

To

Date

L. P. Taggart

June 4, 1976

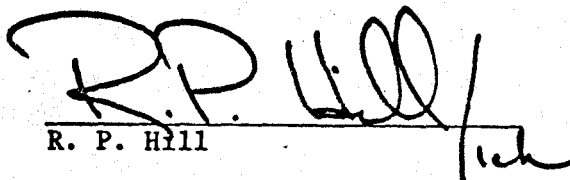
From

R. P. Hill ✓

Subject Proposed Deepening of Small Open Pit North of Tantalus Butte Coal Mine

As requested, I have examined the small open pit north of Tantalus Butte Coal Mine with a view towards deepening the pit for extraction of a further 12,000 tons of coal.

Enclosed is a brief report.


R. P. Hill

/lch

cc: N. G. Cornish
Glen Simpson
S. Q. Alton ✓

PROPOSED DEEPENING OF SMALL OPEN PIT

NORTH OF TANTALUS BUTTE COAL MINE

During 1973, a trenching programme, supervised by Dave Jennings, traced the outcrop of a coal seam northwards along strike from the Tantalus Butte Coal Mine. Following this programme it was suggested that the coal seam was appreciably thickened in trenches 15, 13 and 22, as evidenced by a considerable increase in outcrop width of the seam. Subsequently a small open pit was begun, and approximately 12,000 tons removed and stockpiled.

During the coal-removal operation it was discovered that while the east wall of the pit, presumably the footwall, maintained the regional westerly dip of about 65 degrees, the west wall, thought to be the hanging wall, dipped east at 40 to 60 degrees (N. Cornish, personal communication). In addition, a "rock lens" was uncovered at the south end of the pit.

The writer examined the pit during the first week of June, 1976. Three small cuts were made using the front-end loader, kept by the Tantalus Butte mine, and several outcrops were uncovered by hand. A geological map (Figure 1) and cross-sections (Figures 2 & 3) were prepared at a scale of 50 feet to the inch.

The most likely explanation for the anomalous structures referred to above is that the coal seam occupies a shallow syncline. If this explanation is correct, it would appear that both walls of the pit are formed by the footwall sandstone, which is a dark grey, fine to medium grained sandstone containing abundant carbonised plant fragments and a few thin coal seams. It would also appear that the "rock lens", which consists of thinly interbedded dark grey siltstones and mudstones, is part of the hangingwall sequence.

The disparity between these observations and the observations of Dave Jennings, 1973, is thought to have arisen because the 1973 trenches were not sufficiently deep to give an adequate view of the structure.

Two faults were observed trending northeast through the pit (See Figure 1).

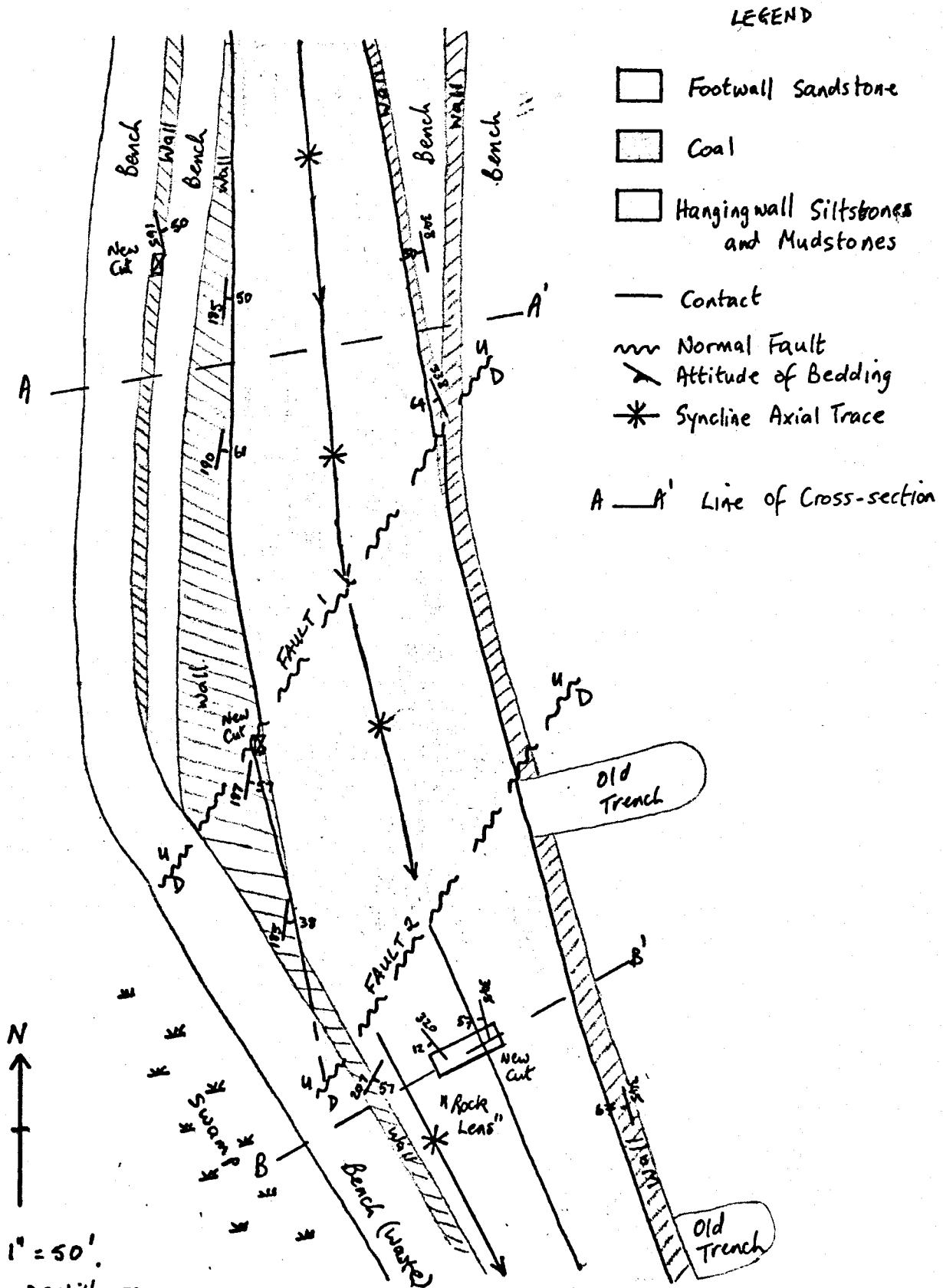
Fault 1 is a normal fault dipping southeast at about 50 degrees, and has a southeasterly downthrow of a few feet, which does not significantly effect the outcrop pattern. Fault 2 is a normal fault dipping southeast at about 70 degrees, and has a southeasterly downthrow of the order of a few tens of feet, exposing the hangingwall sequence. Examination of bedding attitudes in the walls of the pit suggest that the syncline has a gentle southerly plunge north of Fault 2, and that south of this fault the plunge increases somewhat.

Since drill-hole data are not available no reliable estimate of reserves of coal in place can be made. However, several generalizations may be made. The structure north of Fault 2 suggests that very little coal remains in place in this area. However, due to the southeasterly downthrow along Fault 2 it is possible that appreciable reserves remain in place south of the fault, and in the area adjacent to the south. It is interpreted that the west limit of the syncline should subcrop beneath the bench of waste material which forms the west wall at the extreme south end of the pit, or beneath the swamp immediately to the west.

It is recommended that further exploratory work be undertaken by your own staff, to test the hypothesis presented above and to enable approximate calculation of reserves to be made, before any further attempt is made to remove coal from this pit. It is suggested that this should be done as follows:-

1. Bulldozer trenching at (say) 100 foot intervals north of Fault 2, in order to uncover the footwall sandstone and measure the depth of coal still in place;
2. Shallow drilling at (say) 50 foot intervals south of Fault 2, along the west wall of the pit and along trend to the south, in order to determine the thickness of hanging wall rocks ("rock lens") which would have to be removed to uncover the coal seam, and also the thickness of coal present.

FIGURE 1. GEOLOGICAL MAP OF OPEN PIT



SCALE: 1" = 50'
 Geology by R.P. Hill June 1976

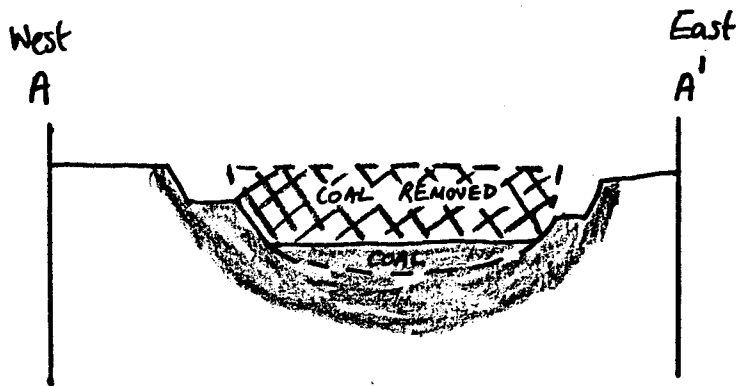


FIGURE 2. DIAGRAMMATIC SECTION A-A' THROUGH OPEN PIT
Scale: 1" = 50'

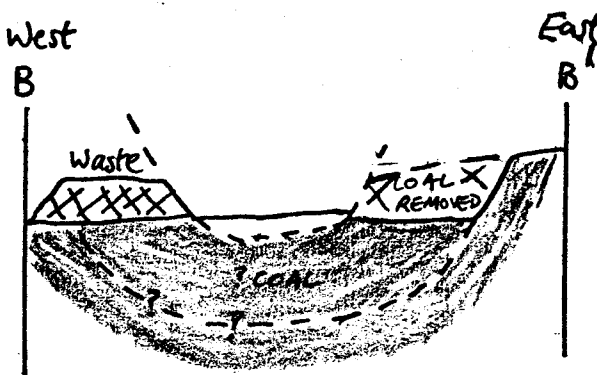


FIGURE 3. DIAGRAMMATIC SECTION B-B' THROUGH OPEN PIT
Scale: 1" = 50'



DEPARTMENT OF BOTANY
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April 5, 1977

Mr. Roderic P. Hill
Cyrus Anvil Mining Corporation
330, 355 Burrard Street
Vancouver, B.C.
V6C 2G8

Dear Mr. Hill:

This will let you know that the plant fossil-containing drill cores arrived in good order about a week ago. I have spent some time on the specimens and can give a preliminary report on the identification of the plant parts. There is an abundance of a fern which is identified as the form genus Cladophlebis with some specimens fitting the description of C. denticulata. The characteristics of Cladophylebis are those of sterile foliage of members of the modern genus Osmunda. It is well known that the Osmundaceae are most abundant in Jurassic and Cretaceous sediments. Although your sample is small it does represent at least two or three spatially separated localities both of which show an abundance of the same type of fern frond remains.

The most abundant of all the plant fossils in the cores is the form genus Pityophyllum which, once again is reported as especially abundant in Jurassic and Cretaceous floras. Some of the specimens of this genus have the characteristics of Pityophyllum nordenskiöldi which is reported from Jurassic floras. This is a very small clue that you may indeed be in the Upper Jurassic. But I wouldn't take it too seriously.

Other remains that allow identification to genus but nothing else are ~~on~~ fragments of what is clearly an Equisetites and other fragments that might be Ginkgo or Ginkgoites. Beyond this, the preliminary survey shows nothing more.

I will go to the literature you have suggested and see how my preliminary identifications and conclusions match those of others and then give a detailed description by drill core number what is present in each.

I don't know what you suggest with respect to the disposition of the specimens. I would appreciate one specimen of Cladophlebis and one of Pityophyllum for our teaching collection. If this is agreeable I'll keep one core with both genera and return the rest.

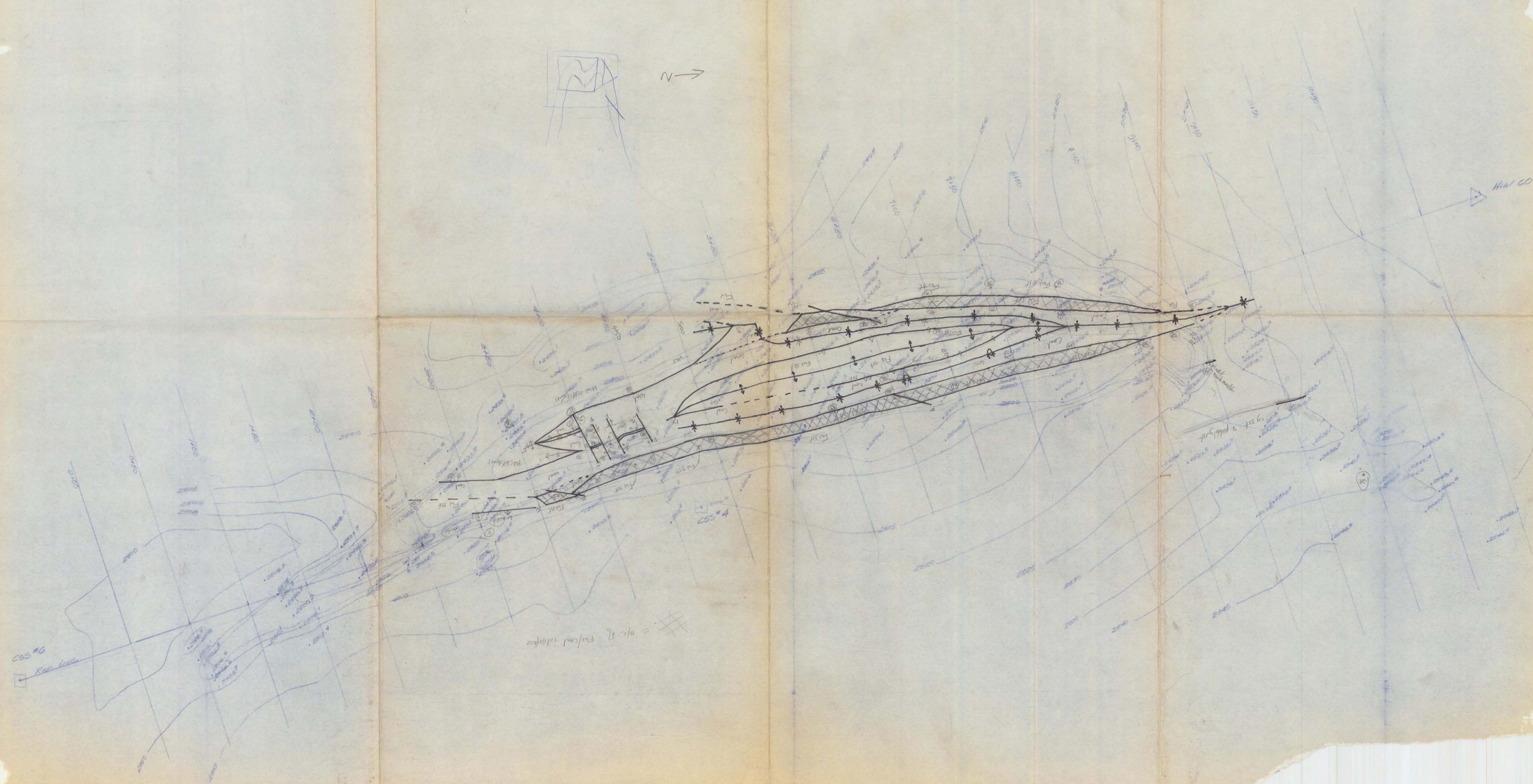
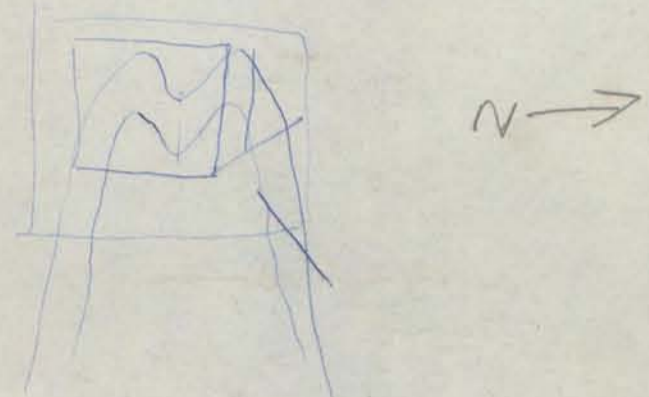
Please let me know if this is agreeable.

Most sincerely,

W.N. Stewart
Professor

WNS/gf

CONTOUR PLAN of Open Pit Coal Mine near Carrizales
(Cyprus - Anwil)



□ = 0/18 ft coal strip

CSS #6
Roe Line

19 set of public st

CSS #4

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