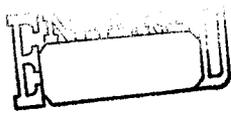


*Tim comments  
any  
7-7-99  
TA54*



To: File

July 1, 1999

From: Bob Weeks

Subject: Observations Outside TA-54 Perimeter Following June 17, 1999 Heavy Rain

On June 30, 1999 Ralph Ford-Schmid, Dave Englert, Bob Wingo, and Bob Weeks performed a visual examination and radiological survey of certain areas outside of the north, south, and east boundaries of TA-54. The reason for the examination was to observe the effects of the June 17, 1999 rainfall in which the TA-54 rain gauge measured 1.94 inches of rainfall from 14:45 to 16:00, a one and a quarter hour period, i.e., flooding conditions. Among those observations was the destruction or burial of several surface water sampling stations. The present report will not elaborate on the status of these sampling stations, but rather will report radiological observations per below. Two detector types were used, a GM pancake probe (for  $\beta$ ,  $\gamma$ ) on instrument 1 and a sodium iodide ( $\gamma$ ) detector on instrument 2, the Ludlum Model 19 MicroR Meter. The reason for using two instruments is simply the greater sensitivity of the NaI detector. For reference to sampling locations, the attached "TA-54 Site Drainage Map Area G - Fire Hydrants" map gives the locations of Surface Water Sampling Stations and the attached pg 215 of the "Environmental Surveillance and Compliance at Los Alamos during 1996" gives the locations of the ESH-18 Sediment Monitoring Stations.

LANC/DATA/ES DATA / SEDIMENT  
LANC/ES / SEDIMENT

Location (as either Sediment or Surface Water Sampling Station #)	$\mu\text{R}/\text{hour}^1$	$\mu\text{R}/\text{hour}^2$
G3 (Surf Water Smpl Station)	40-60	50
Below G5 (Surf Water Smpl Stat'n) (narrow channel, mostly scoured)	60	20-23, both in the channel and the overbank
Below G5 (Surf Water Smpl Stat'n) (fan out sediment)	60	18
@ G4( ESH-18 Sed Monitor Stat'n)	60	18
G3 (Surf Water Smpl Stat'n) (fan overbank)	50-60	19
G4 (Surf Water Smpl Stat'n) (above BMP@head of canyon)	40	40
G4 (Surf Water Smpl Stat'n) (out of channel)	50	50
G4 (Surf Water Smpl Stat'n)(first BMP below G4, fine silt)	60	28
G4 (Surf Water Smpl Stat'n)(2 <sup>nd</sup> BMP below G4, directional monitoring hole, fine silt)	50	20
TA-54, NE Corner, North of fence near TWISP	45	65 (52,35) <sup>3</sup>



<sup>1</sup>Instrument 1: Model TBM-3S, "Contamination Meter", Serial Number 02538, Technical Associates, Canoga Park, CA. Calibrated February 17, 1999 and the next calibration due date is 2-17-00.

<sup>2</sup>Instrument 2: Model 19 MicroR Meter, Serial No. 109937, Ludlum Measurements, Inc., Sweetwater, TX, Calibrated 3-2-99 and the next calibration due date is 3-2-00

<sup>3</sup> The 52 and 35  $\mu\text{R/hr}$  readings were interesting as follows: The readings were taken while performing surveys to determine if radioactive entities had washed out of TA-54 as a result of the June 17 rain. While measuring the soil approximately 6 feet from the fence, an NMED employee kneeled between the Instrument 2 and the fence simply to read the instrument. Upon the employee interposing himself between the instrument and the fence, the instrument reading decreased from 65 to 52  $\mu\text{R/hr}$ . To confirm this observation, Dave Englert placed the instrument at his chest while he stood between the fence and the instrument. The instrument reading then dropped to 35  $\mu\text{R/hr}$ .

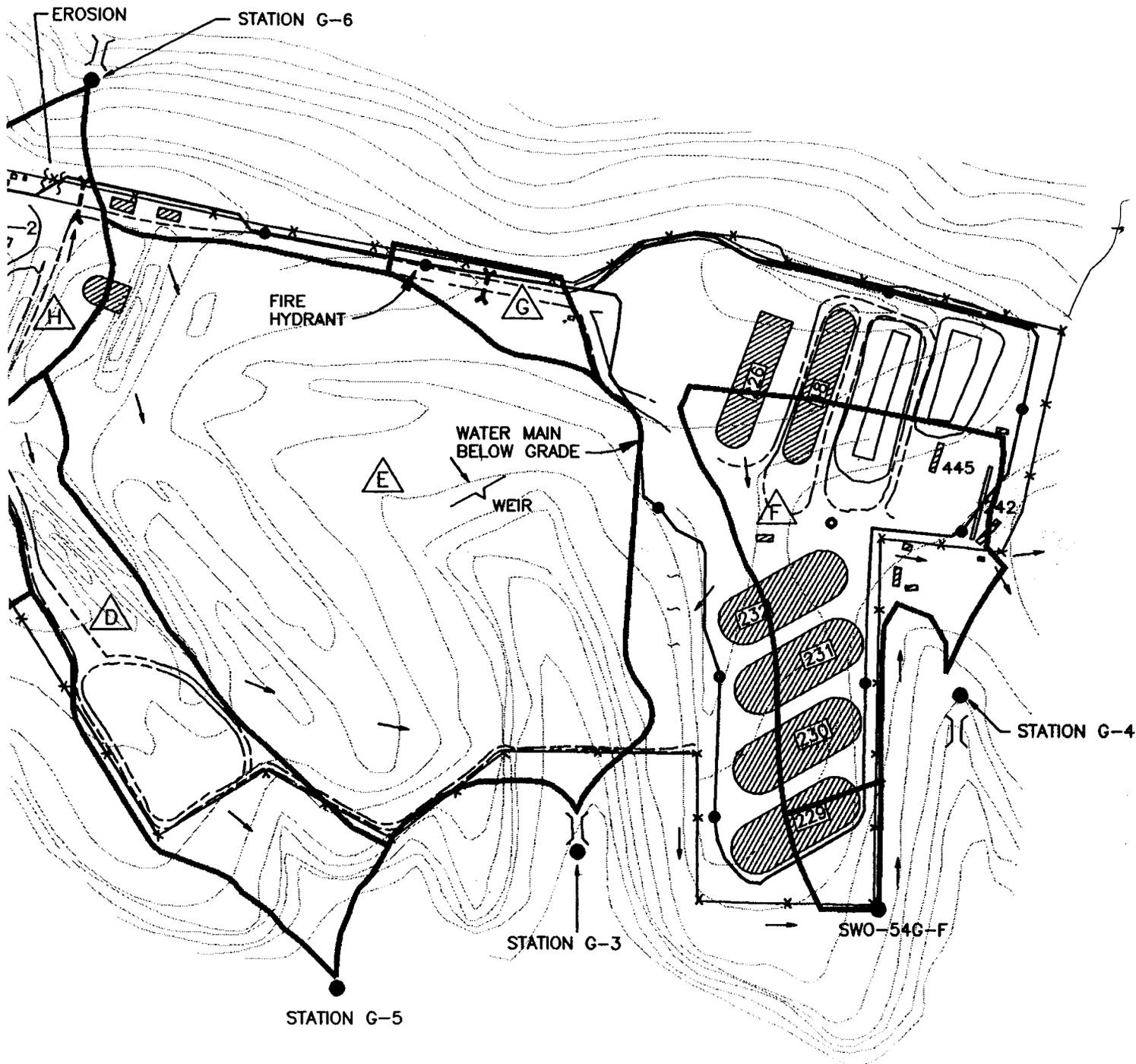
There are perhaps three concerns from the above:

1. The values obtained from Instrument 1 were somewhat constant being between 40-60 $\mu\text{R/h}$  and most likely were not as accurate as those obtained with Instrument 2. One cannot say that the Instrument 1 values at the G4 (ESH-18 Sed Monitor Stat'n) or the G3 (Surf Water Smpl Stat'n) (fan overbank) locations are not due to a higher beta contribution than at the other locations since the pancake detector measures both beta and gamma.

2. The gamma radiation observed with Instrument 2 varied by over a factor of three, ranging from 18 at G4 to 65  $\mu\text{R/h}$  near the TWISP TRU Pad. As Dave Baggett observed, the fact that this radiation is attenuated by the interpositioning of a human body indicates that the radiation is emanating from a point source rather than a broad background. This existence of a point source is contrary to the "shine" explanation for the presence of Pu/Am in the LANL report, LA-13165, "Area G Perimeter Surface-Soil and Single-Stage Water Sampling", pg A-2. However, since our measurement was taken near MDA Survey Point G-43 of this report, our value is consistent with the LANL report value (Appendix A, Table 1, pg A-5) indicating an elevated presence of Cs-137 at this location. It may be worthwhile to further investigate this area with a multi-channel analyzer such as the Exploranium for specific isotope identification.

3. The fact that there were elevated values (as measured by the Ludlum Model 19) at three of the four G4 locations may indicate the presence of gamma contamination such as U-235 or Cs-137 which washed out of TA-54 during the subject June 17 rain. Again, the use of a field instrument such as the Exploranium or other multi-channel analyzer may be informative.

Instrument 1: Model TBM-3S, Serial Number 02538, Technical Associates, Canoga Park, CA. Calibrated February 17, 1999 and the next calibration due date is 2-17-00.



DRAWN	MEW	SCALE:	1" = 250'-0"
DESIGNED	SJV	PLOT DATE	09/25/95
CHECKED	SJV	CREATION DATE	09/21/95
APPROVED		DRAWING FILE NAME	54G-SHT6.DWG

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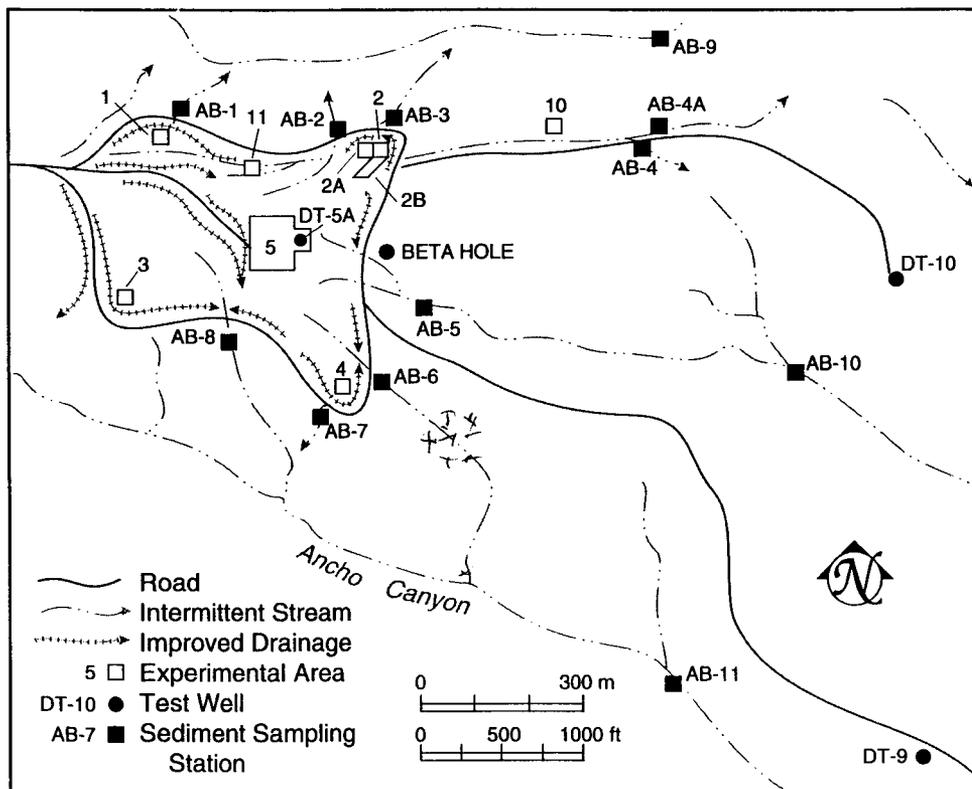
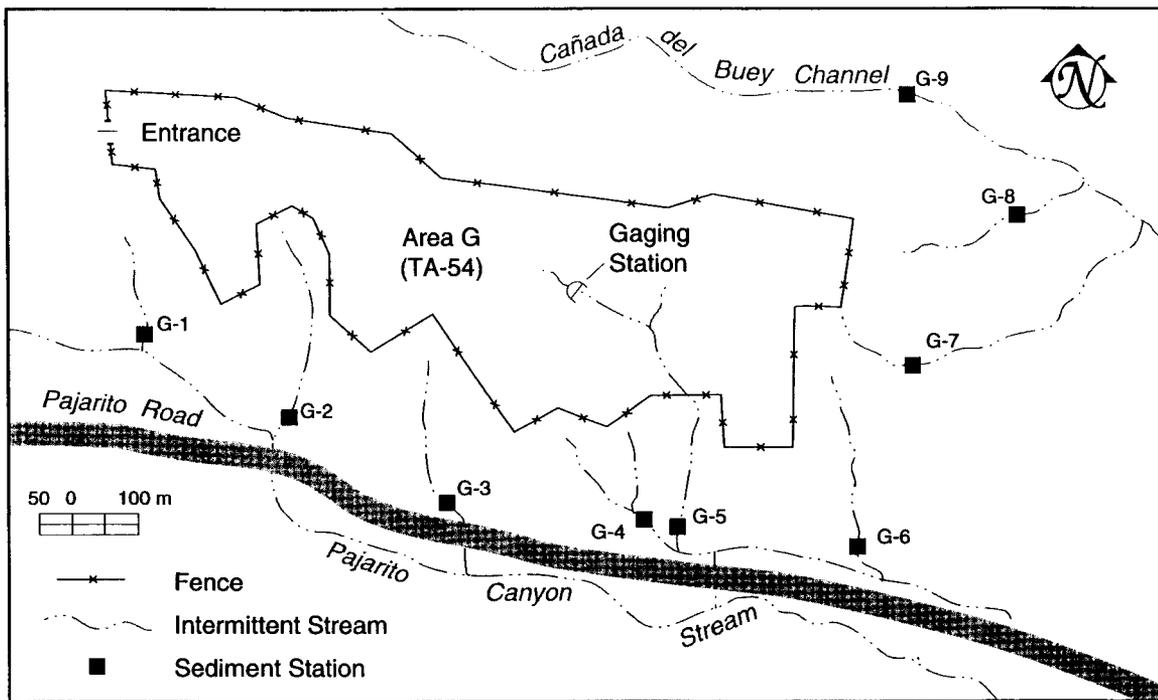
REQUESTING GROUP ESH-18  
 LAB JOB NO. 5030.05

TA-54  
 SITE DRAINAGE MAP  
 AREA G - FIRE HYDRANTS

DRAWING NUMBER  
 FIGURE 1

SHEET	6 / 6
REV	0

## 5. Surface Water, Groundwater, and Sediments



**Figure 5-5.** Sediment sampling stations at solid waste management areas.  
 a. Sampling stations at TA-54, Area G.  
 b. Sediment stations at TA-49, Area AB