

CHAPTER 9  
ALLUVIAL VALLEY FLOORS



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## CHAPTER 9 ALLUVIAL VALLEY FLOORS

### 302-321 ALLUVIAL VALLEY FLOOR DETERMINATION

#### 302-321.100 Scope of Investigation

The purpose of this Chapter is to provide to the Division the results of an investigation which was performed to assess the potential for an alluvial valley floor (AVF) to exist within the permit and adjacent areas of the proposed Dugout Canyon Mine. The scope of this investigation has involved:

- o Geologic studies (detailed in Chapter 6 of this M&RP);
- o Hydrologic studies (detailed in Chapter 7 of this M&RP);
- o Land-use studies (detailed in Chapter 4 of this M&RP);
- o Soils studies (detailed in Chapter 2 of this M&RP); and
- o Vegetation studies (detailed in Chapter 3 of this M&RP).



These studies are summarized in this chapter as they relate to the potential for existence of an AVF within the permit or adjacent area. The individual chapters outlined above should be consulted for more detailed information.

#### 302-321.200 Summary of Studies Performed

**Mapping of Unconsolidated Stream-Laid Deposits.** Plate 6-1 presents a map of surface geology within the permit and adjacent areas. Included on this map are unconsolidated stream-laid deposits identified with map symbol "Qal". Note that, at the scale of Plate 6-1, no alluvium is mapped within the permit area. The closest areas of alluvium mapped on Plate 6-1 occur approximately 2,000 feet downstream from the permit area along Dugout Creek and approximately 600 feet north of the permit area in the headwaters of Pine Canyon.

Data presented in Section 728 of this M&RP indicate that the potential impact to the availability of water in Dugout Creek is an increase in streamflow due to mine dewatering. Hence, mining will not result in a decrease in the availability of water to alluvium which has been mapped downstream from the proposed disturbed area. Furthermore, information presented on Plate 5-7 of this M&RP indicates that subsidence will not extend to the area of the alluvium in the headwaters of Pine Canyon. Together with the hydraulic isolation of the Blackhawk Formation from the overlying Flagstaff and Colton Formations on which the Pine Canyon alluvium has been deposited, this indicates that mining in the permit area will not adversely affect the availability of water in the alluvial deposits in the headwaters of Pine Canyon. As a result, subsequent discussions in the Chapter will concentrate on conditions in the stream-laid deposits within the proposed disturbed area.

During logging of test pits and field reconnaissance within the proposed disturbed area for the soils investigation presented in Chapter 2, it became apparent that the boundary is gradational between alluvium (i.e., stream-laid deposits) and colluvium (i.e., materials deposited by rainwash, sheetwash, other forms of unconcentrated surface runoff, and downslope creep). However, based on field observations, it is estimated that the width of alluvium generally does not exceed 50 feet within the proposed disturbed area.

Within the proposed disturbed area, the bottom of Dugout Creek frequently consists of bedrock. Where bedrock is not exposed, the alluvium is typically very thin. Hence, stream-laid deposits within the proposed disturbed area do not "hold" Dugout Creek as required by the definition of an AVF (see R645-100-200). Rather, the stream is held generally by the underlying bedrock.

**Agricultural Activities.** As noted in Section 411 of this M&RP, the only agricultural activities which occur within the permit and adjacent areas are grazing of range land. No irrigated agriculture occurs within the permit and adjacent areas.



**Flood Irrigation.** No flood irrigation occurs within the permit or adjacent areas. According to Section 411.130 of this M&RP, the nearest area of irrigated agriculture is located approximately 4 miles southwest of the permit boundary.

**Subirrigation.** As part of the soils investigation discussed in Chapter 2 of this M&RP, test pits TP-4 and TP-5 were installed immediately adjacent to Dugout Creek (see Plate 2-2). Observations obtained from these test pits did not indicate that the soils adjacent to Dugout Creek are subirrigated. No signs of mottling or other indications of a high water table were noted in the soils.

Test pits TP-4 and TP-5 exhibited occasional fine roots to the total depths of the pits (approximately 9 feet). However, coarse roots did not extend below 6.5 feet in TP-4 and 5.2 feet in TP-5. The moisture content at each of these depths was described as "damp" (see Appendix 2-3 of this M&RP). No wetlands have been identified within the proposed disturbed area.

**Flood Irrigability.** Surface soils over most of the proposed disturbed area have been classified as "overburden" (significantly disturbed soils and/or mixed mining wastes - see Plate 2-2). These soils are not conducive to flood irrigation. Furthermore, existing surface slopes in the proposed disturbed area are sufficiently steep to make flood irrigation infeasible. Hence, the area of proposed disturbance is not considered flood irrigable.

**Analysis of Aerial Photographs.** Color infrared aerial photographs are not available for the area of the proposed disturbance.

### 302-321.300 Extent of Alluvial Valley Floors

The studies summarized above indicate that stream-laid deposits exist within the proposed disturbed area, in an area approximately 2,000 feet downstream from the permit boundary, and in an area approximately 600 feet north of the permit boundary. Only those stream-laid



deposits within the proposed disturbed area have the potential of being adversely impacted by mining or reclamation operations.

Based on a review of the above studies, AVFs are not present within the proposed disturbed area, as indicated by:

- o No stream-laid deposits exist within the area of potential hydrologic impact that hold a stream;
- o Flood irrigation or subirrigation of stream-laid deposits had not historically occurred within the proposed disturbed area; and
- o Soil and topographic conditions within the proposed disturbed area preclude future flood irrigation of the site.

### 302-322 OPERATIONS AFFECTING DESIGNATED ALLUVIAL VALLEY FLOORS

Based on the information summarized in this chapter, no impacts will occur to designated alluvial valley floors due to mining and reclamation operations within the permit and adjacent areas.

