from the Freedom Mine which resulted in gullies, loss of topsoil, and loss of crop income. Clyde owns land in the NW1/4 of Section 34, T146N, R88W that is not within the permit boundary for surface coal mining permit NACT-9501. The two watersheds that direct surface water to his land from the east are designated as 14-14 and 14-15. Watershed 14-15 is the northern watershed and 14-14 is the southern watershed (**Figure 1**). These watersheds were analyzed in the pre mine and post mine conditions to determine changes in surface water runoff.

Analysis

Hydrology models were developed and analyzed for watersheds 14-14 and 14-15 at their pre mine and post mine conditions to determine the peak discharge and total volume of runoff at the control point for each watershed. AutoCAD Civil 3D, HEC-HMS, and Autodesk Storm and Sanitary Analysis were used for this analysis. A 10-year, 24-hour design storm event was used for this analysis.

Results

The total volume of surface water runoff from watershed 14-14 decreased by 35% from its pre mine condition. The total volume of surface water runoff from watershed 14-15 increased by 175% from its pre mine condition. Since both of the watersheds outlet to Clyde's land in the NW1/4 of Section 34, T146N, R88W, the total runoff volume from each watershed (14-14 and 14-15) were combined for the pre mine and post mine conditions. The total runoff volume from both watersheds decreased by approximately 8% as compared to the pre mine condition.

Figure 1 - Post mine watersheds 14-14 and 14-15 in Permit NACT-9501.

