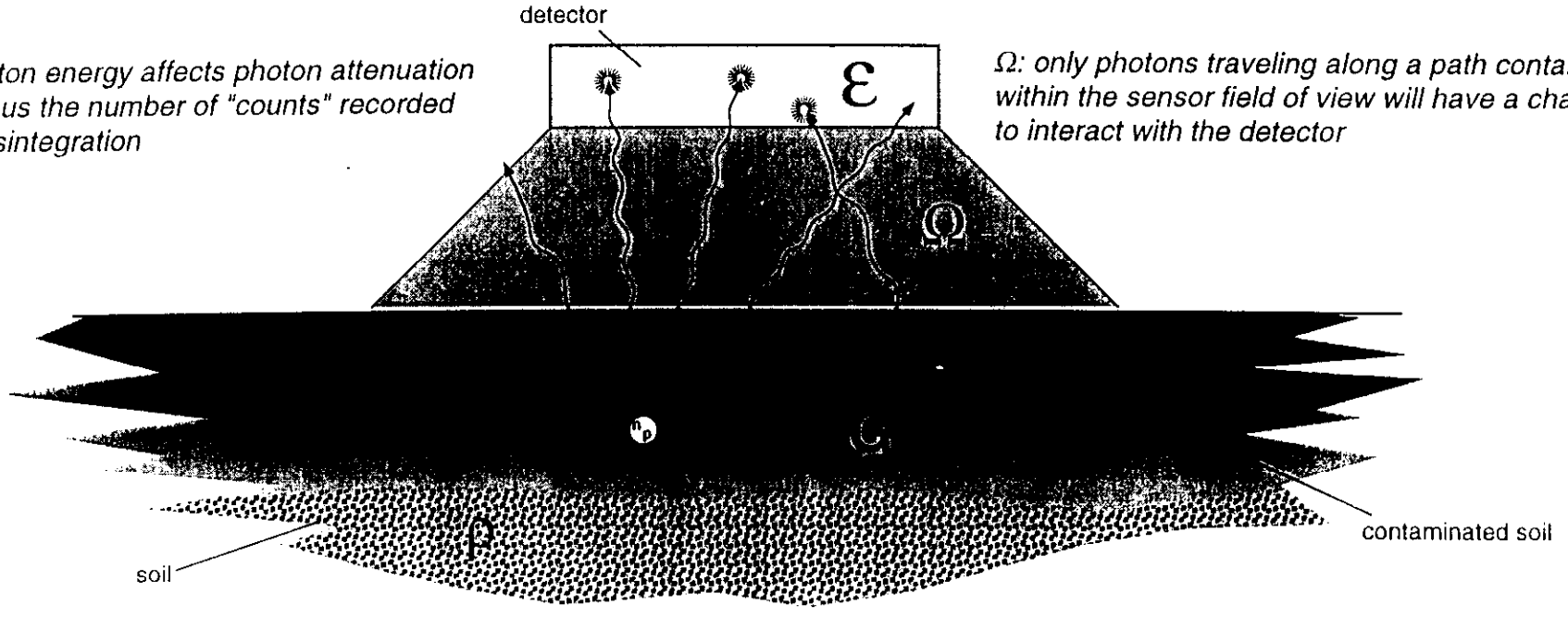
FIGURES

ε : some, but not all photon-detector interactions produce a valid "count" depending on the detector efficiency

γ: photon energy affects photon attenuation and thus the number of "counts" recorded per disintegration

Ω: only photons traveling along a path contained within the sensor field of view will have a chance to interact with the detector



ρ: soil density affects photon attenuation and thus the number of "counts" recorded per disintegration

G: the source geometry (concentration and distribution) is the parameter solved for in the conversion process; normally distribution must be assumed in order to determine concnetration

FIGURE 1

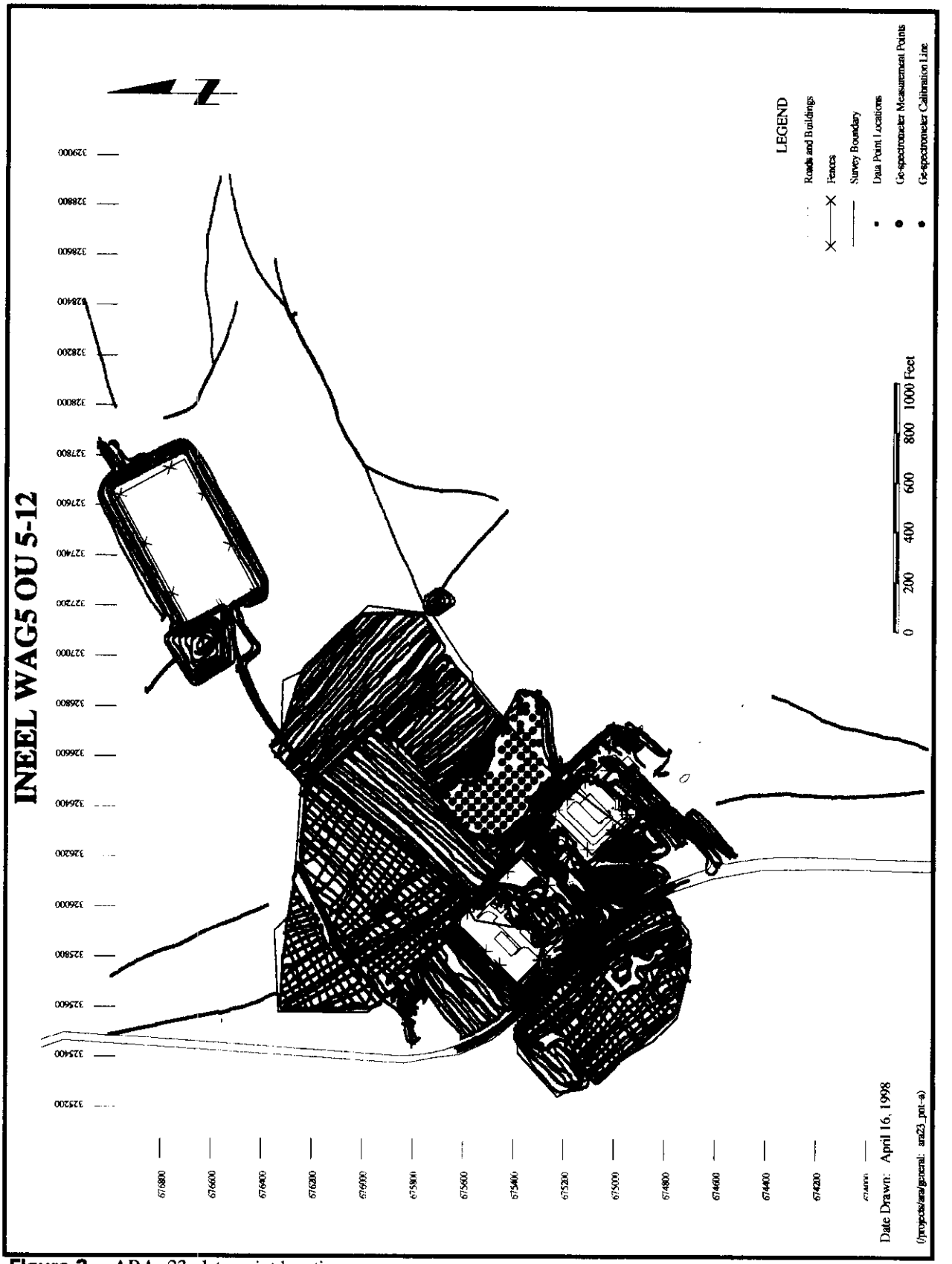


Figure 2. ARA–23, data point locations.

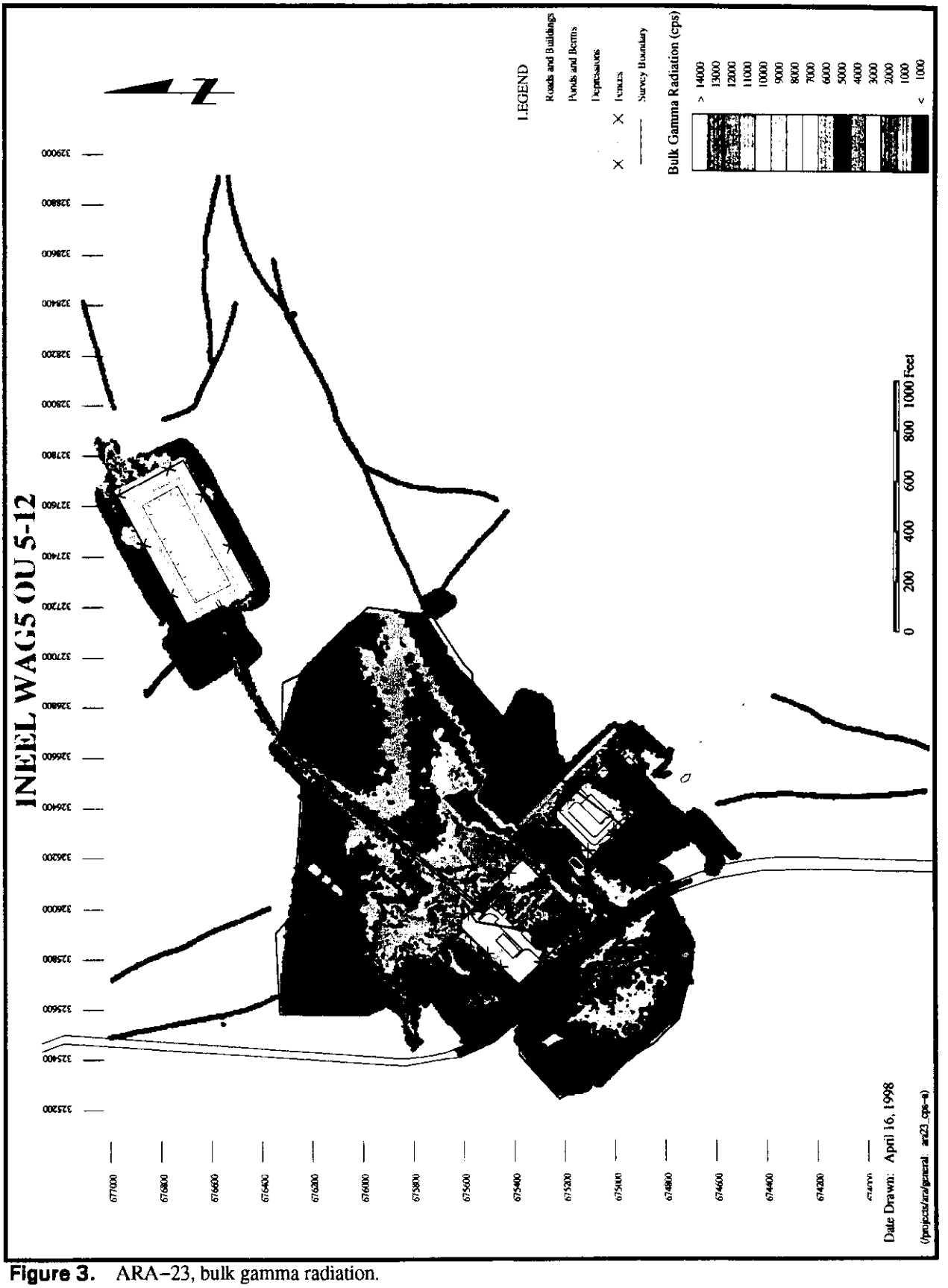


Figure 3. ARA–23, bulk gamma radiation.

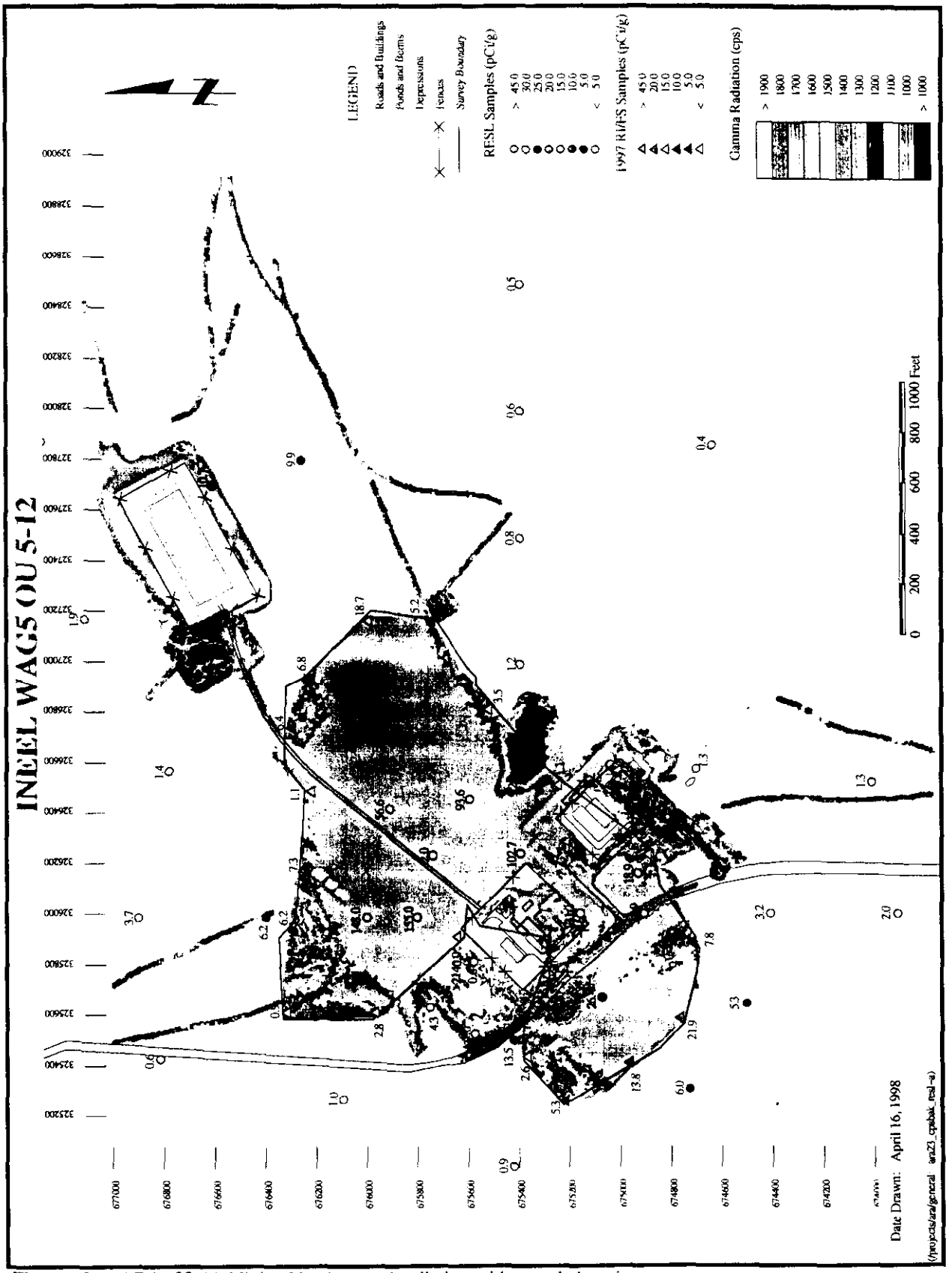


Figure 4. ARA–23, highlighted background radiation with sample locations.

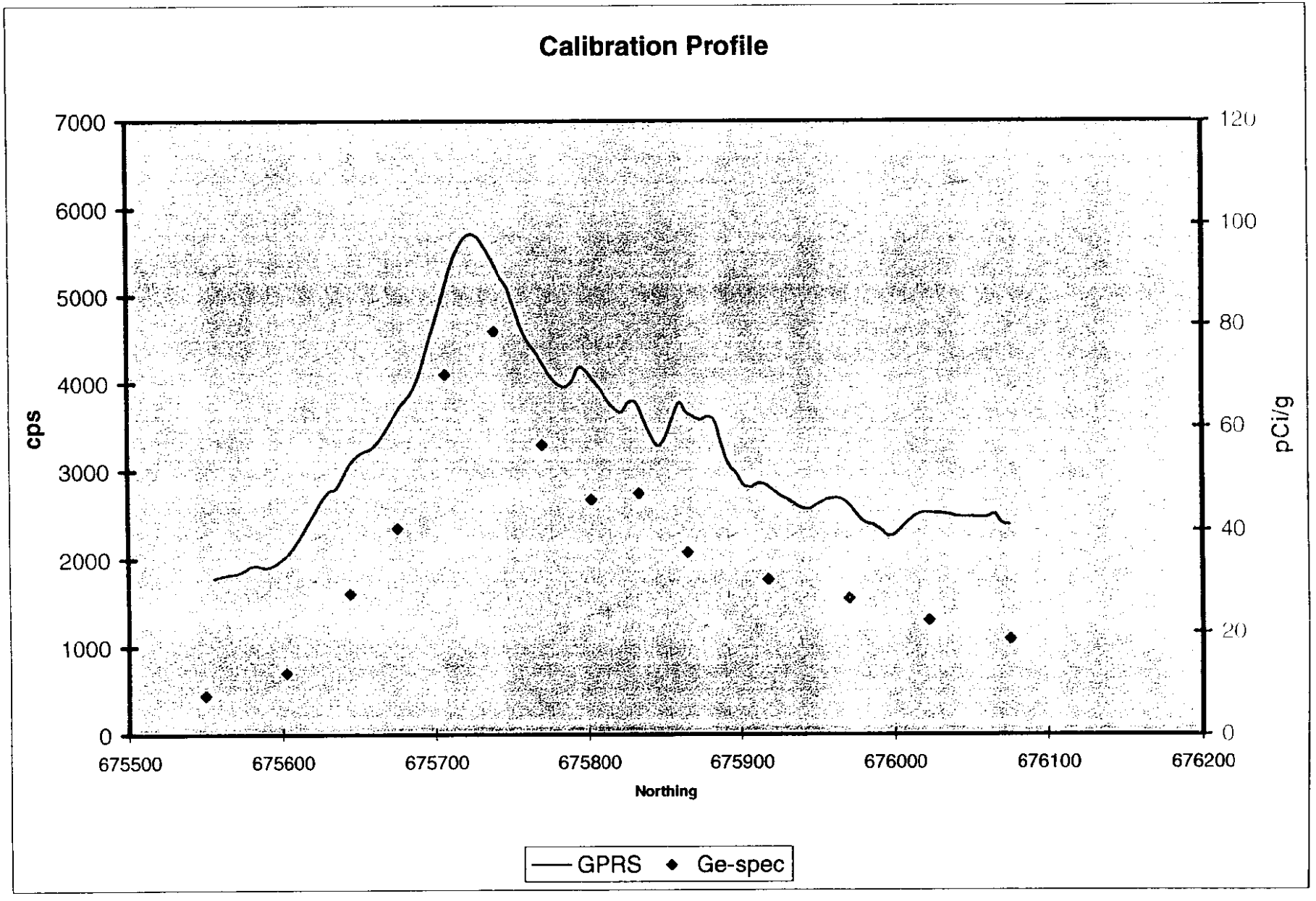

Calibration Profile
7000
6000
5000
4000
3000
2000
1000
0
cps
120
100
80
60
40
20
0
pCi/g
675500
675600
675700
675800
675900
676000
676100
676200
Northing
GPRS
Ge-spec

FIGURE 5

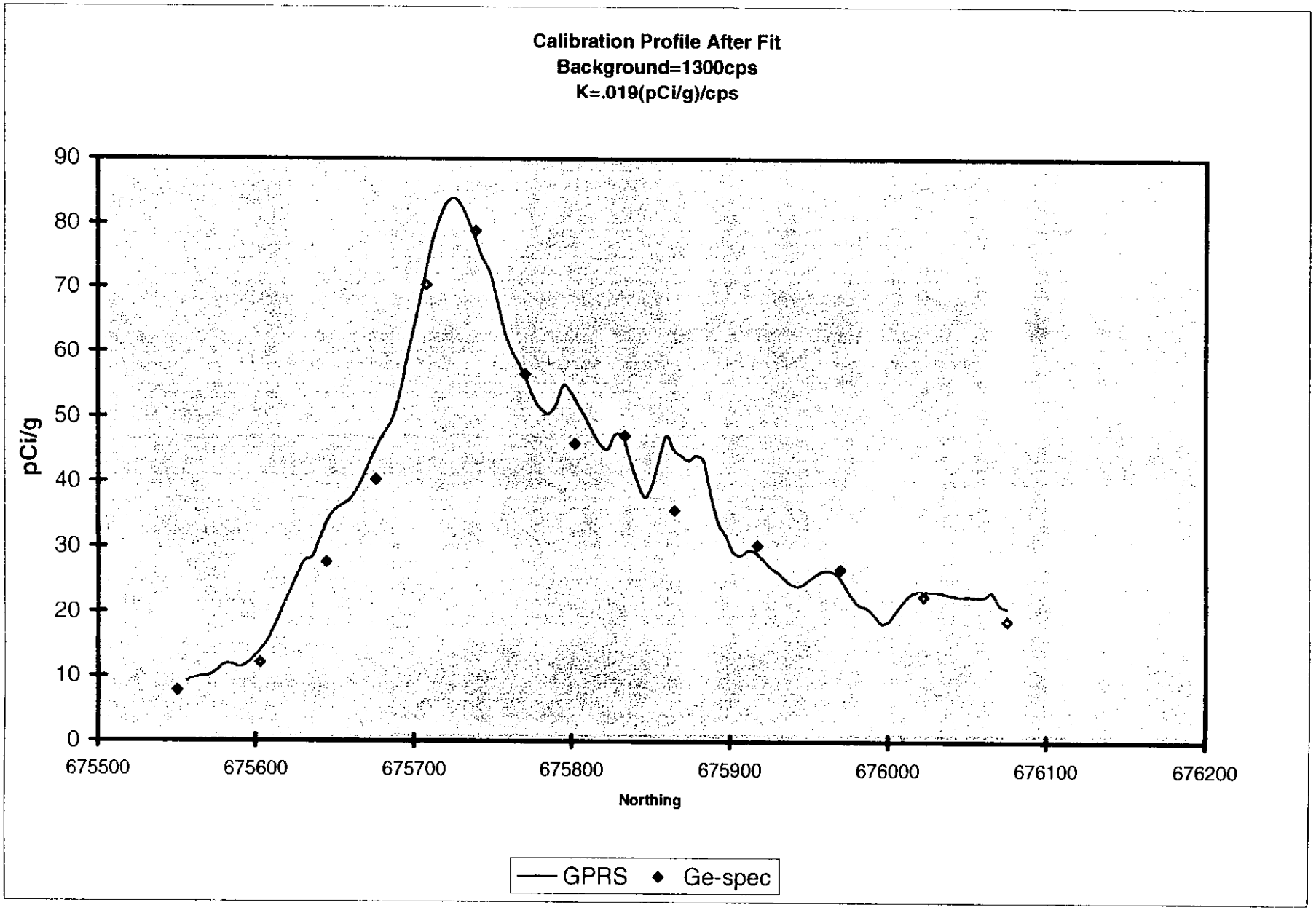

Calibration Profile After Fit
Background=1300cps
K=.019(pCi/g)/cps
pCi/g
90
80
70
60
50
40
30
20
10
0
675500
675600
675700
675800
675900
676000
676100
676200
Northing
GPRS
Ge-spec

FIGURE 6

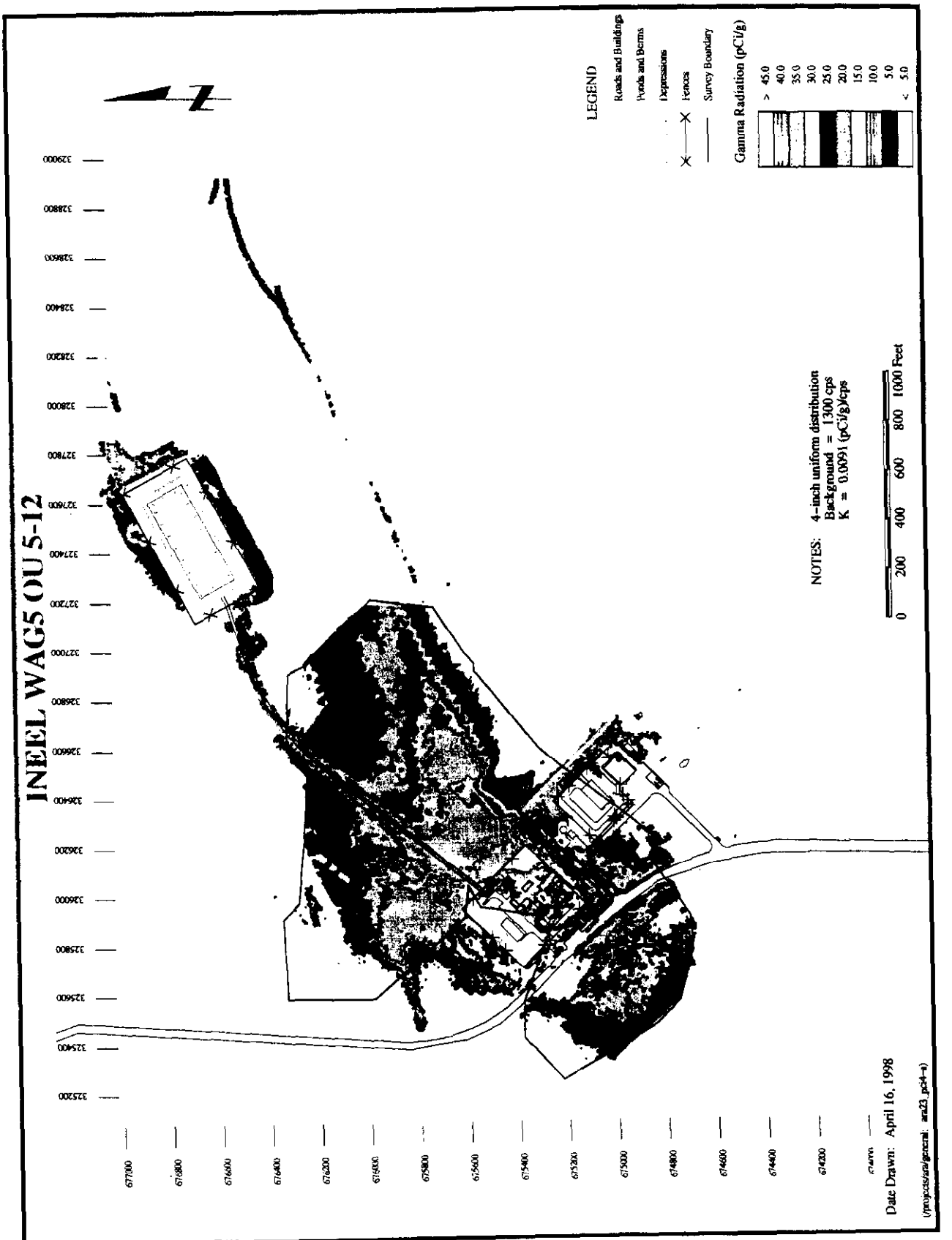


Figure 7. ARA–23, Cs–137 concentration.

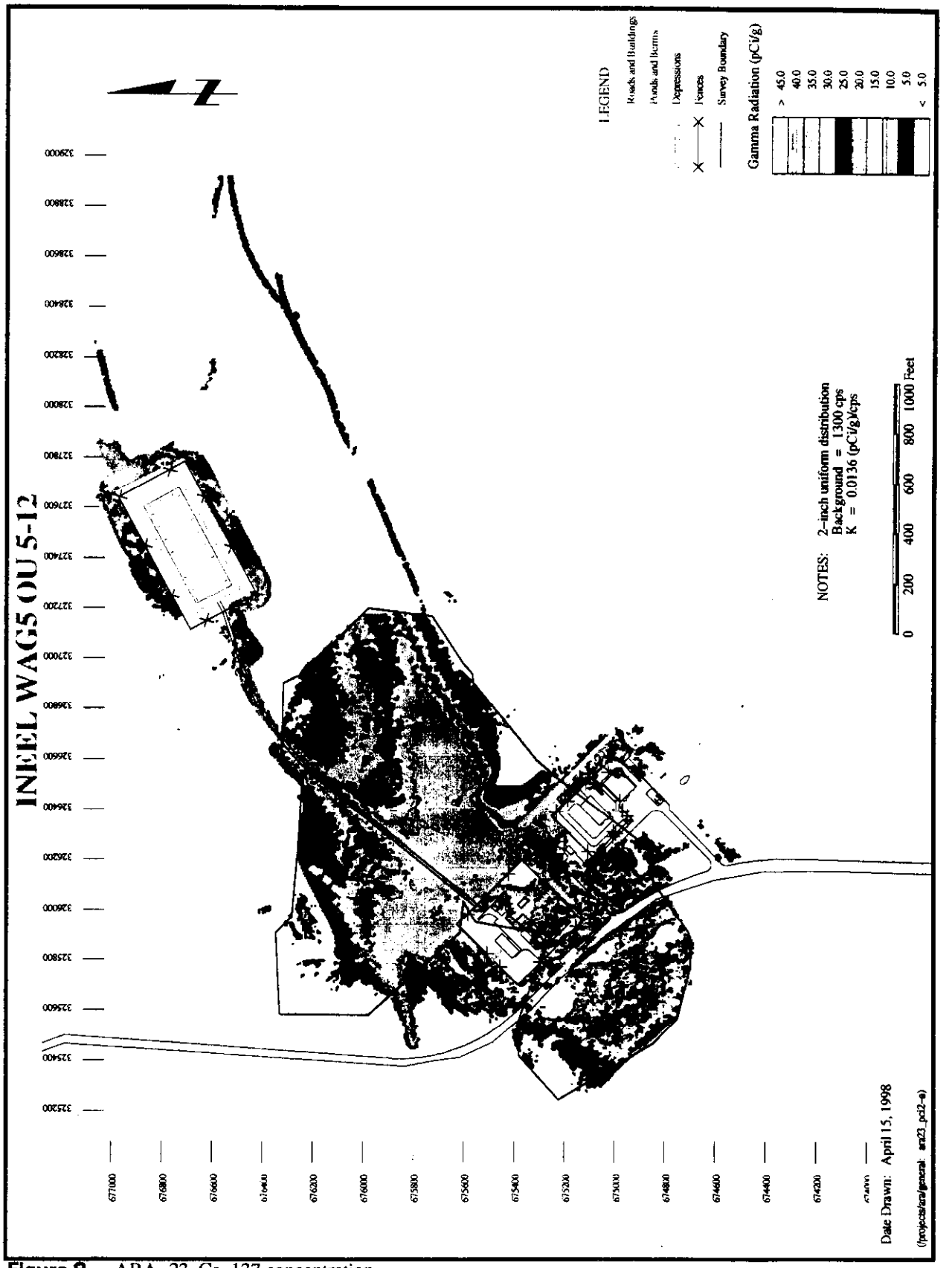


Figure 8. ARA–23, Cs–137 concentration.

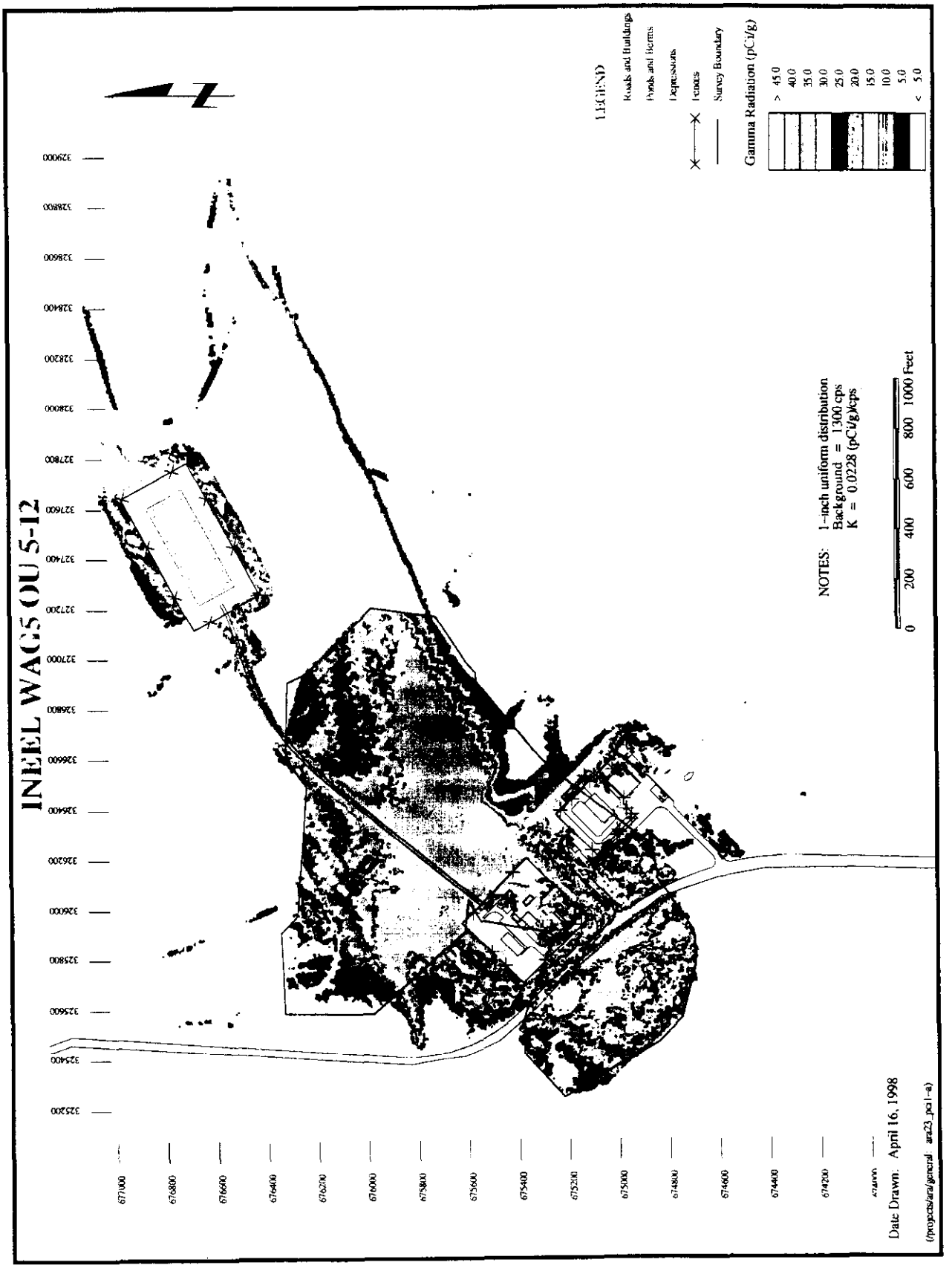


Figure 9. ARA–23, Cs–137 concentration.

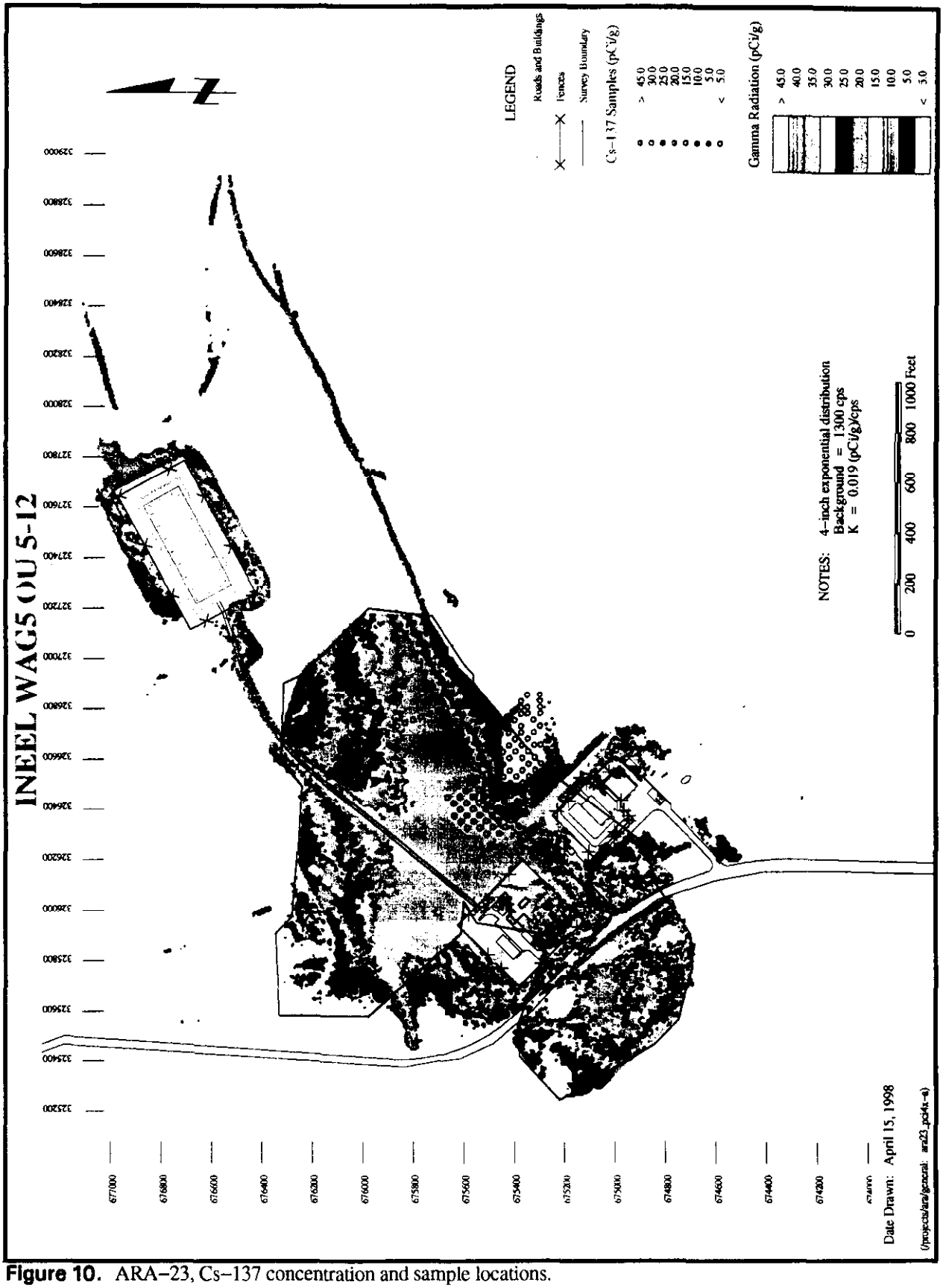


Figure 10. ARA-23, Cs-137 concentration and sample locations.

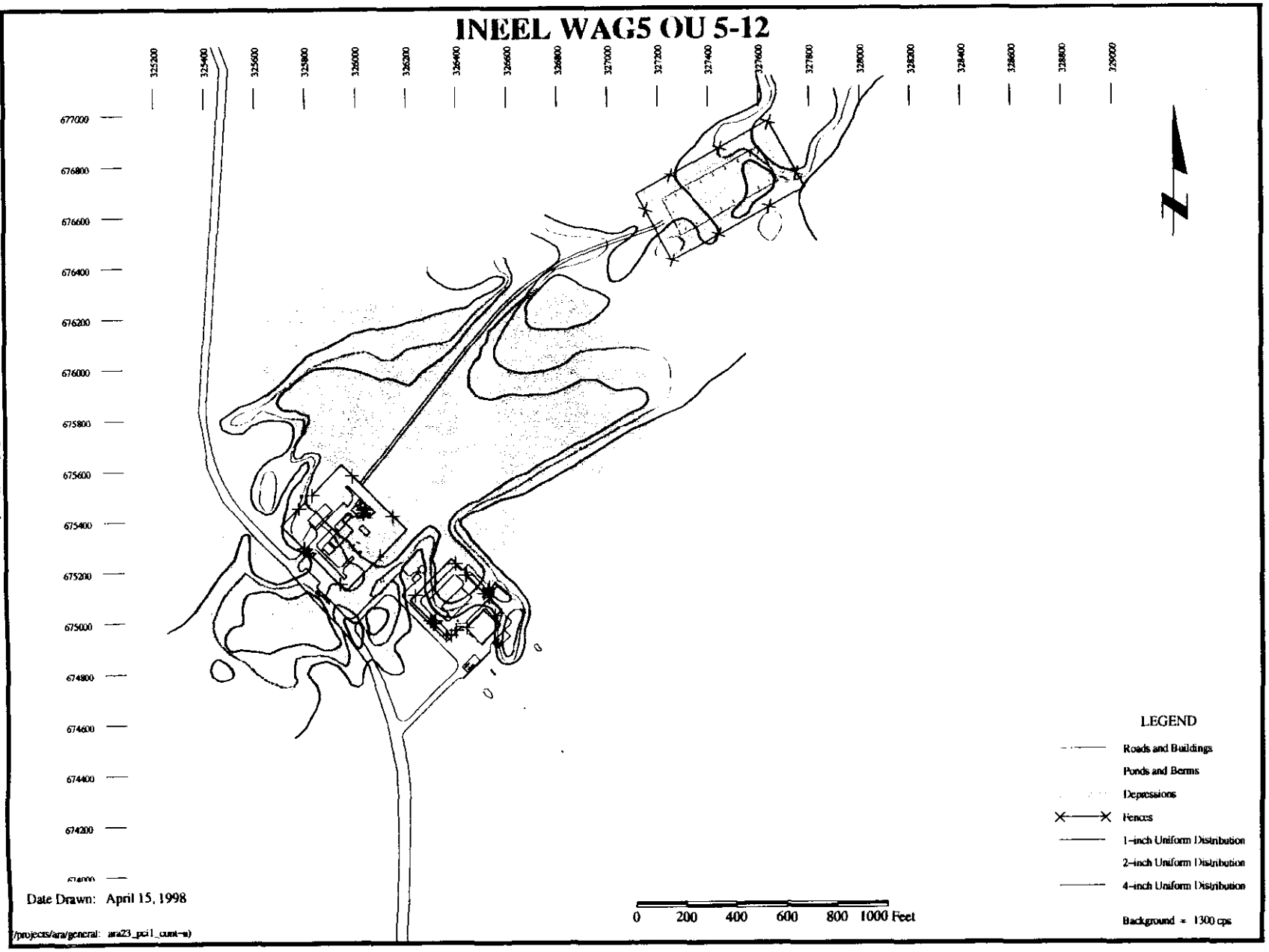


Figure 11. ARA-23, 17 pCi/g limits as function of distribution.

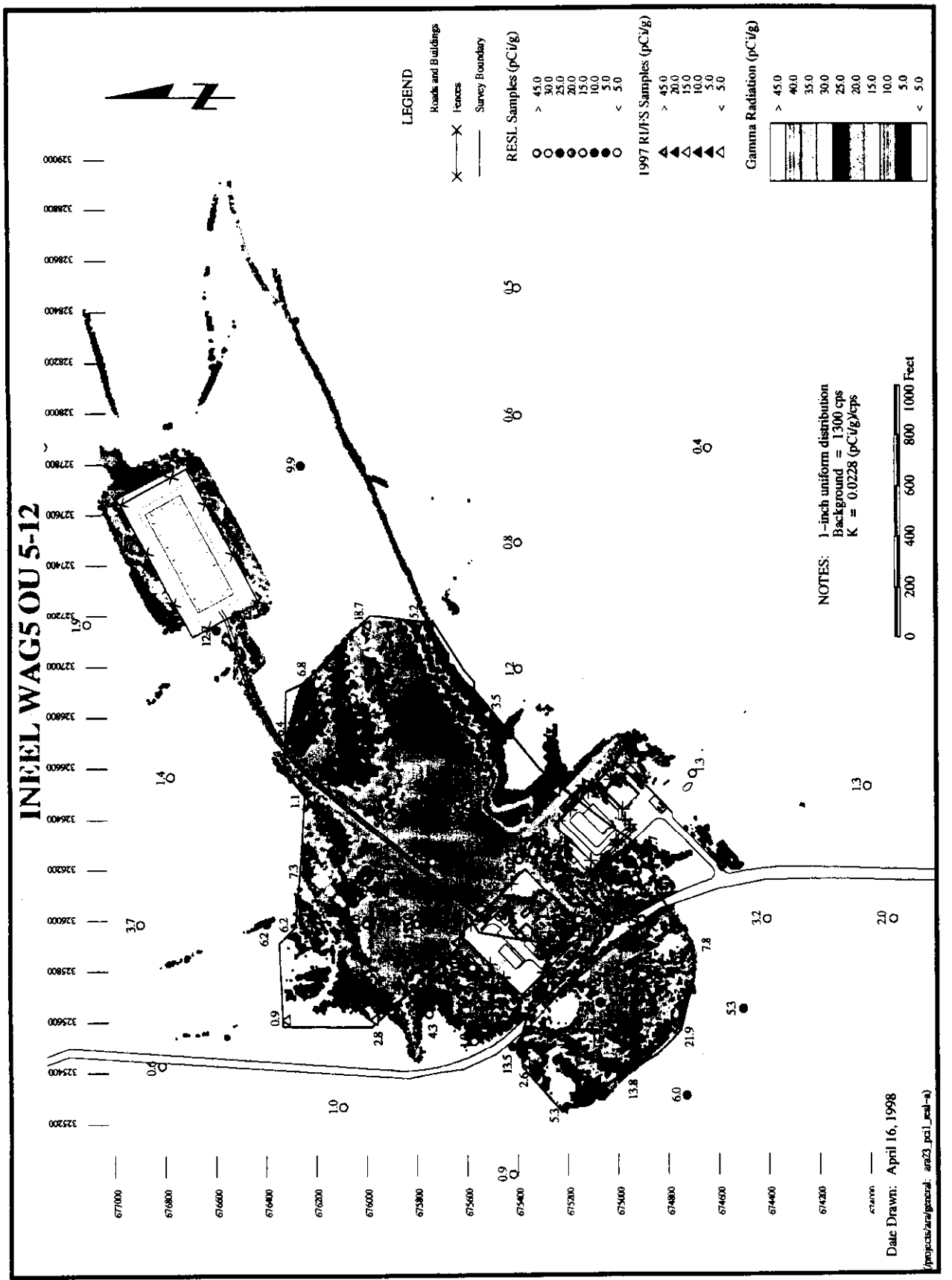


Figure 12. ARA–23, Cs–137 concentration with RESL and RI/FS sample locations.

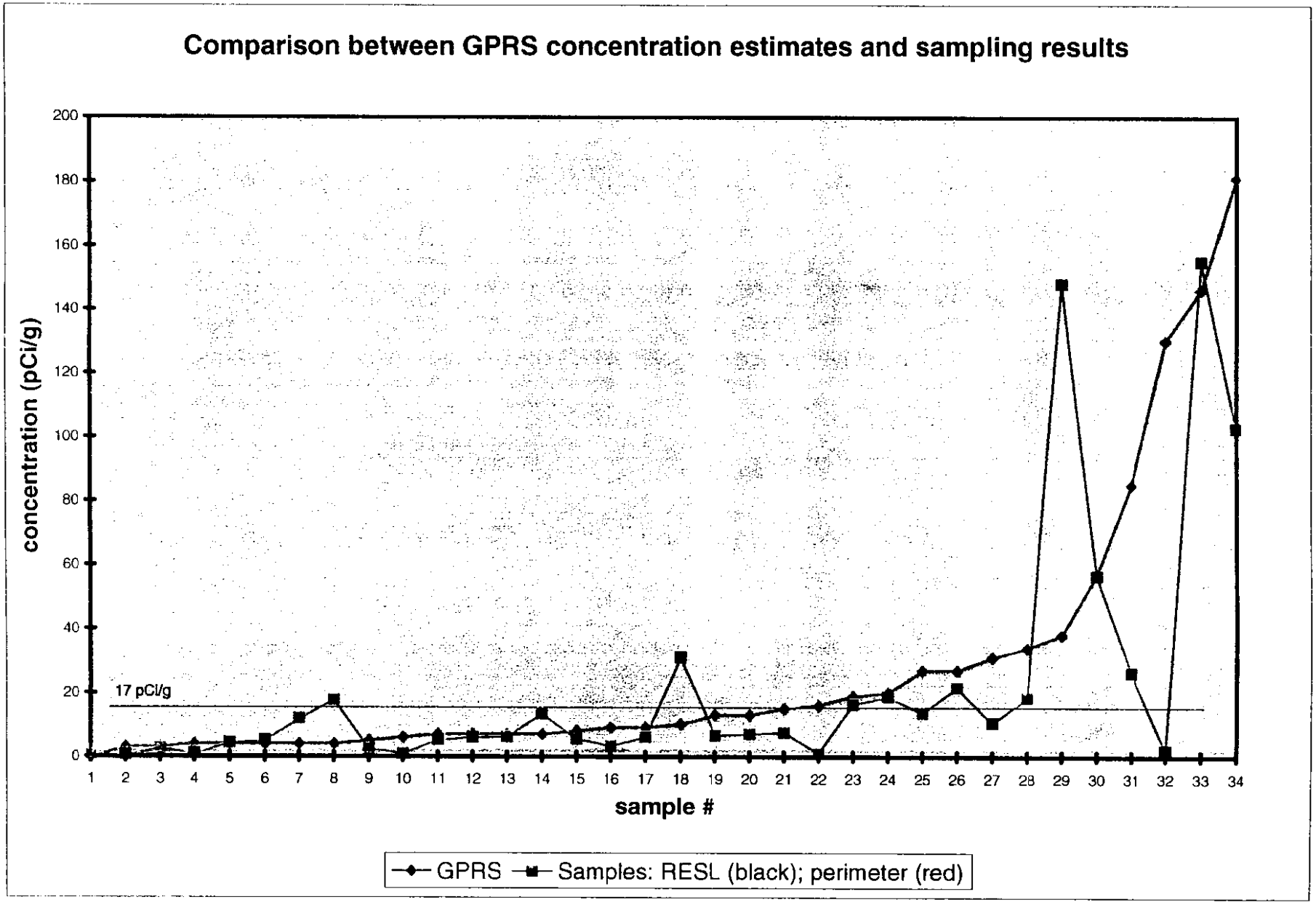

Comparison between GPRS concentration estimates and sampling results
concentration (pCi/g)
200
180
160
140
120
100
80
60
40
20
0
17 pCi/g
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34
sample #
GPRS
Samples: RESL (black); perimeter (red)

FIGURE 13

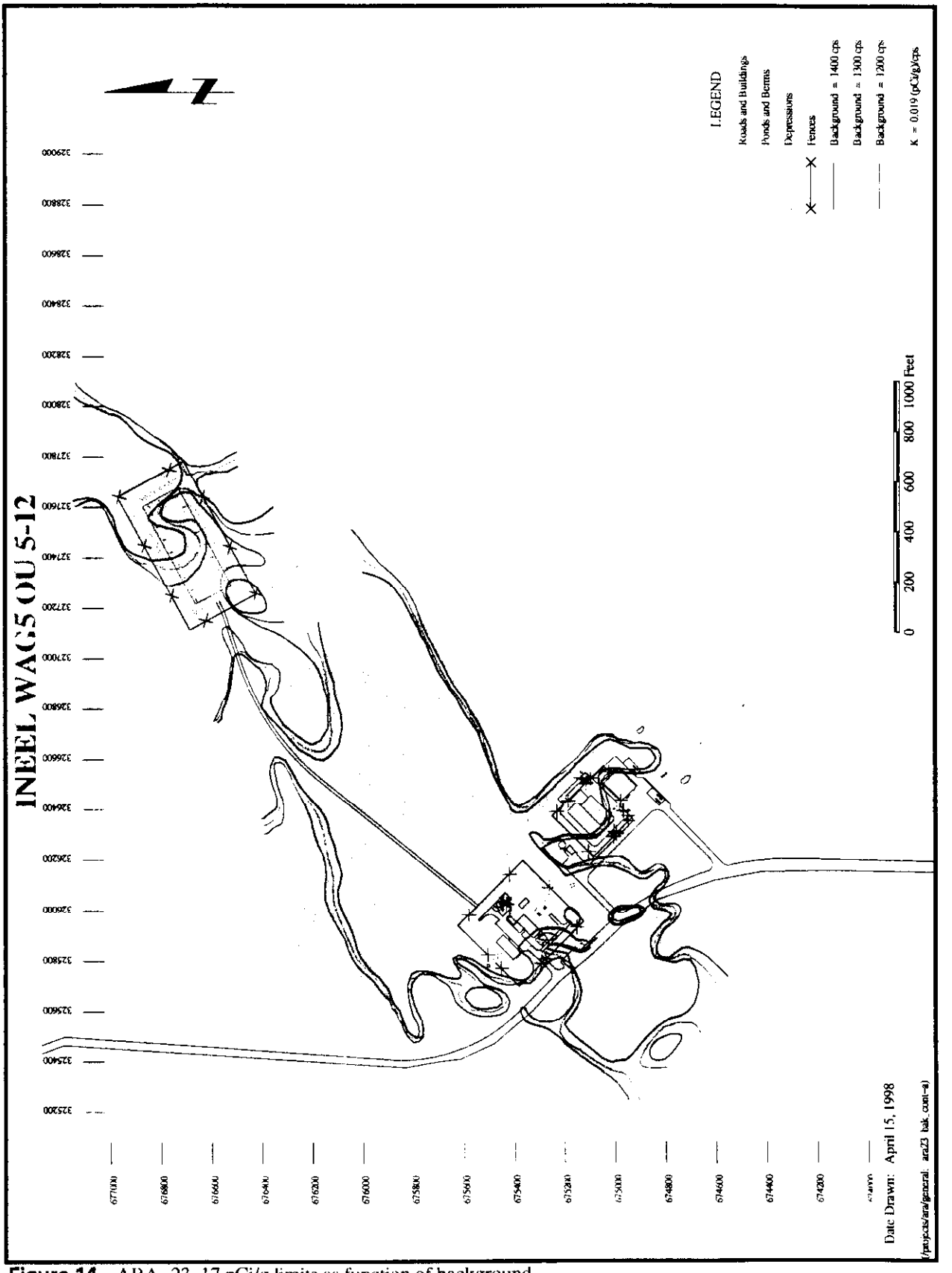


Figure 14. ARA-23, 17 pCi/g limits as function of background.

Figure 15. ARA–24, data point locations.

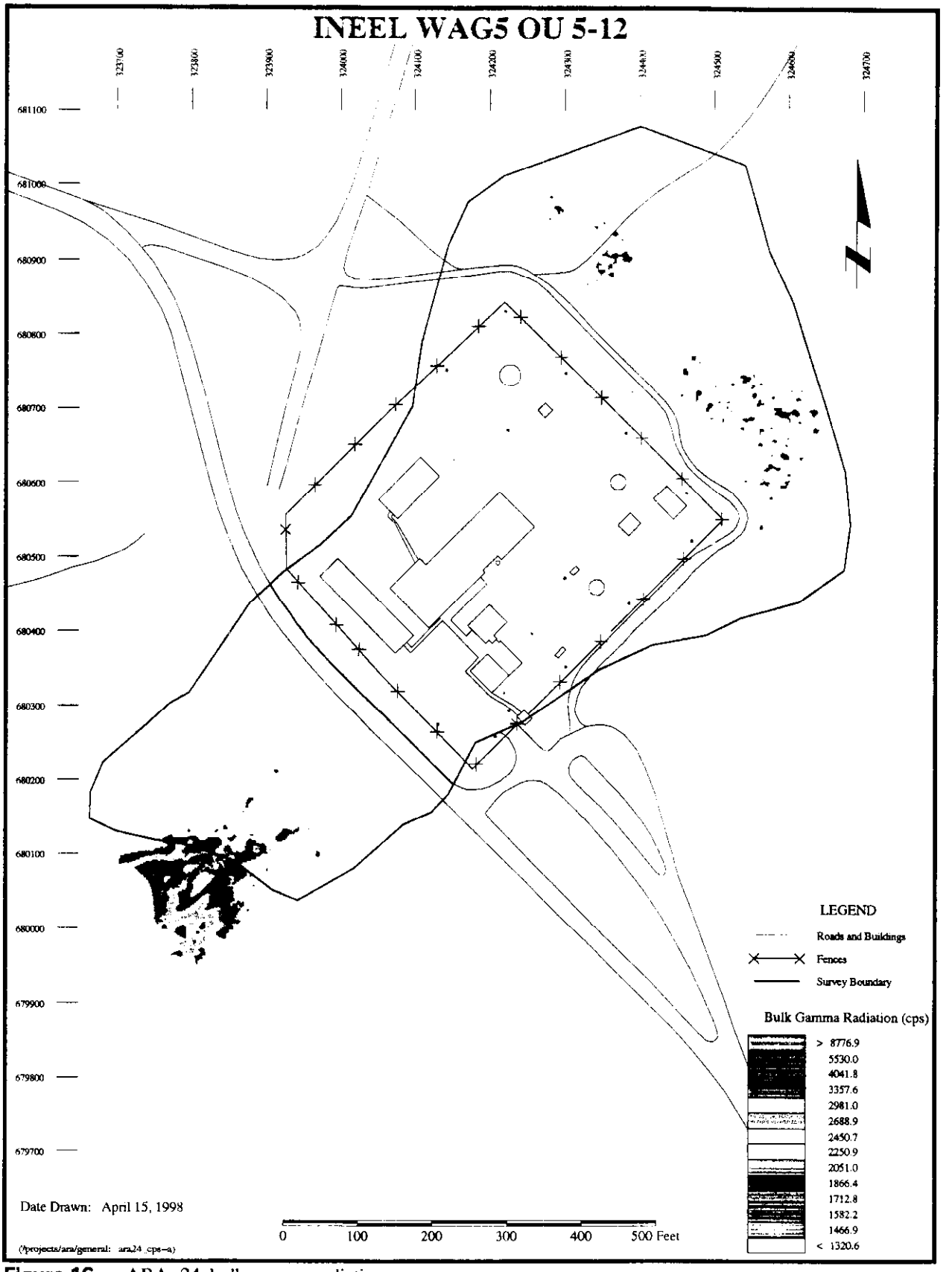


Figure 16. ARA-24, bulk gamma radiation.

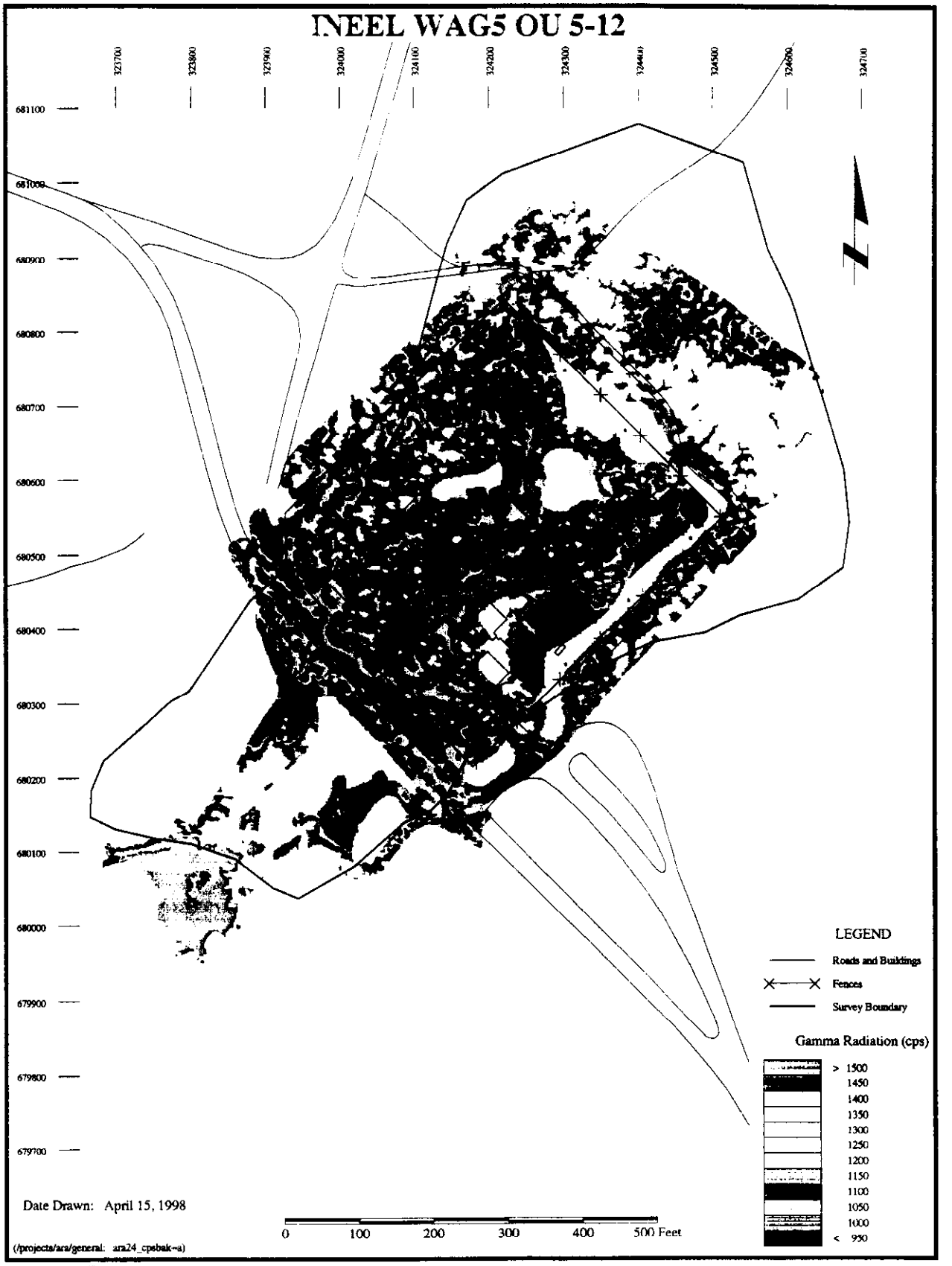


Figure 17. ARA–24, highlighted background radiation.

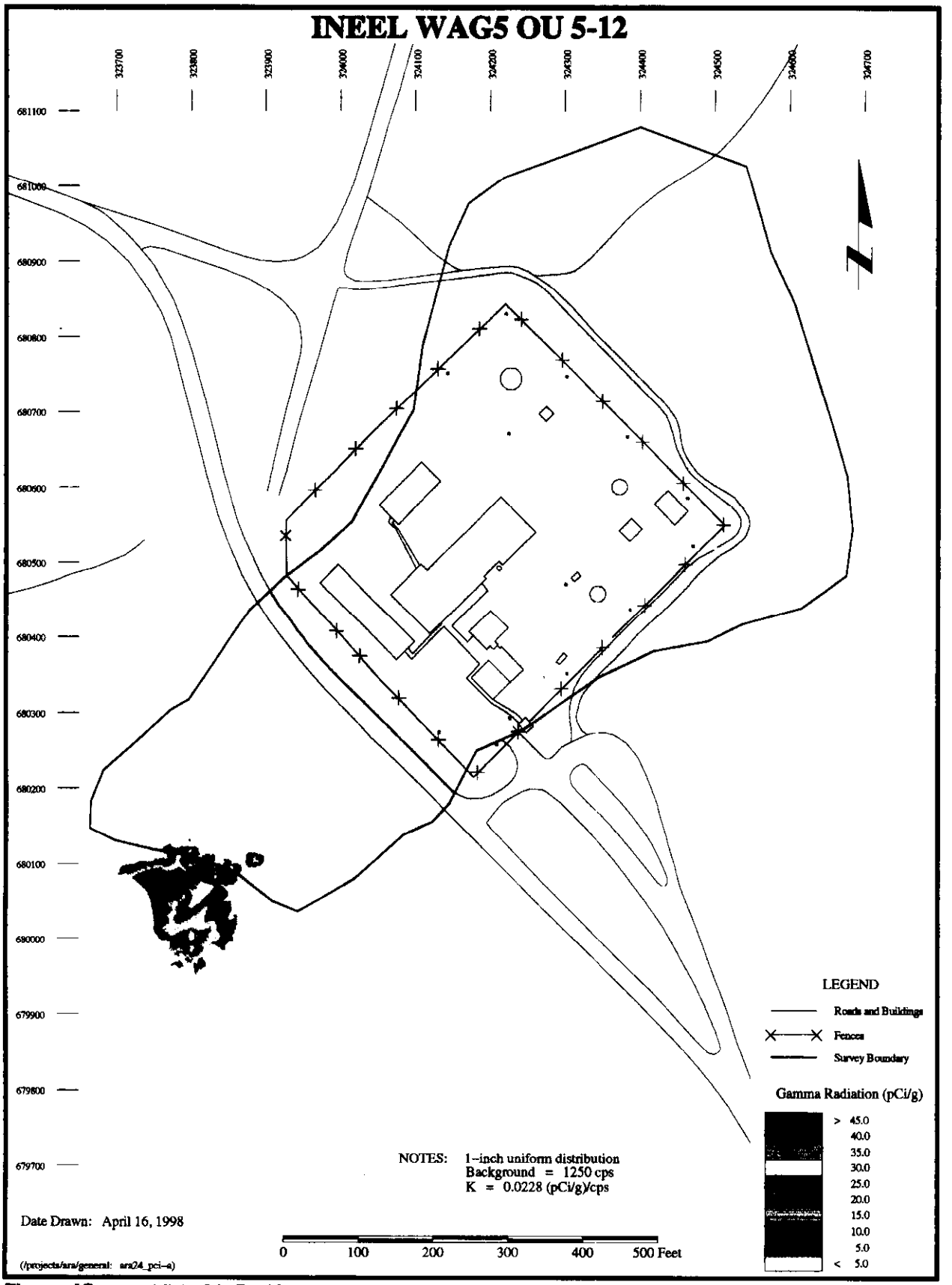


Figure 18. ARA-24, Cs-137 concentration.