sectors with the most limiting dispersion factors at an 8 kilometer (5 mile) distance. A site area land use census indicated no residences within 8 kilometers (5 miles) of the center of the EREF facilities. Section 3.1.2, Local and Regional Setting, indicates that the closest residence as measured from the edge of the EREF facility footprint is approximately 7.7 km (4.8 mi) to the east.

The annual average atmospheric dispersion factors used in the radiological impacts assessment were calculated as described in Section 4.6, Air Quality Impacts and are provided in Table 4.6-12, Sector Average Concentration, Depleted, Decayed, χ/Q Values (sec/m^3) for Special Receptors are from Table 4.6-14, Sector Average D/Q Values (1/m^2) for Special Receptors. The meteorological data was taken from the Idaho National Engineering Laboratory (INEL) reservation which is adjacent to the EREF and includes meteorological data covering the years from 2003 through 2007.

Three groups of individuals (members of the public) or exposure scenarios were evaluated for both potential and real receptors located at or beyond the site boundary. For the first group, the dose impact to the nearest (and highest potentially impacted) residence (assumed at 8 km (5 mi) NE for deposition pathways and north for inhalation and cloud exposures) was evaluated for all exposure pathways (inhalation and plume immersion, direct dose from ground plane deposition, and ingestion of food products which include fresh and stored vegetables, milk and meat postulated to be grown or raised at this location). The analysis included dose equivalent assessments for all four age groups (adults, teens, children, and infants) for these pathways. The occupancy time was assumed to be continuous for a full year, along with a conservative residential shielding factor of 1.0 for direct radiation exposures. This location provides for an assessment of doses to real members of the public.

The second group of individuals (critical populations) are those associated with local businesses (temporary occupancy of potato storage facilities) situated near the plant site in the South (S) and Southwest (SW) sectors. For this group, the location of maximum potential impact was determined. The location, which bounds both of the identified potato storage facilities, is at 4.0 km (2.5 miles) in the SW sector. This is the location for the most limiting dispersion for a non-EREF worker (i.e., local business). At this distance, the direct dose contribution from fixed radiation sources, i.e., all outdoor UF_6 cylinder storage pads, is not a significant contributor to the total dose when compared to the gaseous effluent pathways. Since these are outdoor businesses, the annual occupancy is taken as 2,000 hours, along with a residential shielding factor of 1.0 (i.e., no shielding credit). In addition, only the inhalation and plume immersion pathways along with direct dose equivalent from ground plane deposition are applied (no food product consumption - gardens or animals - is associated with the performance of the business activity). The age group of interest, is taken as adults (>17 years) as the only significant age group assumed to spend substantial time at any work location.

The third group of postulated individuals (critical populations) is associated with transient populations who come right up to the site boundary, and are assumed to stay for the equivalent of a standard work year (2,000 hours). This high occupancy time maximizes the dose impacts for activity on land bordering the site boundary. This also provides an estimate for on-site dose equivalents (EREF occupational dose equivalents) for that portion of the EREF staff whose jobs take them into the general area of the plant property away from the buildings. As with the group of local area businesses noted above, the residential shielding factor is set at 1.0 (no shielding credit) since any activity is assumed to take place outdoors. In addition, only the gaseous release exposure pathways of inhalation and plume immersion along with direct dose equivalent from ground plane deposition are applied (no food product ingestion pathways are expected to exist along the site boundary line). The total impact for the site boundary also includes direct radiation from the Full Feed, Full Tails, Full Product, and Empty Cylinder Storage Pads on-site.