WILLA PROJECT

STAGE 1 ENVIRONMENTAL ASSESSMENT

Prepared for:

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3.2 Geology

3.2.1 Regional Geology

The Willa Project is located within a pendant of volcanic and sedimentary rocks on the western margin of the Nelson Batholith. The rocks in the pendant may be part of the Slocan Group of Triassic or Lower Jurassic age, or possibly those of the Rossland Group of Permian age. The Nelson Batholith comprises predominantly porphyritic granite and granodiorite.

The Slocan Fault extends along the western margin of the Nelson Batholith and separates the Nelson Batholithic rocks from gneisses of the Valhalla complex to the west; the Slocan fault strikes northerly and dips steeply east. The Slocan fault may occupy a broad valley near the western margin of the Willa property.

Several lead-zinc-silver and gold-copper mines or prospects exist within the area of the Willa Project, between Enterprise Creek to the south and Silverton Creek to the north. The Hewitt and Van Roi Mines, located 6 km northeasterly from Willa were mined between 1893 and 1955. The L.H. gold-copper prospect adjoins Willa to the north; exploration including diamond drilling has been performed on this property during 1986 and 1987.

3.2.2 Property Geology

Lithologies within the mineralized area at Willa comprise volcanics, quartz latite porphyry, feldspar porphyry, heterolithic breccia and lamprophyre dykes. These rocks are part of a 15 km^2 pendant within the Nelson Batholith. Figure 3-1 shows the main features of property geology at Willa.

Exploration to date at Willa has identified economically significant gold and copper mineralization in two main bodies (identified as the West and Main Zones) within and adjacent to a plug of intrusive heterolithic breccia. A third possible body (identified as the East Zone) has been intersected within volcanics, 30 m east of the heterolithic breccia volcanic contact. The present program has predominantly explored the West Zone. Plans and sections of the West Zone are shown in Figures 3-2 to 3-4.

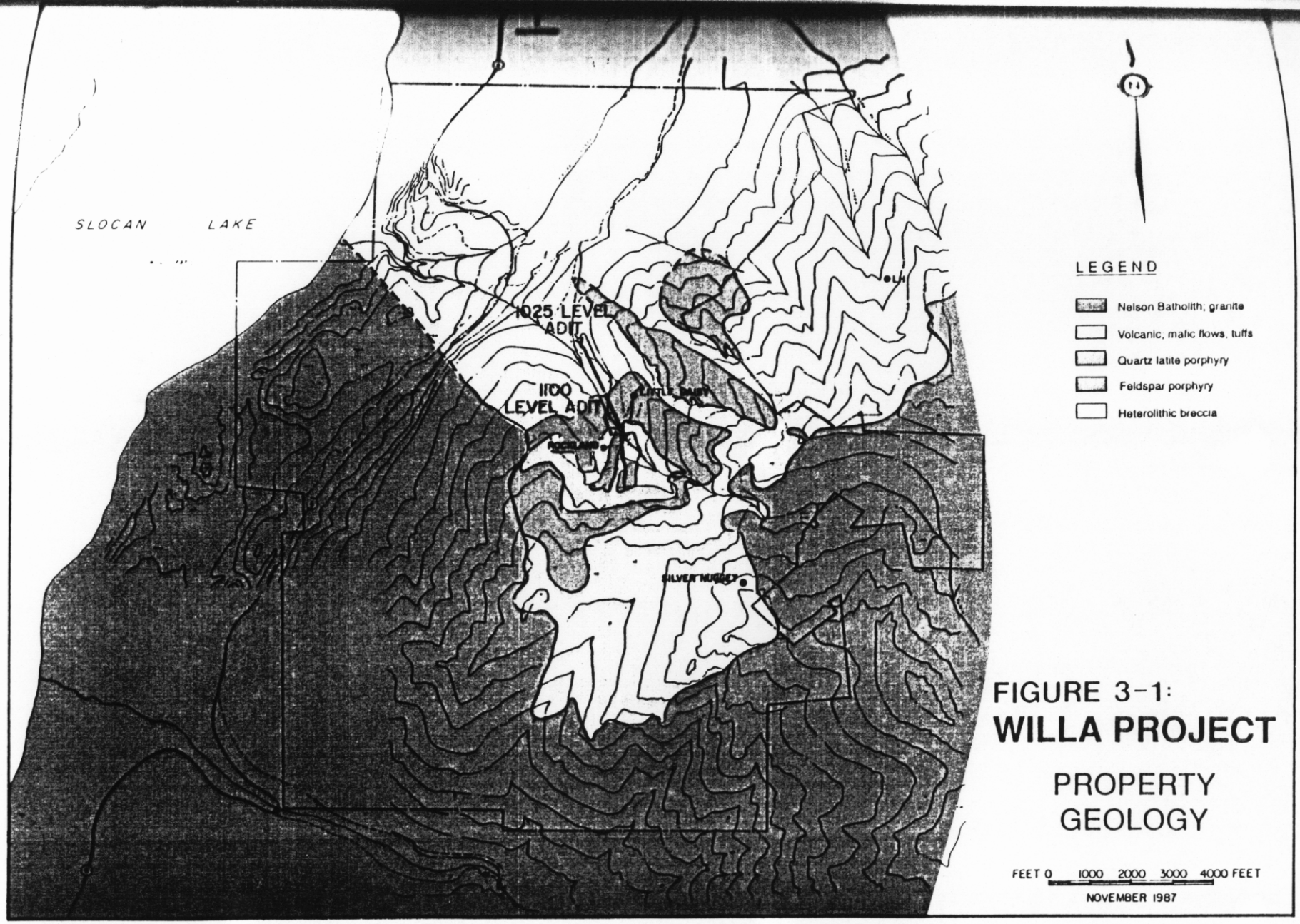

FIGURE 3-1:
WILLA PROJECT

PROPERTY GEOLOGY

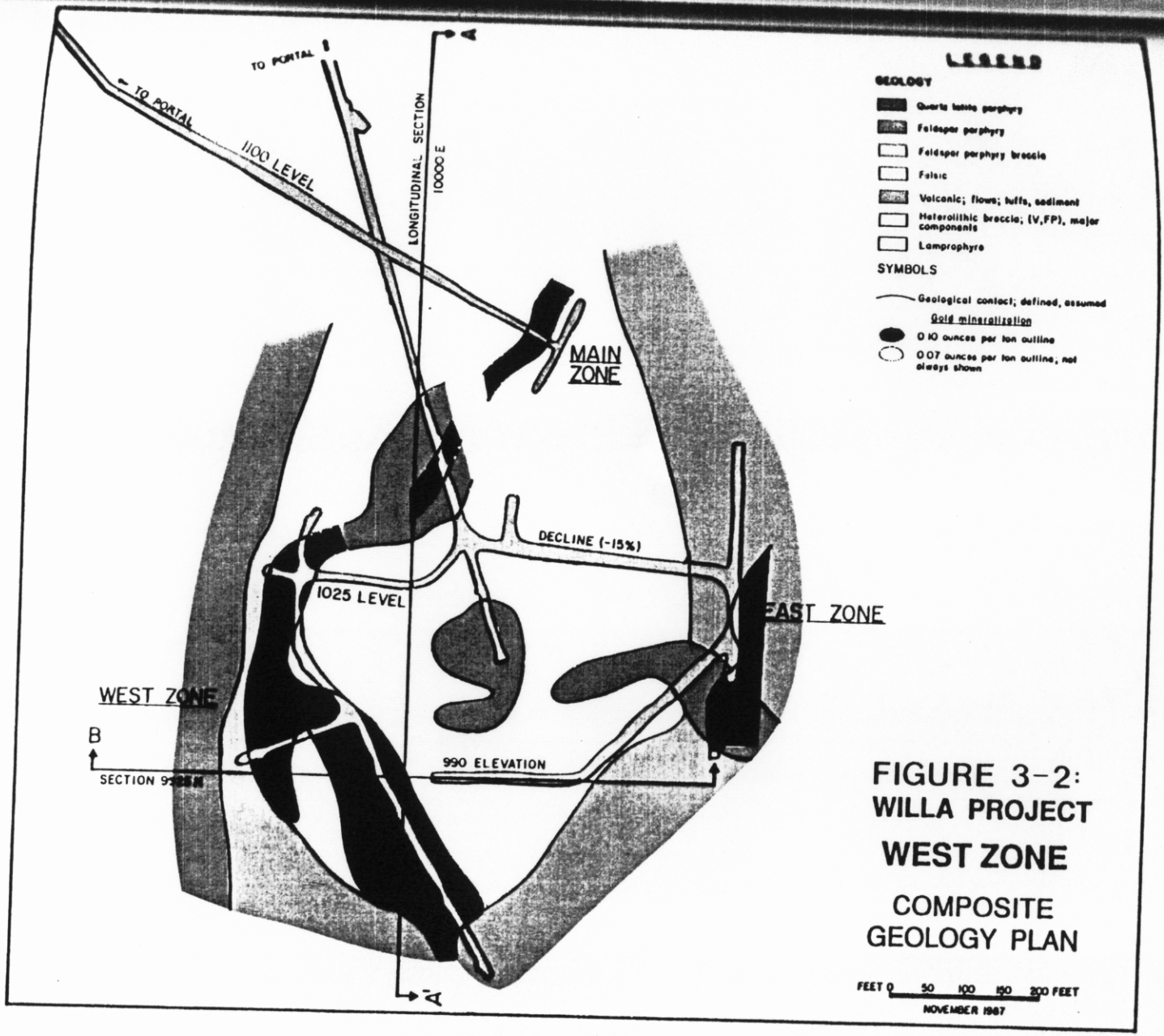

FIGURE 3-2:
WILLA PROJECT
WEST ZONE
COMPOSITE
GEOLOGY PLAN

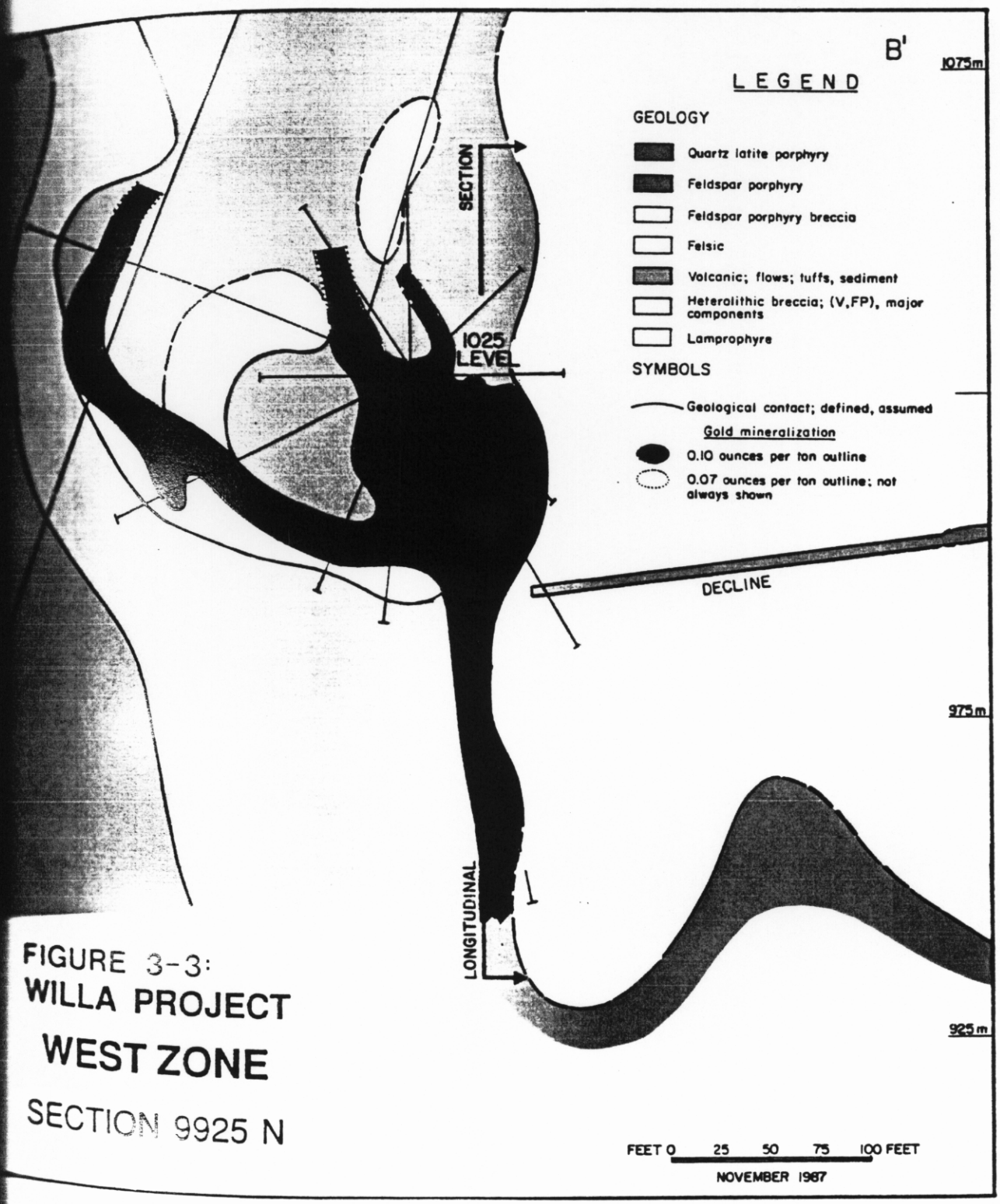

FIGURE 3-3:
WILLA PROJECT
WEST ZONE
SECTION 9925 N

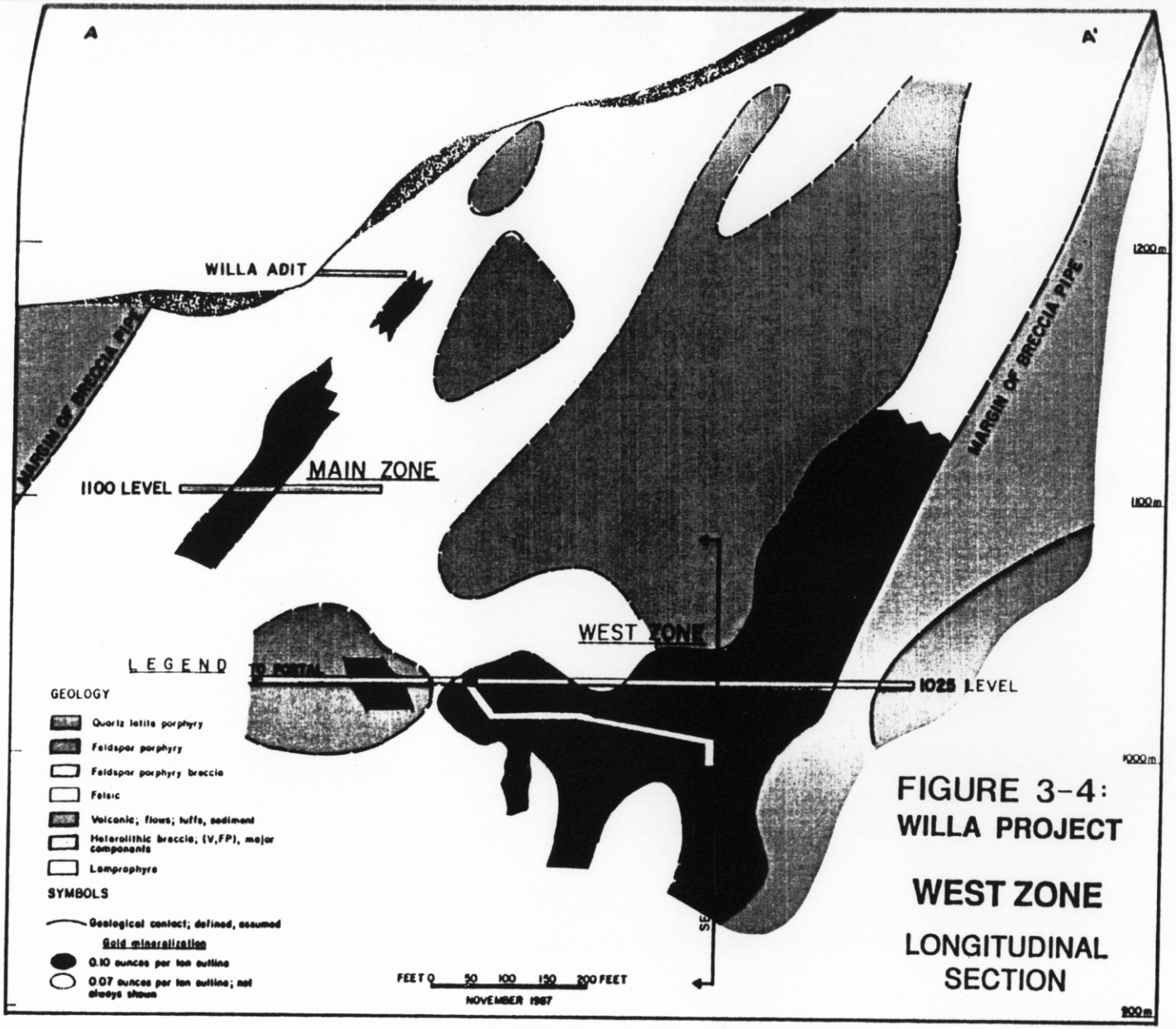

FIGURE 3-4:
WILLA PROJECT

WEST ZONE

LONGITUDINAL SECTION

The heterolithic breccia plug has a roughly elliptical outline and is about 160 m by 300 m in plan. At surface, the plug is bounded by volcanics to the east and quartz latite porphyry to the west; at the 1025 m (main adit) level, the plug is bounded by a thick sequence of volcanics to the east and a thin (5 to 10 m) sequence of volcanics to the west.

The breccia comprises fragments of all adjacent lithologies; fragments are generally subrounded, matrix supported and comprise from 30 to 40 percent of the rock. The matrix is fine grained and generally contains from 2 to 5 percent pyrite.

Irregular bodies of feldspar porphyry exist within and at the margin of the heterolithic breccia, especially in the southern and western portions of the plug. Some of these bodies may be quartz latite porphyry.

A northeasterly striking fault is exposed in the adit near 10100 N; dip is steep southerly to sub-vertical. The fault is comprised of several zones of clay gouge with slickensides and several m of fractured rock. Displacement, if any, is not known. The fault can be traced in drill holes over a strike length of about 150 m.

Lamprophyre dykes cut all other rock types in the area; the dykes strike northerly and dip sub-vertically to steeply east. Margins of some of the dykes are strongly sheared to a white clay or talc. Two sets of dykes exist: one set strikes northerly through and adjacent to the West Zone; the other extends from near the southern end of 950 drift, northerly along the eastern margin of the breccia pipe. The lamprophyre dykes are not mineralized.

The West Zone, as presently defined, has an irregular, sub-horizontal pipe shape striking about 150 degrees. It lies at or near the lower margin of an irregular lense of feldspar porphyry. The feldspar porphyry extends from about the 1010 m elevation up to at least the 1100 m elevation and may connect with a body of feldspar porphyry mapped on surface and centered near 9900 N 10000 E. In part, gold and copper mineralization extends well into the heterolithic breccia and volcanics in a narrow, sub-vertical lense below the main body.

3.2.3 Mineralization

3.2.3.1 *West and Main Zones*

Within the West Zone, gold mineralization is generally associated with sulphide mineralized, crackle brecciated feldspar porphyry and to a lesser extent with sulphide mineralized heterolithic breccia and volcanics. Within the Main Zone, gold mineralization is associated with pyritic heterolithic breccia. The sulphides exist both within the breccia matrix or may form the matrix completely. The sulphides also exist as irregular veinlets and blebs within and rimming fragments.

Fragments are sub-angular and predominantly 10 to 50 cm in diameter. There is a gradation from crackle brecciated feldspar porphyry to heterolithic breccia with fragments composed predominantly of feldspar porphyry.

Sulphides, veins and pods within the breccia are occasionally rimmed with magnetite, epidote or chlorite. Occasionally, pods and irregular veinlets of light purple anhydrite exist within the matrix.

Sulphides consist predominantly of pyrite with lesser chalcopyrite. In certain sections, pyrrhotite may be in equal proportion to pyrite. In part, the pyrite may be crystallographically continuous over several centimeters even within irregular blebs and veinlets.

At least some of the gold occurs as grains and veinlets of native gold or electrum. The grains and veinlets range from a few microns to 20 microns in maximum dimension and occur on the margins or in fractures in pyrite and chalcopyrite. Grains of gold were seen in core at a few locations. In general, higher gold content is closely related to higher chalcopyrite content.

3.2.3.2 *East Zone*

In the East Zone, gold mineralization exists within both mafic volcanic and feldspar porphyry or quartz latite porphyry within a northerly to northeasterly striking belt 10 to 30 m east of the eastern margin of the heterolithic breccia pipe. This belt has a strike length of 45 m and is open.

Mineralization is comprised of coarse-grained pyrite with lesser chalcopyrite and, in part, pyrrhotite. Vugs lined and filled with zeolite and pyrite occur in and adjacent to gold mineralized sections in both mafic volcanic and feldspar porphyry. In hole 268, massive chalcopyrite and pyrrhotite contained 10 g/t gold over 8.0 m within feldspar porphyry.

3.2.4 Ore Reserves

West Zone ore reserves at Willa are presently estimated to be 600,000 tons (544,000 tonnes) grading 0.22 oz/ton (7.5 g/t) gold, 1.04 percent copper, and 0.277 oz/ton (9.5 g/t) silver. These are uncut, undiluted figures classified as "drill indicated probable" reserves based on drilling results. These reserves do not include gold mineralization that is being drilled in the East Zone which lies in volcanics east of the breccia pipe, the Main Zone or the low-copper, gold-bearing breccia area in the centre of the breccia zone.

Reserve estimates were calculated by Dr. P.W. Richardson, P.Eng. from a series of cross sections at 25 m spacings. Areas for each cross section grading over 0.1 oz/ton (3.43 g/t) gold were determined and multiplied by the cross section spacing (25 m) to give a volume which was then converted to tonnage, based on a specific gravity of 3.0.

The grade of each block was determined by calculating the weighted average of the ore intersections in each block. Most of the holes were on sections, but off-section (usually) surface holes were used if they passed through a block.

Further work is presently underway to confirm estimates prepared in this way.