Area T

1585 TA-21

Room 115, Federal Building
Santa Fe, New Mexico 87501

August 19, 1969

Mr. C. W. Christenson, Group Leader
Group H-7
Los Alamos Scientific Laboratory
Los Alamos, New Mexico 87544

Subject: Geology at disposal area near Bldg. 257, TA-21.

Dear Chris:

At your request I have compiled data related to the geology at the disposal area near Bldg. 257 at TA-21. Two sketches showing sections of rock units from pit 3 to 27 and pit 2 to 27 are attached.

The lower unit is a light gray moderately welded tuff with an approximate thickness of 100 feet. It is overlain in part by a reworked tuff which is deposited in a channel or low relief cut into the lower light gray tuff unit. The upper unit forming the surface of the mesa at the disposal area is a light brownish gray moderately welded tuff (see sketch 1 and 2).

The unit that is giving us trouble in drilling additional pit is the reworked tuff and pumice which contains cobbles and boulders in the lower part. The reworked tuff was deposited by gaseous forces accompanying the emplacement of the upper ash flow. The cobbles and boulders occur in tabular shapes or if in mass show faceted sides as if deposited by sliding rather than rolling as one would expect with water-laid material. The blast caused by expanding gases accompanying the emplacement of the upper ash flow deposited the larger materials (cobbles and boulders) into areas of low relief in the upper surface of the lower unit. As the upper unit and reworked tuff were emplaced contemporaneously they have cooled as a single unit thus the contact between the two is gradiational and not very distinct. A sharp contact is found between the reworked tuff and lower light gray unit.

10031

Pit 18 and 26 (sketch 2) were drilled in July 1969. Pit 18 went to a depth of 59 feet (pilot hole 64 ft) passed through the reworked tuff which evidently had few boulders in the lower part. The walls of the pit are rough and irregular in the reworked tuff from a depth of about 14 to 22 feet.

Pit 26 was drilled into a nest of boulders near the base of the reworked tuff and was abandoned at a depth of 15 feet (pilot hole 19 feet). The walls of the pit from the land surface (I was not able to get a ladder long enough to get to the bottom) showed no cobbles or boulders, fairly smooth walls. The only evidence of the reworked unit in the walls was a small patch of reworked sand and tuff at a depth of about 12 feet along the northwest wall of the pit. Evidently the pilot hole (dug with a 3 foot bucket auger to a depth of 19 feet) encountered cobbles and boulders too large to dislodge or pick up thus was probably abandoned several feet above the top of the lower unit of light gray tuff.

Inspection of pits when the rig is setting on the hole to allow access may be of value determining extent of the reworked tuff containing the cobbles and boulders. This would aid in location of future pits. If we can make the inspection for you or if you need additional information please feel free to give us a call.

Sincerely yours,

W. D. Purtymun
Hydrologist

For: W. E. Hale
District Chief, WRD

cc: Wm. Kennedy, H-6, LASL
Los Alamos, N.Mex.

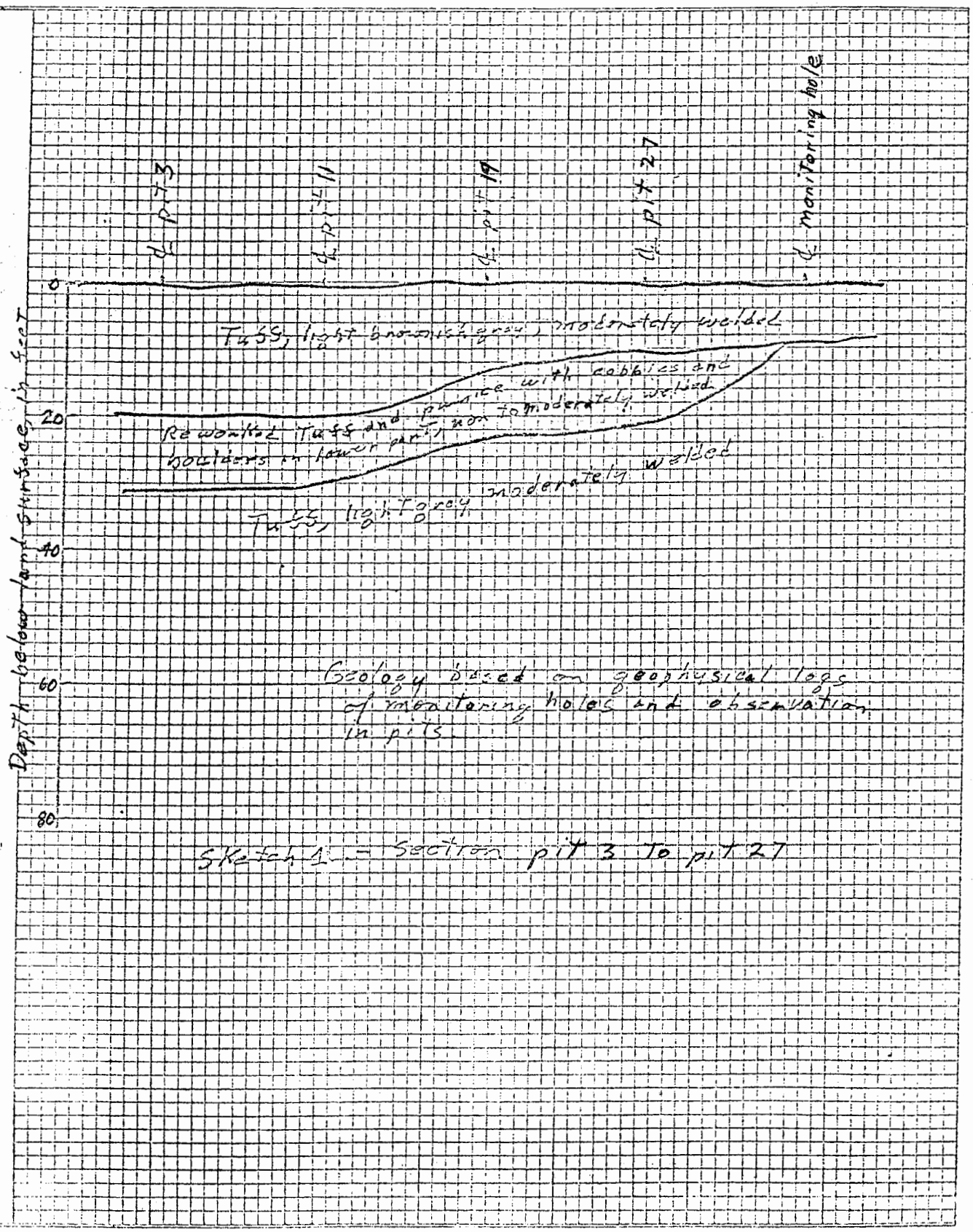
F. C. Koopman, USGS
Albuquerque, N. Mex.

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES DIVISION

File Number | Washington District

16—13469-2 GPO

(DO NOT USE THIS SPACE EXCEPT FOR BINDING PURPOSES)



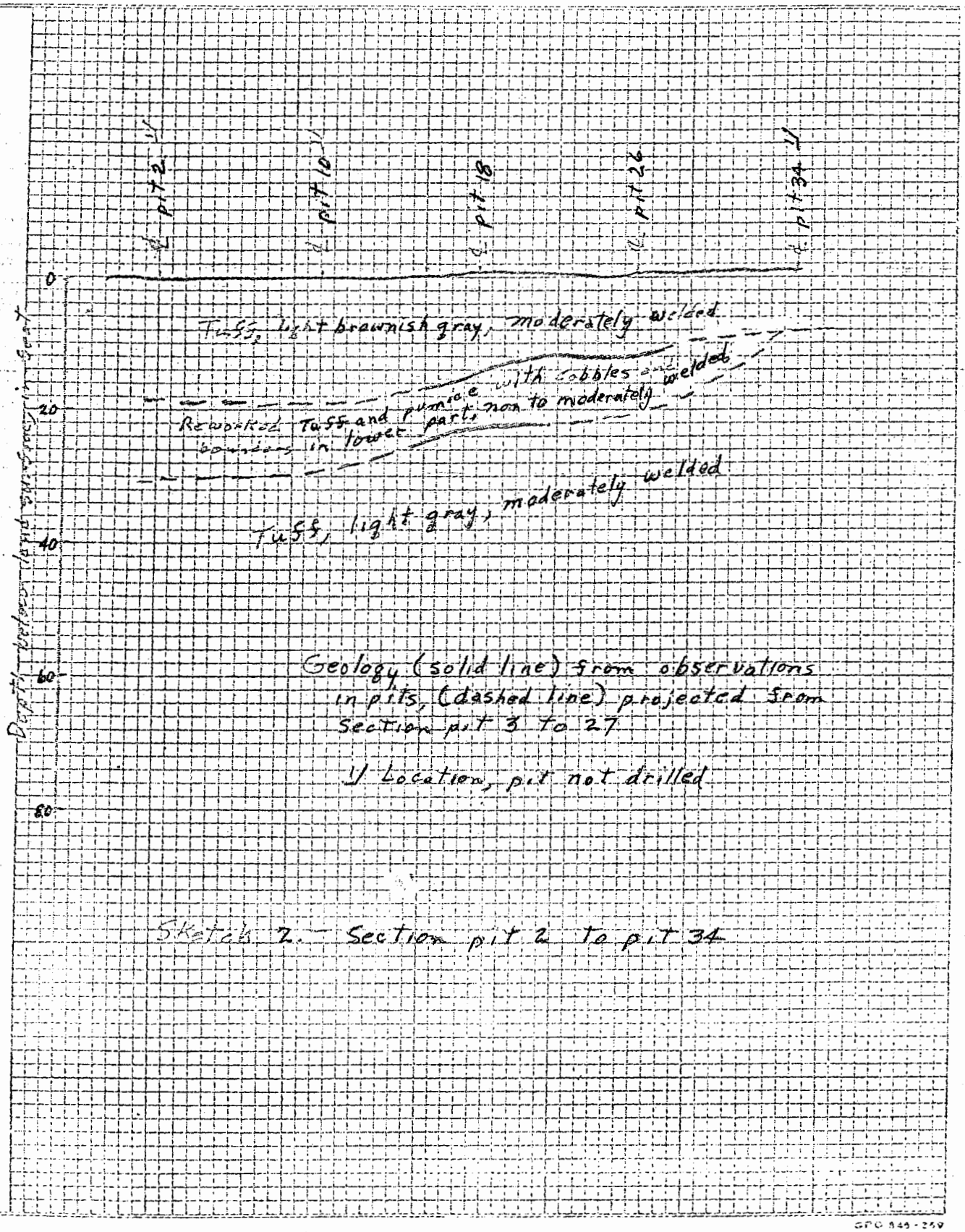
Sketch 1 — Section pit 3 to pit 27

GPO 846-369

Sheet No. ..... of ..... sheets. Prepared by ..... Date ..... Checked by ..... Date .....

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES DIVISION

File Number | Washington ..... District .....



Sketch 2.— Section pit 2 to pit 34

(DO NOT USE THIS SPACE EXCEPT FOR BINDING PURPOSES)

Sheet No. ..... of ..... sheets. Prepared by ..... Date ..... Checked by ..... Date .....