

SAVAGE

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT
FIVE-YEAR PERMIT RENEWAL
C.V. SPUR COAL PROCESSING AND LOADOUT FACILITY
ACT/007/022

BEAVER CREEK COAL COMPANY
CARBON COUNTY, UTAH
AUGUST 7, 1989

I. INTRODUCTION

The purpose of this report is to provide a Cumulative Hydrologic Impact Assessment (CHIA) for Beaver Creek Coal Company's C. V. Spur Coal Processing and Loadout Facility located in Carbon County, Utah. The assessment encompasses the probable cumulative impacts of all anticipated coal mining in the general area on the hydrologic balance and whether the operations proposed under the application have been designed to prevent damage to the hydrologic balance outside the proposed permit area. This report complies with federal legislation passed under the Surface Mining Control and Reclamation Act (SMCRA) and subsequent Utah and federal regulatory programs under UMC 786.19(c) and 30 CFR 784.14(f), respectively.

Beaver Creek Coal Company's C. V. Spur Coal Processing and Loadout Facility is located in Castle Valley approximately four miles South-Southeast of Price, Utah (Figure 1).

II. CUMULATIVE IMPACT AREA (CIA)

Figure 2 delineates the CIA for the C. V. Spur Coal Processing and Loadout Facility. The CIA includes Section 11, E 1/2 of Section 10, Township 15 South, Range 10 East. The CIA encompasses approximately 1,000 acres.

III. SCOPE OF MINING

The C. V. Spur Coal Processing and Loadout Facility processes and loads coal from the Gordon Creek #2, #7, and #8 Mine and Trail Mountain #9 Mine. This facility handles approximately 1,000,000 tons of coal annually.

The permit area is approximately 160 acres, of which 117 acres will be disturbed during the life of the facility. Approximately 77.2 acres of this permit area was disturbed prior to the enactment of the Surface Mining Control and Reclamation Act of 1977.

All of the surface structures will be removed and the entire area reclaimed upon cessation of operations.

BEAVER CREEK COAL COMPANY AREA OF OPERATIONS

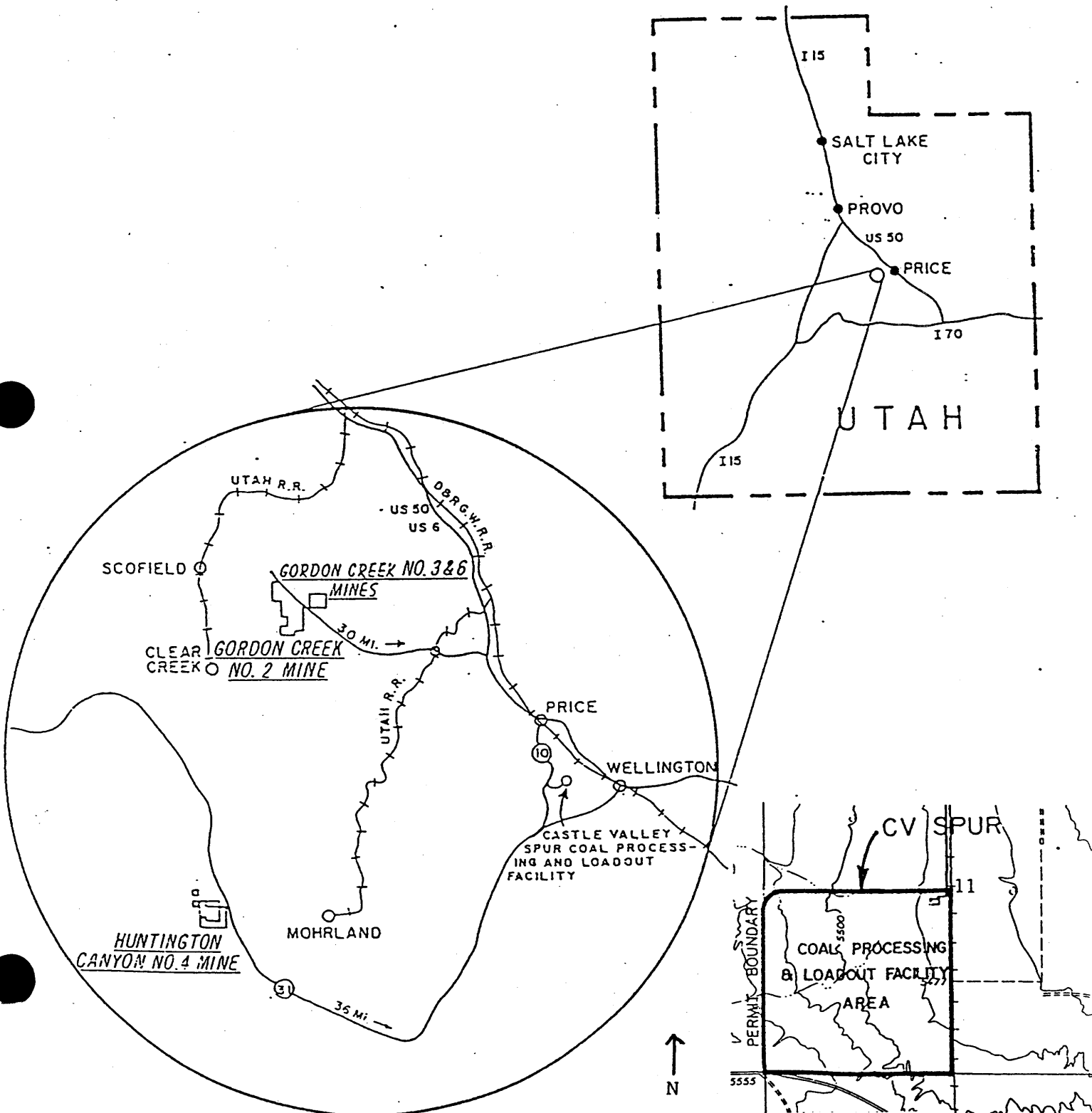


FIGURE 1 LOCATION MAP

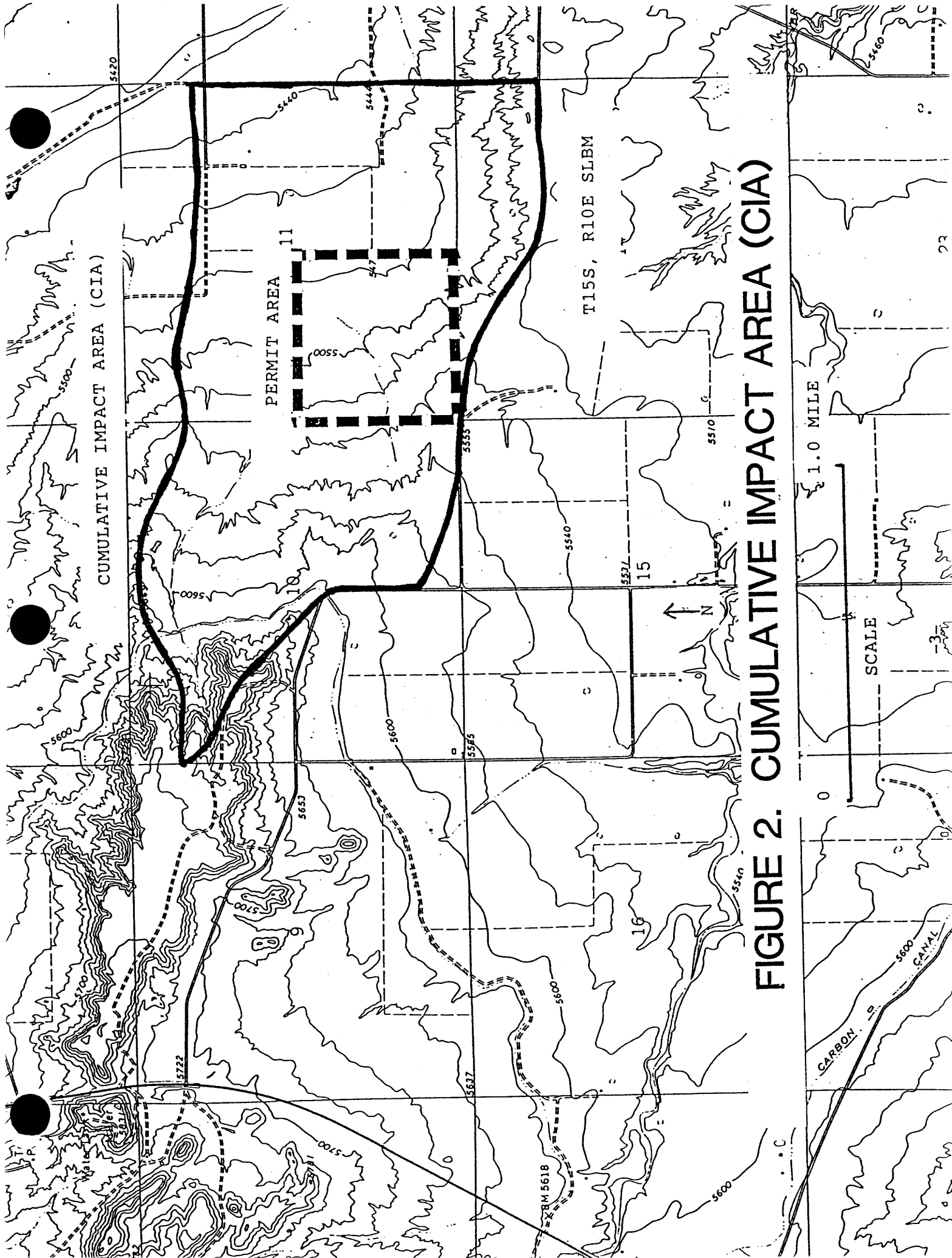


FIGURE 2. CUMULATIVE IMPACT AREA (CIA)

IV. STUDY AREA

A. Geology

The C.V. Spur Coal Processing and Loadout Facility is located on the Bluegate Shale Member of the Mancos Shale. The Bluegate Shale Member is a dark blue-gray marine mudstone with some thin lenses of shaley sandstone, sandy limestone, and calcareous shale that is 500 feet thick in the Castle Valley area. The Ferron Sandstone Member underlies the Bluegate Shale Member. Drilling in the Castle Valley area has identified a regional confined aquifer in the Ferron Sandstone Member.

Rocks in the study area strike generally to the northeast and dip from three to six degrees to the northwest. No faults have been identified in the study area.

B. Topography and Precipitation

Topography ranges from 5420 feet to 5760 feet.

Average annual precipitation is approximately ten inches.

C. Vegetation

Native vegetation of the C. V. Spur Coal Preparation and Loadout Facility area consists entirely of desert shrub. Soils are derived from Mancos Shale and are finely textured and relatively saline.

The desert shrub community is sparsely vegetated and dominated by shadscale (Atriplex confertifolia), and mat saltbush (A. corrugata). This community may include fourwing saltbush (A. Canescens), winterfat (Ceratoides lanata), Mormon tea (Ephedra spp.), budsage (Artemisia spinescens), miscellaneous buckwheats (Eriogonum spp.), Indian ricegrass (Oryzopsis hymenoides), galleta grass (Hilaria jamesii), grama grass (Bouteloua spp.), needle and thread grass (Stipa comata), sand dropseed (Sporobolus cryptandrus) and squirreltail (Sitanian hystrix). Greasewood (Sarcobatus vermiculatus) and saltgrass (Distichlis stricta) often dominate bottomlands.

V. HYDROLOGIC RESOURCES

A. Ground Water

No springs occur within the CIA.

Thirteen boreholes have been drilled for the purposes of identifying and evaluating shallow ground-water resources within and adjacent to the permit area (Figure 3). Shallow (2 to 20 feet below the surface) unconfined ground water occurs within the surficial weathered portion of the Bluegate Shale Member. Shallow ground-water levels seasonally vary from a low during the late winter to a high during the late spring. Flow is towards the east-northeast and discharge most likely occurs in proximity to the Price River. Water quality is poor with extremely high levels of total dissolved solids (1,500 to 48,000 mg/l) and sulfate (1,000 to 31,000 mg/l). These values are characteristic for shallow ground-water resources found in weathered Mancos Shale.

Aquifer testing was conducted to determine hydraulic conductivity in the weathered and unweathered portions of the Bluegate Shale Member. A pump test indicated a hydraulic conductivity of .007 ft./min. for weathered bedrock, whereas a slug test indicated unweathered bedrock is impermeable.

A French drain was installed along the northern and western boundaries of the permit area to intercept shallow ground-water flow and isolate the coal processing and loadout facility from this ground-water resource.

B. Surface Water

The C.V. Spur Coal Processing and Loadout Facility is located in the Price River drainage Basin. No perennial streams exist within the CIA. Miller Creek and the Price River are perennial and occur within one mile of the CIA. All streams within the CIA are ephemeral (Figure 2).

Disturbed area runoff is controlled by a series of sedimentation ponds. Undisturbed area runoff is diverted around disturbed areas by means of ditches and culverts.

The final sedimentation pond in the series is regulated by a UPDES permit (Figure 3). All disturbed drainage must pass through this pond before leaving the CIA. The coal processing and loadout facility uses most water produced on site. Under normal conditions, no water produced on site will be discharged off site. The sedimentation ponds are designed to prevent additional contributions of sediment to downstream areas.

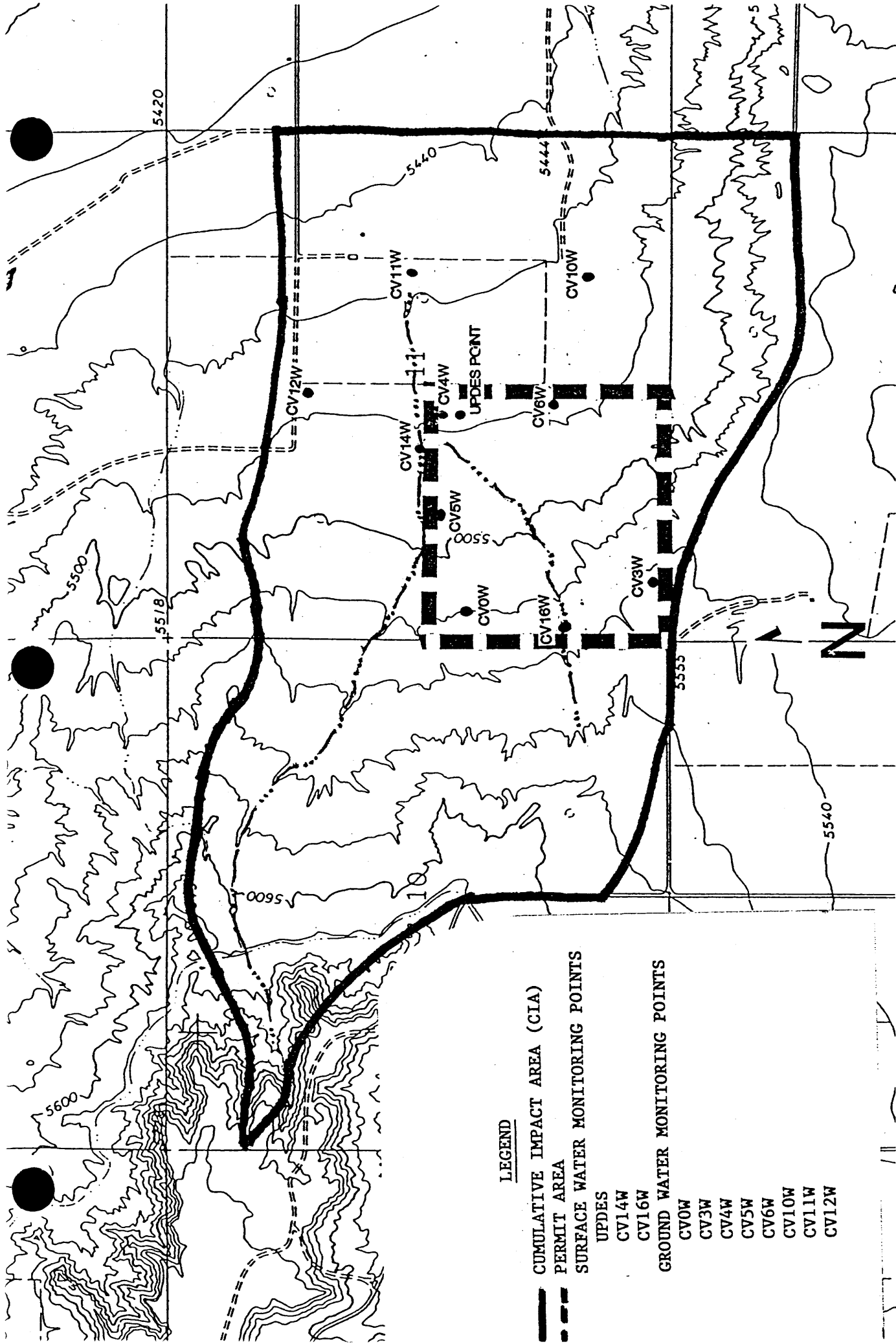


FIGURE 3. WATER MONITORING LOCATIONS

LEGEND

- CUMULATIVE IMPACT AREA (CIA)
- - - PERMIT AREA
- SURFACE WATER MONITORING POINTS
 - UPDES
 - CV14W
 - CV16W
- GROUND WATER MONITORING POINTS
 - CV0W
 - CV3W
 - CV4W
 - CV5W
 - CV6W
 - CV10W
 - CV11W
 - CV12W

VI. POTENTIAL HYDROLOGIC IMPACTS

A. Ground Water

Shallow ground-water quality is poor and it is not anticipated that surface activities will further degrade this resource. Moreover, a French drain was installed to prevent potential contamination of the shallow ground-water resource.

Aquifer testing indicated that the deep ground-water resource is hydrologically isolated from the overlying ground-water resource within the CIA.

B. Surface Water

Leachate and acid- and toxic-forming material analyses has been performed on all material stored on-site. Results of the analyses indicate that no impacts have occurred to the surface waters in the CIA to date. Annual analysis will detect possible future impacts.

A surface water monitoring plan has been implemented at the site. Three surface locations exist which includes two points along the northwestern diversion ditch which are monitored annually according to the Division's Water Monitoring Guidelines and one UPDES point at the discharge of Sedimentation Pond #6.

The combination of surface water monitoring, NPDES monitoring, and annual acid- and toxic-forming material analyses will enable determination of any potential impacts to the hydrologic balance.

Material disposed of at the C.V. Spur Coal Processing and Loadout Facility consists of the following material: sedimentation pond waste from Gordon Creek #2, #7, and #8 Mine and Trail Mountain #9 Mine; coal processing waste produced from the processing of coal from Gordon Creek #2, #7, and #8 Mine (active), Gordon Creek #3 and #6 Mine (inactive), Huntington #4 Mine (inactive) and Trail Mountain #9 Mine (active).

Percent pyritic-sulfur analyses from the coal processing waste and each individual coal seam being processed average 0.49 percent.

The weathered bedrock underlying the coal processing waste disposal area is calcareous and should neutralize drainage or seepage from areas within the coal processing waste area, which could potentially form acid.

Although most water associated with the C.V. Spur Coal Processing and Loadout Facility coal processing waste will evaporate, a minor amount of water may percolate through the storage cells into the underlying weathered bedrock. However, as indicated previously this seepage has a low potential for degrading the shallow ground-water resource because of the poor water quality that occurs naturally.

VII. SUMMARY

The operational designs proposed for the C.V. Spur Coal Processing and Loadout Facility are herein determined to be consistent with preventing damage to the hydrologic balance outside the permit area.

BT241/1-5

REFERENCES

Beaver Creek Coal Company, Permit Application Package, July 19, 1989,
Castle Valley Spur Coal Processing and Loadout Facility, Carbon
County, Utah