
PROBABILISTIC DOSE ASSESSMENT FOR THE FORMER
BROOKS AND PERKINS SITE

PREPARED FOR AAR CORP.

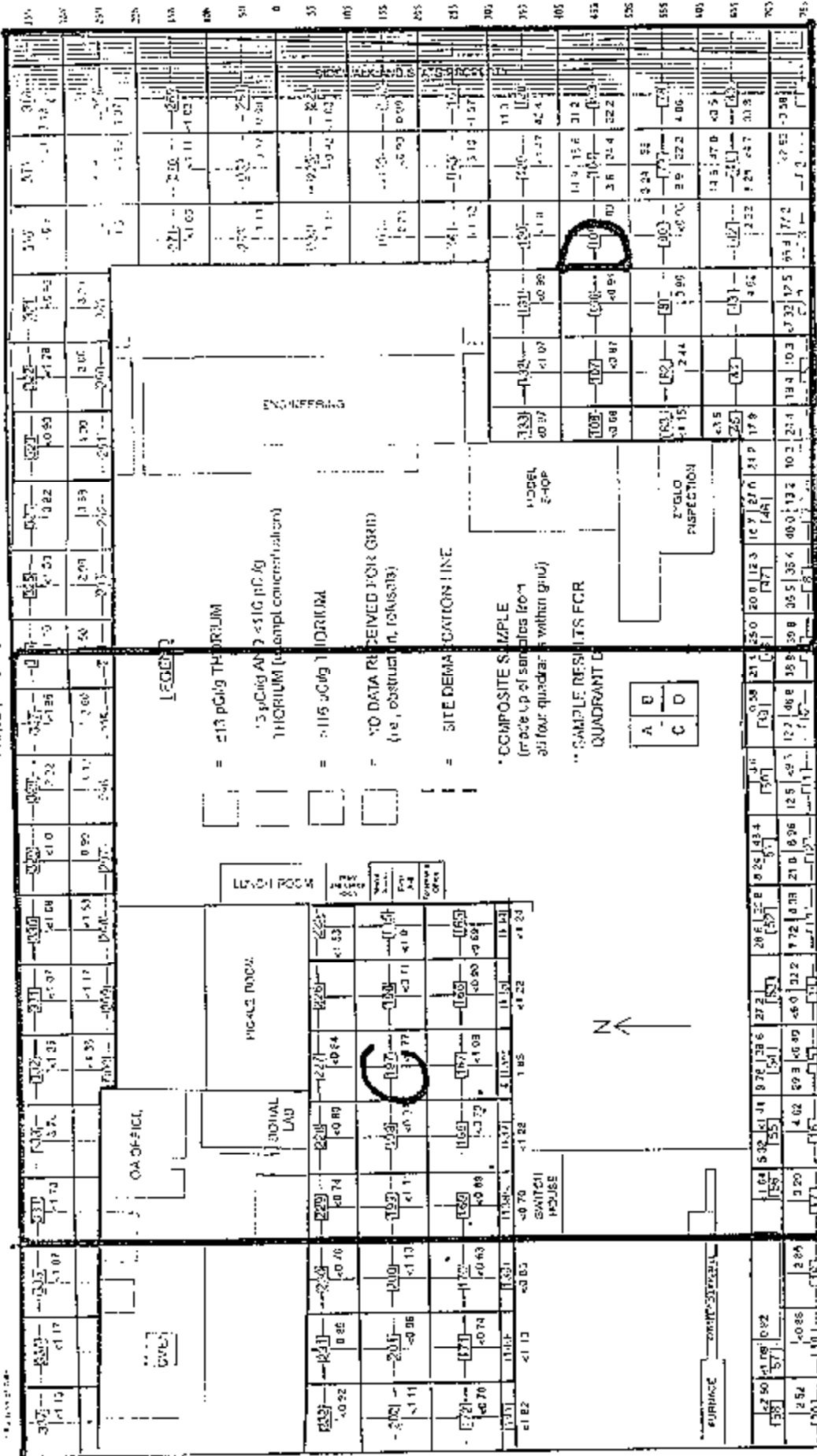
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PROBABILISTIC DOSE ASSESSMENT FOR THE FORMER
BROOKS AND PERKINS SITE

- EASTERN PROPERTY
 - INCLUDES FACTORY BUILDINGS
 - PARKING LOT
 - APPROXIMATELY 9 ACRES
- WESTERN PROPERTY
 - DENSELY VEGETATED
 - APPROXIMATELY 1.5 ACRES

0.4 METER INCREMENT SOIL SAMPLE RESULTS - TOTAL THOR UM (pCi/g)
 GRID/SQUADRANTS (S 13 pCi/g)



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PROBABILISTIC DOSE ASSESSMENT FOR THE FORMER
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AREAS OF CONSIDERATION

- EASTERN PROPERTY
 - AREA A 9350 M²
 - AREA B 9350 M²
 - AREA C 9350 M²
 - AREA D 8800 M²

- WESTERN PROPERTY
 - SINGLE AREA 6175 M²

PROBABILISTIC DOSE ASSESSMENT FOR THE FORMER
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SCENARIOS & ASSUMPTIONS

Comparison of Resident Farmer and Industrial Use Scenarios			
Pathway/Parameter	Unit	Resident Farmer¹	Industrial Worker²
External gamma		Yes	Yes
Inhalation		Yes	Yes
Plant Ingestion		Yes	No
Milk and Meat Ingestion		Yes	No
Fish Ingestion		Yes	No
Drinking Water		No ³	No
Inadvertent Soil Ingestion		Yes	Yes
Inhalation Rate	m ³ /year	8400 ⁴	12,264 ⁵
Indoor Time Fraction		0.66 ⁵	0.17 ⁶
Outdoor Time Fraction		0.12 ⁵	0.06 ⁶

¹All default distributions provided by RESRAD 6.0 were used except indoor time fraction value of 0.66 which is the default value from NUREG-5512, Volume 3.

²All default distributions provided by RESRAD 6.0 were used except the inhalation rate of 12,264m³/yr, the NUREG-5512, Volume 3 default, and the indoor and outdoor time fractions of 0.17 and 0.06, respectively which are the RESRAD defaults for the industrial worker scenario.

³This pathway was excluded from our analysis based on the site hydrogeology, but is normally included in the resident farmer scenario.

⁴ This value is the mode of Default Distribution (triangular with min and max of 4380 and 13,100, respectively) from RESRAD 6.0

⁵Default value from NUREG-5512, Volume 3

⁶Default deterministic value from RESRAD 6.0 for the industrial worker scenario.

Note: The time fractions for the industrial scenario equate to approximately 2015 hours/year on site.

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MEAN TOTAL THORIUM CONCENTRATION
(EXCLUDING ^{232}Th AND ^{228}Th BACKGROUND)

- AREA A 2.7 PICOCURIES PER GRAM (AREA A
SELECTED BECAUSE IT HAS THE HIGHEST MEAN
THORIUM CONCENTRATION)
- WESTERN AREA 12.4 PICOCURIES PER GRAM

PROBABILISTIC DOSE ASSESSMENT FOR THE FORMER
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RESRAD RESULTS

EASTERN PROPERTY – RESIDENT FARMER

- MEAN PEAK DOSE, ALL PATHWAYS 7.47 MREM/YR
- STANDARD DEVIATION 2.77 MREM/YR
- 95TH PERCENTILE PEAK DOSE 12.4 MREM/YR

WESTERN PROPERTY · INDUSTRIAL WORKER

- MEAN PEAK DOSE, ALL PATHWAYS 8.62 MREM/YR
- STANDARD DEVIATION 6.98 MREM/YR
- 95TH PERCENTILE PEAK DOSE 23.5 MREM/YR

PROBABILISTIC DOSE ASSESSMENT FOR THE FORMER
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RESRAD RESULTS

WESTERN PROPERTY – RESIDENT FARMER

- MEAN PEAK DOSE, ALL PATHWAYS 34.1 MREM/YR
- STANDARD DEVIATION 12.7 MREM/YR
- 95TH PERCENTILE PEAK DOSE 56.7 MREM/YR

PROBABILISTIC DOSE ASSESSMENT FOR THE FORMER
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CONCLUSIONS

- EASTERN PROPERTY
 - FULFILLS CONDITIONS FOR UNRESTRICTED RELEASE

- WESTERN PROPERTY
 - FULFILLS CONDITIONS FOR RESTRICTED RELEASE