PMBeICOL PEmails

From: Spink, Thomas E [tespink@tva.gov]
Sent: Wednesday, August 06, 2008 4:56 PM
To: Mallecia Hood
Cc: Sterdis, Andrea Lynn; Neil Haggerty
Subject: Courtesy email copy of TVA's Response to Environmental Report - LTR 30 - RADIOLOGICAL/FUEL CYCLE/WASTE SYSTEMS AND ENVIRONMENTAL IMPACTS OF ACCIDENTS
Attachments: ER Ltr 30 - Rad_Acc_final_080508.pdf

Mallecia:

I have enclosed a pdf copy of our response to RAI # 2.7.4.2-1, 5.4.3-1, 2.7-1, 7.2-1 and 7.2-2 related to Radiological/ Fuel Cycle/Waste Systems with this email as a courtesy. As always, the official submittal has been submitted to the Document Control Desk via paper copy using Federal Express services. The paper copy should arrive on August 7, 2008.

If you have any questions, please do not hesitate to call me.

Thomas E. Spink
Licensing Project Manager
Nuclear Generation Development
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423-751-7062 Fax: (423)-751-6509

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August 6, 2008

10 CFR 52.80

Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

In the Matter of	)	Docket Numbers	52-014 and 52-015
Tennessee Valley Authority	)		

BELLEFONTE COMBINED LICENSE APPLICATION – RESPONSE TO ENVIRONMENTAL REPORT REQUEST FOR ADDITIONAL INFORMATION – RADIOLOGICAL/FUEL CYCLE/WASTE SYSTEMS AND ENVIRONMENTAL IMPACTS OF ACCIDENTS

Reference:

Letter from Mallecia Hood (NRC) to Ashok S. Bhatnaker (TVA), Request for Additional Information Regarding the Environmental Review of the Combined License Application for Bellefonte Nuclear Plant, Units 3 and 4, dated July 11, 2008 [ML081840493].

This letter provides the Tennessee Valley Authority's (TVA) response to five of the Nuclear Regulatory Commission's (NRC) request for additional information (RAI) items included in the reference letter.

The enclosure to this letter provides a response to two of the NRC RAIs related to Radiological/ Fuel Cycle/Waste Systems and three of the NRC RAIs related to Environmental Impacts of Accidents, as well as identifying any associated changes that will be made in a future revision of the BLN application. The status of the six RAIs from these two subject areas is also provided in the enclosure.

If you should have any questions, please contact Thomas Spink at 1101 Market Street, LP5A, Chattanooga, Tennessee 37402-2801, by telephone at (423) 751-7062, or via email at tespink@tva.gov.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on this 6th day of AUG, 2008.

Jack A. Bailey
Vice President, Nuclear Generation Development

Enclosure and Attachments:

Enclosure:

Response to Environmental Report Requests for Additional Information Related to Radiological/Fuel Cycle/Waste Systems and Environmental Impacts of Accidents

Attachments:

2.7-1A Atmospheric Dispersion Values for Routine Operations Based on Revision 16 of the AP1000 DCD (7 pages: Tables 1-1 through 1-17)

2.7-1B Atmospheric Dispersion Values for Routine Operations Based on Revision 15 of the AP1000 DCD (7 pages: Tables 1-1 through 1-17)

cc (Enclosure and Attachments):
M. A. Hood, NRC/HQ

cc (w/o Enclosure and Attachments):
S.P. Frantz, Morgan Lewis
R.C. Grumbir, NuStart
P.S. Hastings, NuStart
R.H. Kitchen, PGN
M.C. Kray, NuStart
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RESPONSE TO ENVIRONMENTAL REPORT REQUESTS FOR ADDITIONAL INFORMATION

RADIOLOGICAL / FUEL CYCLE / WASTE SYSTEMS AND ENVIRONMENTAL IMPACTS OF ACCIDENTS

This enclosure provides the status of the three requests for additional information (RAI) related to Radiological/Fuel Cycle/Waste Systems and the three requests for additional information (RAI) related to Environmental Impacts of Accidents and provides the BLN responses to five of these requests.

Status of Requests for Additional Information Related to Radiological/Fuel Cycle/Waste Systems

RAI Number	Date of TVA Response
• 2.7.4.2-1	This letter – see following pages.
• 5.4.1-1	Future – expected submittal by August 11, 2008
• 5.4.3-1	This letter – see following pages.

Status of Requests for Additional Information Related to Environmental Impacts of Accidents

RAI Number	Date of TVA Response
• 2.7-1	This letter – see following pages.
• 7.2-1	This letter – see following pages.
• 7.2-2	This letter – see following pages.

NRC Review of the BLN Environmental Report

NRC Environmental Category: RADIOLOGICAL/FUEL CYCLE/WASTE SYSTEMS

NRC RAI NUMBER: 2.7.4.2-1

(a) Provide a completed version of ER Table 2.7-119.

(b) Provide revisions of the normal atmospheric dispersion (χ/Q) calculations and incorporate the results into Table 2.7-119 so that it can be reconciled with FSAR Figure 2.1-206.

BLN RESPONSE:

As noted during the BLN Environmental Report (ER) audit, Table 2.7-119 could not be reconciled with the 0 – 5 mi. population data given in FSAR Figure 2.1-206; therefore, a new survey of nearest receptors was conducted. Receptors and their locations for the nearest residence, milk cow, milk goat, meat animal, and vegetable garden larger than 50 m^2 to a distance of 8 km (5 mi.) were identified. A revised Table 2.7-119, BLN Off-site Receptor Locations (presented below) reflects the results of the new survey and replaces existing Table 2.7-119, as noted below. Consistent with population data given in FSAR Figure 2.1-206, residences are identified in all sectors. A revision of the normal atmospheric dispersion (χ/Q) calculation has been prepared using the results of the new survey. The revision of the normal atmospheric dispersion calculation is made available for NRC review at NuStart's contractors' offices.

BLN OFF-SITE RECEPTOR LOCATIONS [1]

	Garden	Milk Cow	Milk Goat	House	Animal for Meat
S	7900	-	-	7634	-
SSW	6039	-	-	5656	-
SW	1817	3907	-	2907	3907
WSW	1780	7409	-	4101	7409
W	1813	2457	-	2324	2457
WNW	1213	1286	-	1187	1286
NW	1095	1250	3809	1113	1250
NNW	1831	2186	-	1124	2186
N	2368	4646	-	1454	4646
NNE	2246	3622	4193	1908	3622
NE	6079	6914	7686	7111	6914
ENE	5600	6243	-	5667	6243
E	3911	3783	3785	3478	3783
ESE	4444	6103	6958	3363	6103
SE	3830	3568	7197	3120	3568
SSE	-	-	-	7758	-

1. Distances, in meters, from the site center to the nearest receptor of each type for a given sector.

The survey results given in the table of receptors locations above is based on the conservative assumption that cattle and goats can be used for meat as well as milk.

Note that a mixed mode release was assumed in the normal atmospheric dispersion (χ/Q) calculation. In lieu of determining the location of all milk cows, milk goats, meat animals, residences, and vegetable gardens larger than 50 m^2 out to a distance of 5 km (3 mi), as identified in NUREG 1555, Section 5.4.1, a comparison was made of χ/Q results to confirm that the locations of all resulting peaks occur at distances closer than the nearest receptors identified in the receptor survey. Therefore, it can be concluded that the χ/Qs based on nearest receptor locations are conservative relative to receptors located at greater distances.

This response is PLANT-SPECIFIC.

ASSOCIATED BLN COL APPLICATION TEXT CHANGES:

Change COLA Part 3, ER Chapter 2, Subsection 2.7, by replacing existing Table 2.7-119 with the table provided below:

TABLE 2.7-119

BLN OFF-SITE RECEPTOR LOCATIONS [1]

	Garden	Milk Cow	Milk Goat	House	Animal for Meat [2]
S	7900	-	-	7634	-
SSW	6039	-	-	5656	-
SW	1817	3907	-	2907	3907
WSW	1780	7409	-	4101	7409
W	1813	2457	-	2324	2457
WNW	1213	1286	-	1187	1286
NW	1095	1250	3809	1113	1250
NNW	1831	2186	-	1124	2186
N	2368	4646	-	1454	4646
NNE	2246	3622	4193	1908	3622
NE	6079	6914	7686	7111	6914
ENE	5600	6243	-	5667	6243
E	3911	3783	3785	3478	3783
ESE	4444	6103	6958	3363	6103
SE	3830	3568	7197	3120	3568
SSE	-	-	-	7758	-

1. Distances, in meters, from the site center to the nearest receptor of each type for a given sector.
2. The survey results given in the table of receptors locations above is based on the conservative assumption that cattle and goats can be used for meat as well as milk.

ATTACHMENTS:

None.

NRC Review of the BLN Environmental Report

NRC Environmental Category: RADIOLOGICAL/FUEL CYCLE/WASTE SYSTEMS

NRC RAI NUMBER: 5.4.3-1

Provide occupational doses from normal operations.

BLN RESPONSE:

The collective occupational dose is provided in the AP1000 DCD. Information from the DCD will be incorporated into the ER to provide the collective occupational doses. The COLA change provided below amends the change provided in the BLN response to the NRC sufficiency review comment related to occupational dose (identified as BLN Comment ID ER28) provided in the referenced TVA letter, dated May 2, 2008.

Collective occupational doses using the format of ESRP Table 5.4.3-2 are not provided, because the DCD occupational dose is appropriately provided in terms of total effective dose equivalent (TEDE) rather than organ dose. In addition, the intent of Table 5.4.3-2 is to provide site doses due to effluent releases and direct radiation for comparison with the 40 CFR 190 limits, which are not applicable to occupational doses from normal operations.

Reference:

Letter from Andrea L. Sterdis (TVA) to NRC Document Control Desk, "Response to Environmental Report (ER) Sufficiency Review Comments," dated May 2, 2008 [ML081270657].

This response is PLANT-SPECIFIC.

ASSOCIATED BLN COL APPLICATION TEXT CHANGES:

Change COLA Part 3, ER Chapter 5, Subsection 5.4.3.4, to add the following paragraph after the existing paragraph.

The AP1000 is designed to operate within the occupational dose limits specified in 10 CFR Part 20. The anticipated occupational radiation exposure due to normal operation and anticipated inspection and maintenance of the AP1000 units is provided in the AP1000 Design Control Document (DCD), Section 12.4, Dose Assessment. The estimated annual doses associated with all evaluated plant activities are presented in DCD Section 12.4. The estimated annual collective dose is 67.1 man-rem based on normal operation with an 18-month fuel cycle.

ATTACHMENTS:

None.

NRC Review of the BLN Environmental Report

NRC Environmental Category: RADIOLOGICAL/FUEL CYCLE/WASTE SYSTEMS

NRC RAI NUMBER: 2.7-1

Provide X/Q computation for routine operations based on the AP-1000 DCD, revision 16.

BLN RESPONSE:

Revision 1 of the Bellefonte Nuclear Plant routine release atmospheric dispersion calculation used AP1000 DCD Revision 15 for certain design inputs. Subsequent to issuance of Revision 1 of the atmospheric dispersion calculation, Revision 16 of the DCD became available. Several minor changes to the design inputs were identified. These changes were documented and compared with the previous values using a sensitivity study. The results of the sensitivity study were compared with the original calculation results. The impact of AP1000 DCD Revision 16 changes on the results of this calculation were shown to be negligible.

The changes to design inputs that were identified in DCD Revision 16 are explained in the following paragraphs.

The reactor building height changed from 71.3 m (233.9 ft.) in Revision 15 (Ref. 1, Table 3.3-1, Tier 1 Material) to 69.8 m (229.0 ft.) in Revision 16 (Ref. 2, Table 3.3-1, Tier 1 Material). The reactor building height is used for two purposes in the atmospheric dispersion calculation. It is used for the height of the release and it is used in a conservative determination of building surface area. Both of these parameters are used by the computer code XOQDOQ (Ref. 3) in determination of building wake effects on atmospheric dispersion. The DCD Revision 16 inputs resulted in an approximate 2 percent difference in both the height of release and the building area input to the XOQDOQ computer code.

Figure 15A-1 from drawing APP-0000-N5-301 (Ref. 4) showed the replacement of the fuel building rail bay door with a new release location, the Radwaste Building Truck Staging Area Door. In addition, it showed that the Condenser Air Removal (CAR) stack was relocated further from the containment. The AP1000 release locations are used in the atmospheric dispersion calculation to show that a circle centered on the site base line coordinates conservatively encompasses all release locations for both units used in dose analyses. This release boundary is used to conservatively determine the distances from the releases to the site boundary. When the new CAR stack release location and Truck Staging Area Door were considered in the determination of the radius of a circle encompassing all release locations for both units, a circle with a radius of 168 m (550 ft) was calculated. The radius based on Revision 15 of the DCD was 160 m (525 ft). This change resulted in less than a 1 percent decrease in the site boundary distances.

Atmospheric dispersion computations for routine operations based on Revision 16 of the AP1000 DCD are given in Attachment 2.7-1A. For comparison, results based on Revision 15 of the AP1000 DCD are given in Attachment 2.7-1B.

The XOQDOQ results are best compared using the results for radial distances and segments due to the greater degree of accuracy that is provided in the XOQDOQ output. The largest percent change in the X/Q at any radial distance location for any case considered is 0.6 percent. The largest percent change in the X/Q and D/Q values reported for the radial segments is 0.4 percent. These differences are negligible.

From Attachment 2.7-1A, the highest X/Q value for the Exclusion Area Boundary (EAB) is 1.4×10^{-6} sec/m^3 for the southwest and north-northeast sectors. This value is identical to the maximum X/Q value for the EAB calculated based on Revision 15 of the DCD (Attachment 2.7-1B) and is bounded

by the annual average atmospheric dispersion factor of 2.0×10^{-5} sec/m^3 from Table 5.0-1 of the AP1000 DCD Tier 1 Material. The majority of the X/Q and D/Q values for the receptor locations were unchanged by the DCD Revision 16 inputs. However, only two significant figures are provided for the receptor results in the XOQDOQ output; therefore, differences are not compared on a percentage basis. Given that only a small number of values are changed, it is reasonable to assume that the differences are due to rounding. Like the differences in the radial distance and segment values, these differences are viewed to be negligible.

This response is PLANT-SPECIFIC.

References:

1. Westinghouse Electric Company, "AP1000 Design Control Document," Revision 15.
2. Westinghouse Electric Company, "AP1000 Design Control Document," Revision 16.
3. NUREG/CR-2919 (PNL-4380), "XOQDOQ: Computer Program for the Meteorological Evaluation of Routine Effluent Releases at Nuclear Power Stations," September 1982.
4. Westinghouse Electric Company LLC, AP1000 Drawing, APP-0000-N5-301, "DCD Figure 15A-1 and Table 15A-7 Site Plan with Release and Intake Locations," Revision 3.

ASSOCIATED BLN COL APPLICATION TEXT CHANGES:

None.

ATTACHMENTS:

The following documents are provided as Attachments 2.7-1A and 2.7-1B to this enclosure:

2.7-1A. Atmospheric Dispersion Values for Routine Operations Based on Revision 16 of the AP1000 DCD (7 pages: Tables 1-1 through 1-17)

2.7-1B. Atmospheric Dispersion Values for Routine Operations Based on Revision 15 of the AP1000 DCD (7 pages: Tables 1-1 through 1-17)

NRC Review of the BLN Environmental Report

NRC Environmental Category: ENVIRONMENTAL IMPACTS OF ACCIDENTS

NRC RAI NUMBER: 7.2-1

Discuss whether there are surface water pathways that need to be addressed for severe accidents in addition to the ingestion pathways considered by MACCS2.

BLN RESPONSE:

Surface water dose pathways are an extension of the air pathway. These pathways cover the effects of radioactive material deposited on open bodies of water. The surface water pathways of interest include external radiation from submersion in water and activities near the water, ingestion of water, and ingestion of fish and other aquatic creatures. Of these pathways, the MACCS2 code evaluates only the ingestion of contaminated water. The risks associated with this surface water pathway calculated for the BLN site are included in the last column of Table 7.2-9. NUREG-1437 Table 5.13 indicates that Bellefonte is classified as a "small river" site and Table 5.17 indicates that for small river sites, drinking water is the dominant liquid pathway compared to seafood ingestion and shoreline exposure. Furthermore, the water ingestion dose risk of 4.51×10^{-3} person-rem/reactor year (RY) is small compared to the total dose risk of 2.88×10^{-2} person-rem/RY. Finally, should a severe accident occur at the BLN site, it is likely that federal, state, and local officials would restrict access to the river below the site and in contaminated areas above the site. These actions would further reduce surface water pathway exposures.

This response is PLANT-SPECIFIC.

ASSOCIATED BLN COL APPLICATION TEXT CHANGES:

Change COLA Part 3, ER Chapter 7, Subsection 7.2.3.2, by inserting the following paragraph after the first paragraph:

Surface water dose pathways are an extension of the air pathway. These pathways cover the effects of radioactive material deposited on open bodies of water. The surface water pathways of interest include external radiation from submersion in water and activities near the water, ingestion of water, and ingestion of fish and other aquatic creatures. Of these pathways, the MACCS2 code evaluates only the ingestion of contaminated water. The risks associated with this surface water pathway calculated for the BLN site are included in the last column of Table 7.2-9. NUREG-1437 Table 5.13 indicates that Bellefonte is classified as a "small river" site and Table 5.17 indicates that for small river sites, drinking water is the dominant liquid pathway compared to seafood ingestion and shoreline exposure. Furthermore, the water ingestion dose risk of 4.51×10^{-3} person-rem/RY is small compared to the total dose risk of 2.88×10^{-2} person-rem/RY. Finally, should a severe accident occur at the BLN site, it is likely that federal, state, and local officials would restrict access to the river below the site and in contaminated areas above the site. These actions would further reduce surface water pathway exposures.

ATTACHMENTS:

None.

NRC Review of the BLN Environmental Report

NRC Environmental Category: ENVIRONMENTAL IMPACTS OF ACCIDENTS

NRC RAI NUMBER: 7.2-2

Identify groundwater pathways that exist for severe accidents.

BLN RESPONSE:

Based on a discussion with the NRC staff on July 14, 2008 (Reference 1), it is TVA's understanding that the information requested by this RAI has been fundamentally, but not fully, addressed to the reviewer's satisfaction by the BLN response to NRC sufficiency review comment related to groundwater pathway modeling (identified as BLN Comment ID ER 31) in the TVA letter dated May 2, 2008 (Reference 2). Consequently, a clarification to this RAI was provided by the reviewer, requesting the following supplemental information for this RAI:

There was some discussion about two aspects of this RAI.

1) *Are there calculations of how the groundwater pathway affects severe accidents? TVA's response was that it is not a quantitative analysis, it is based on a qualitative analysis; there are no explicit calculations, just text from NUREG-1437. Their response will so indicate.*

2) *The second aspect related to the whether the effects of porosity changes identified through other aspects of the Bellefonte application have been applied to severe accidents. Porosity has been updated and provided to NuStart, but not reflected in the severe accident analysis*

The clarifications are addressed as follows:

In addition to surface water, groundwater must be considered in the liquid pathways dose. Subsection 2.3.2.3.1 states that local groundwater use in the vicinity appears limited to mainly individual residences. Also, as discussed in Subsection 2.3.1.5.4, there is no use or anticipated use of groundwater at the BLN site. Potable, sanitary, and fire suppression water is supplied by the Scottsboro Municipal Water System, which draws water from the Tennessee River. Subsection 2.3.1.5.4 further states that the majority of groundwater discharge from the BLN site is to the Town Creek embayment. As shown in Subsection 2.3.1.5.6, the average groundwater travel time from Unit 3 to the Town Creek embayment is 655 days, which allows ample time for interdiction and other prevention activities. The groundwater travel time is based on the current groundwater analysis, which uses the porosity value that was identified and updated through other aspects of the BLN COLA. Therefore, the groundwater pathway, as determined through a qualitative analysis, is expected to be negligible.

References:

1. NRC Communication Summary, "Summary of Telecommunication with Tennessee Valley Authority to Discuss Clarification on Request for Additional Information (RAI) for Bellefonte Units 3 and 4." Contact: Mallecia Hood (DSER/NRO), dated July 28, 2008 [ML082070062].
2. Letter from Andrea L. Sterdis (TVA) to NRC Document Control Desk, "Response to NRC Environmental Report (ER) Sufficiency Review Comments," dated May 2, 2008 [ML081270657].

This response is PLANT-SPECIFIC.

ASSOCIATED BLN COL APPLICATION TEXT CHANGES:

Change COLA Part 3, ER Chapter 7, Subsection 7.2.3.2, by inserting the following paragraph after the first paragraph:

> In addition to surface water, groundwater must be considered in the liquid pathways dose. Subsection 2.3.2.3.1 states that local groundwater use in the vicinity appears limited to mainly individual residences. Also, as discussed in Subsection 2.3.1.5.4, there is no use or anticipated use of groundwater at the BLN site. Potable, sanitary, and fire suppression water is supplied by the Scottsboro Municipal Water System, which draws water from the Tennessee River. Subsection 2.3.1.5.4 further states that the majority of groundwater discharge from the BLN site is to the Town Creek embayment. As shown in Subsection 2.3.1.5.6, the average groundwater travel time from Unit 3 to the Town Creek embayment is 655 days, which allows ample time for interdiction and other prevention activities. Therefore, the groundwater pathway is expected to be negligible.

ATTACHMENTS:

None.

Tennessee Valley Authority

Atmospheric Dispersion Values for Routine Operations Based on Revision 16 of the AP1000 DCD

(7 pages: Tables 1-1 through 1-17)

Attachment 2.7-1A
Atmospheric Dispersion Values for Routine Operations Based on Revision 16 of the AP1000 DCD

Table 1-1: Annual Average X/Q (sec/m^3) for no decay, undepleted for each 22.5° sector at the distances (miles) shown at the top

SECTOR	0.25	0.5	0.75	1	1.5	2	2.5	3	3.5	4	4.5
S	3.54E-06	1.39E-06	1.12E-06	8.47E-07	6.88E-07	2.06E-06	1.29E-06	8.88E-07	6.56E-07	5.09E-07	4.09E-07
SSW	4.82E-06	1.82E-06	1.52E-06	1.23E-06	9.04E-07	6.85E-07	5.35E-07	4.31E-07	3.56E-07	8.33E-07	7.33E-07
SW	4.87E-06	1.77E-06	1.46E-06	1.17E-06	8.64E-07	6.56E-07	5.14E-07	4.16E-07	3.45E-07	2.93E-07	2.53E-07
WSW	1.06E-06	3.95E-07	3.39E-07	2.92E-07	2.40E-07	1.95E-07	1.60E-07	1.33E-07	1.14E-07	9.87E-08	8.69E-08
W	3.26E-07	1.23E-07	1.05E-07	8.71E-08	7.18E-08	6.21E-08	5.46E-08	4.86E-08	4.37E-08	3.96E-08	3.62E-08
WNW	4.26E-07	1.65E-07	1.42E-07	1.16E-07	8.66E-08	6.80E-08	5.54E-08	4.65E-08	4.00E-08	2.86E-07	2.32E-07
NW	1.07E-06	3.97E-07	2.97E-07	2.06E-07	1.28E-07	9.21E-08	7.16E-08	5.85E-08	2.05E-07	3.58E-07	2.90E-07
NNW	1.31E-06	5.24E-07	4.18E-07	3.04E-07	2.00E-07	1.48E-07	1.17E-07	9.64E-08	3.05E-07	4.77E-07	3.86E-07
N	2.33E-06	9.07E-07	6.91E-07	4.90E-07	3.21E-07	2.40E-07	1.92E-07	1.59E-07	1.36E-07	1.19E-07	1.05E-07
NNE	5.80E-06	2.07E-06	1.46E-06	1.01E-06	6.51E-07	4.84E-07	3.83E-07	3.16E-07	2.68E-07	2.32E-07	2.05E-07
NE	4.13E-06	1.49E-06	1.08E-06	7.72E-07	5.19E-07	3.89E-07	3.07E-07	1.10E-06	1.23E-06	9.60E-07	7.75E-07
ENE	2.31E-06	8.86E-07	6.54E-07	4.60E-07	2.94E-07	1.50E-06	9.41E-07	6.53E-07	4.84E-07	3.77E-07	3.04E-07
E	1.50E-06	6.29E-07	4.86E-07	3.54E-07	6.15E-07	9.94E-07	6.20E-07	4.28E-07	3.17E-07	2.46E-07	1.98E-07
ESE	1.21E-06	5.18E-07	3.96E-07	2.75E-07	1.17E-06	6.98E-07	4.36E-07	3.02E-07	2.24E-07	1.74E-07	1.40E-07
SE	1.38E-06	5.39E-07	4.28E-07	3.17E-07	1.31E-06	7.70E-07	4.79E-07	3.31E-07	2.44E-07	1.89E-07	1.52E-07
SSE	2.26E-06	8.80E-07	6.74E-07	4.81E-07	2.11E-06	1.28E-06	8.02E-07	5.55E-07	4.11E-07	3.20E-07	2.58E-07

Table 1-2: Annual Average X/Q (sec/m^3) for no decay, undepleted for each 22.5° sector at the distances (miles) shown at the top

SECTOR	5	7.5	10	15	20	25	30	35	40	45	50
S	3.38E-07	1.73E-07	1.12E-07	6.46E-08	4.39E-08	3.26E-08	2.56E-08	2.09E-08	1.76E-08	1.51E-08	1.31E-08
SSW	6.06E-07	3.10E-07	2.01E-07	1.15E-07	7.82E-08	5.80E-08	4.55E-08	3.71E-08	3.11E-08	2.66E-08	2.32E-08
SW	2.63E-07	3.86E-07	2.52E-07	1.46E-07	9.97E-08	7.44E-08	5.87E-08	4.80E-08	4.04E-08	3.48E-08	3.04E-08
WSW	7.75E-08	2.22E-07	1.46E-07	8.61E-08	5.94E-08	4.47E-08	3.55E-08	2.92E-08	2.47E-08	2.13E-08	1.87E-08
W	3.33E-08	1.35E-07	8.92E-08	5.27E-08	3.65E-08	2.75E-08	2.18E-08	1.80E-08	1.52E-08	1.32E-08	1.16E-08
WNW	1.93E-07	1.01E-07	6.68E-08	3.94E-08	2.72E-08	2.05E-08	1.63E-08	1.34E-08	1.14E-08	9.83E-09	8.63E-09
NW	2.41E-07	1.27E-07	8.37E-08	4.95E-08	3.42E-08	2.58E-08	2.05E-08	1.69E-08	1.43E-08	1.24E-08	1.09E-08
NNW	3.20E-07	1.68E-07	1.10E-07	6.48E-08	4.47E-08	3.36E-08	2.67E-08	2.19E-08	1.86E-08	1.60E-08	1.40E-08
N	9.43E-08	6.38E-08	1.73E-07	1.01E-07	6.98E-08	5.24E-08	4.16E-08	3.42E-08	2.89E-08	2.49E-08	2.18E-08
NNE	1.83E-07	1.23E-07	3.75E-07	2.21E-07	1.53E-07	1.15E-07	9.13E-08	7.52E-08	6.37E-08	5.50E-08	4.82E-08
NE	6.44E-07	3.36E-07	2.21E-07	1.29E-07	8.89E-08	6.67E-08	5.29E-08	4.35E-08	3.67E-08	3.16E-08	2.77E-08
ENE	2.52E-07	1.31E-07	8.57E-08	5.01E-08	3.44E-08	2.57E-08	2.04E-08	1.67E-08	1.41E-08	1.22E-08	1.06E-08
E	1.64E-07	8.42E-08	5.48E-08	3.17E-08	2.16E-08	1.61E-08	1.27E-08	1.04E-08	8.72E-09	7.49E-09	6.54E-09
ESE	1.16E-07	5.99E-08	3.91E-08	2.28E-08	1.56E-08	1.17E-08	9.22E-09	7.57E-09	6.38E-09	5.50E-09	4.81E-09
SE	1.25E-07	6.40E-08	4.14E-08	2.38E-08	1.61E-08	1.20E-08	9.38E-09	7.65E-09	6.42E-09	5.50E-09	4.80E-09
SSE	2.13E-07	1.10E-07	7.20E-08	4.19E-08	2.87E-08	2.14E-08	1.69E-08	1.39E-08	1.17E-08	1.01E-08	8.83E-09

Table 1-3: Annual Average X/Q (sec/m^3) for no decay, undepleted for each 22.5° sector for each segment (miles) shown at the top

SECTOR	.5-1	1-2	2-3	3-4	4-5	5-10	10-20	20-30	30-40	40-50
S	1.06E-06	1.33E-06	1.33E-06	6.66E-07	4.12E-07	1.83E-07	6.59E-08	3.28E-08	2.10E-08	1.51E-08
SSW	1.46E-06	8.78E-07	5.33E-07	5.59E-07	7.15E-07	3.27E-07	1.18E-07	5.84E-08	3.72E-08	2.67E-08
SW	1.40E-06	8.40E-07	5.13E-07	3.46E-07	2.69E-07	2.99E-07	1.49E-07	7.49E-08	4.82E-08	3.48E-08
WSW	3.31E-07	2.31E-07	1.58E-07	1.14E-07	8.69E-08	1.56E-07	8.76E-08	4.49E-08	2.93E-08	2.13E-08
W	1.01E-07	7.09E-08	5.42E-08	4.35E-08	3.61E-08	9.21E-08	5.36E-08	2.76E-08	1.80E-08	1.32E-08
WNW	1.36E-07	8.48E-08	5.52E-08	1.36E-07	2.33E-07	1.06E-07	4.01E-08	2.06E-08	1.35E-08	9.84E-09
NW	2.79E-07	1.29E-07	7.18E-08	2.21E-07	2.92E-07	1.33E-07	5.03E-08	2.60E-08	1.70E-08	1.24E-08
NNW	3.91E-07	2.00E-07	1.17E-07	3.11E-07	3.89E-07	1.76E-07	6.60E-08	3.38E-08	2.20E-08	1.60E-08
N	6.50E-07	3.23E-07	1.92E-07	1.36E-07	1.05E-07	1.19E-07	1.03E-07	5.27E-08	3.43E-08	2.49E-08
NNE	1.39E-06	6.55E-07	3.83E-07	2.68E-07	2.05E-07	2.48E-07	2.25E-07	1.16E-07	7.54E-08	5.50E-08
NE	1.04E-06	5.17E-07	6.46E-07	1.09E-06	7.81E-07	3.53E-07	1.32E-07	6.71E-08	4.36E-08	3.17E-08
ENE	6.19E-07	8.67E-07	9.75E-07	4.92E-07	3.07E-07	1.38E-07	5.10E-08	2.59E-08	1.68E-08	1.22E-08
E	4.59E-07	7.26E-07	6.43E-07	3.22E-07	1.99E-07	8.88E-08	3.23E-08	1.62E-08	1.04E-08	7.51E-09
ESE	3.69E-07	7.60E-07	4.52E-07	2.27E-07	1.41E-07	6.31E-08	2.32E-08	1.17E-08	7.59E-09	5.50E-09
SE	4.03E-07	8.50E-07	4.98E-07	2.48E-07	1.53E-07	6.76E-08	2.43E-08	1.20E-08	7.68E-09	5.51E-09
SSE	6.34E-07	1.38E-06	8.31E-07	4.18E-07	2.60E-07	1.16E-07	4.27E-08	2.16E-08	1.39E-08	1.01E-08

Table 1-4: Annual Average X/Q (sec/m^3) for no decay, depleted for each 22.5° sector at the distances (miles) shown at the top

SECTOR	0.25	0.5	0.75	1	1.5	2	2.5	3	3.5	4	4.5
S	3.30E-06	1.29E-06	1.05E-06	8.01E-07	6.62E-07	2.01E-06	1.23E-06	8.38E-07	6.10E-07	4.66E-07	3.70E-07
SSW	4.49E-06	1.67E-06	1.42E-06	1.17E-06	8.70E-07	6.61E-07	5.16E-07	4.15E-07	3.43E-07	8.19E-07	7.13E-07
SW	4.53E-06	1.63E-06	1.36E-06	1.11E-06	8.30E-07	6.32E-07	4.96E-07	4.01E-07	3.33E-07	2.82E-07	2.44E-07
WSW	9.82E-07	3.63E-07	3.18E-07	2.79E-07	2.32E-07	1.89E-07	1.55E-07	1.30E-07	1.11E-07	9.60E-08	8.45E-08
W	3.04E-07	1.13E-07	9.81E-08	8.30E-08	6.94E-08	6.03E-08	5.32E-08	4.75E-08	4.27E-08	3.87E-08	3.54E-08
WNW	3.97E-07	1.53E-07	1.33E-07	1.10E-07	8.35E-08	6.58E-08	5.36E-08	4.50E-08	3.87E-08	2.83E-07	2.26E-07
NW	9.96E-07	3.64E-07	2.74E-07	1.92E-07	1.21E-07	8.71E-08	6.79E-08	5.55E-08	2.02E-07	3.53E-07	2.82E-07
NNW	1.22E-06	4.84E-07	3.90E-07	2.87E-07	1.91E-07	1.41E-07	1.12E-07	9.23E-08	3.01E-07	4.70E-07	3.75E-07
N	2.17E-06	8.38E-07	6.42E-07	4.60E-07	3.05E-07	2.29E-07	1.83E-07	1.52E-07	1.30E-07	1.14E-07	1.01E-07
NNE	5.40E-06	1.90E-06	1.34E-06	9.35E-07	6.14E-07	4.59E-07	3.65E-07	3.02E-07	2.56E-07	2.23E-07	1.96E-07
NE	3.85E-06	1.37E-06	1.00E-06	7.22E-07	4.93E-07	3.71E-07	2.94E-07	1.09E-06	1.21E-06	9.30E-07	7.42E-07
ENE	2.15E-06	8.17E-07	6.07E-07	4.31E-07	2.79E-07	1.48E-06	9.09E-07	6.20E-07	4.54E-07	3.48E-07	2.78E-07
E	1.40E-06	5.84E-07	4.55E-07	3.36E-07	6.03E-07	9.69E-07	5.93E-07	4.03E-07	2.94E-07	2.25E-07	1.79E-07
ESE	1.14E-06	4.83E-07	3.71E-07	2.59E-07	1.16E-06	6.77E-07	4.15E-07	2.83E-07	2.06E-07	1.58E-07	1.26E-07
SE	1.29E-06	4.97E-07	3.99E-07	2.99E-07	1.30E-06	7.46E-07	4.56E-07	3.09E-07	2.25E-07	1.72E-07	1.36E-07
SSE	2.11E-06	8.13E-07	6.28E-07	4.53E-07	2.09E-06	1.24E-06	7.63E-07	5.20E-07	3.79E-07	2.91E-07	2.31E-07

Table 1-5: Annual Average X/Q (sec/m^3) for no decay, depleted for each 22.5° sector at the distances (miles) shown at the top

SECTOR	5	7.5	10	15	20	25	30	35	40	45	50
S	3.02E-07	1.48E-07	9.22E-08	4.99E-08	3.22E-08	2.30E-08	1.74E-08	1.37E-08	1.12E-08	9.33E-09	7.92E-09
SSW	5.83E-07	2.86E-07	1.79E-07	9.69E-08	6.28E-08	4.48E-08	3.40E-08	2.69E-08	2.19E-08	1.83E-08	1.56E-08
SW	2.54E-07	3.67E-07	2.31E-07	1.27E-07	8.30E-08	5.97E-08	4.56E-08	3.63E-08	2.97E-08	2.49E-08	2.13E-08
WSW	7.53E-08	2.15E-07	1.37E-07	7.63E-08	5.05E-08	3.66E-08	2.81E-08	2.25E-08	1.85E-08	1.56E-08	1.34E-08
W	3.26E-08	1.31E-07	8.38E-08	4.69E-08	3.11E-08	2.26E-08	1.74E-08	1.39E-08	1.15E-08	9.68E-09	8.31E-09
WNW	1.86E-07	9.36E-08	5.96E-08	3.32E-08	2.20E-08	1.59E-08	1.22E-08	9.77E-09	8.05E-09	6.78E-09	5.81E-09
NW	2.32E-07	1.17E-07	7.45E-08	4.16E-08	2.75E-08	1.99E-08	1.53E-08	1.23E-08	1.01E-08	8.51E-09	7.30E-09
NNW	3.08E-07	1.55E-07	9.81E-08	5.44E-08	3.59E-08	2.60E-08	1.99E-08	1.59E-08	1.31E-08	1.10E-08	9.40E-09
N	9.06E-08	6.15E-08	1.66E-07	9.25E-08	6.11E-08	4.43E-08	3.41E-08	2.72E-08	2.24E-08	1.89E-08	1.62E-08
NNE	1.76E-07	1.18E-07	3.62E-07	2.02E-07	1.34E-07	9.74E-08	7.50E-08	6.01E-08	4.96E-08	4.18E-08	3.59E-08
NE	6.09E-07	3.04E-07	1.93E-07	1.07E-07	6.99E-08	5.05E-08	3.86E-08	3.08E-08	2.53E-08	2.12E-08	1.81E-08
ENE	2.28E-07	1.13E-07	7.11E-08	3.90E-08	2.55E-08	1.83E-08	1.40E-08	1.11E-08	9.08E-09	7.61E-09	6.49E-09
E	1.46E-07	7.18E-08	4.49E-08	2.44E-08	1.58E-08	1.13E-08	8.58E-09	6.78E-09	5.53E-09	4.62E-09	3.93E-09
ESE	1.03E-07	5.08E-08	3.19E-08	1.74E-08	1.14E-08	8.14E-09	6.20E-09	4.92E-09	4.02E-09	3.36E-09	2.86E-09
SE	1.11E-07	5.42E-08	3.37E-08	1.82E-08	1.17E-08	8.32E-09	6.29E-09	4.96E-09	4.04E-09	3.36E-09	2.85E-09
SSE	1.89E-07	9.35E-08	5.87E-08	3.21E-08	2.09E-08	1.50E-08	1.14E-08	9.03E-09	7.38E-09	6.17E-09	5.26E-09

Table 1-6: Annual Average X/Q (sec/m^3) for no decay, depleted for each 22.5° sector for each segment (miles) shown at the top

SECTOR	.5-1	1-2	2-3	3-4	4-5	5-10	10-20	20-30	30-40	40-50
S	9.90E-07	1.29E-06	1.28E-06	6.20E-07	3.74E-07	1.58E-07	5.14E-08	2.32E-08	1.38E-08	9.36E-09
SSW	1.36E-06	8.43E-07	5.14E-07	5.45E-07	6.96E-07	3.04E-07	9.99E-08	4.53E-08	2.70E-08	1.84E-08
SW	1.31E-06	8.05E-07	4.94E-07	3.33E-07	2.59E-07	2.82E-07	1.31E-07	6.03E-08	3.64E-08	2.50E-08
WSW	3.10E-07	2.23E-07	1.54E-07	1.11E-07	8.45E-08	1.49E-07	7.83E-08	3.69E-08	2.26E-08	1.57E-08
W	9.48E-08	6.84E-08	5.28E-08	4.25E-08	3.53E-08	8.83E-08	4.81E-08	2.28E-08	1.40E-08	9.71E-09
WNW	1.27E-07	8.15E-08	5.34E-08	1.34E-07	2.28E-07	9.90E-08	3.41E-08	1.60E-08	9.82E-09	6.79E-09
NW	2.58E-07	1.22E-07	6.80E-08	2.18E-07	2.84E-07	1.24E-07	4.26E-08	2.01E-08	1.23E-08	8.53E-09
NNW	3.65E-07	1.90E-07	1.12E-07	3.06E-07	3.78E-07	1.64E-07	5.59E-08	2.62E-08	1.60E-08	1.10E-08
N	6.05E-07	3.06E-07	1.83E-07	1.30E-07	1.01E-07	1.15E-07	9.49E-08	4.47E-08	2.74E-08	1.90E-08
NNE	1.28E-06	6.17E-07	3.65E-07	2.56E-07	1.97E-07	2.39E-07	2.07E-07	9.82E-08	6.03E-08	4.19E-08
NE	9.60E-07	4.90E-07	6.32E-07	1.07E-06	7.48E-07	3.22E-07	1.09E-07	5.09E-08	3.09E-08	2.13E-08
ENE	5.76E-07	8.45E-07	9.45E-07	4.61E-07	2.80E-07	1.20E-07	4.01E-08	1.85E-08	1.12E-08	7.63E-09
E	4.31E-07	7.06E-07	6.17E-07	2.99E-07	1.80E-07	7.64E-08	2.51E-08	1.14E-08	6.82E-09	4.63E-09
ESE	3.46E-07	7.43E-07	4.32E-07	2.10E-07	1.27E-07	5.40E-08	1.79E-08	8.22E-09	4.94E-09	3.37E-09
SE	3.76E-07	8.30E-07	4.75E-07	2.29E-07	1.38E-07	5.78E-08	1.88E-08	8.41E-09	4.99E-09	3.37E-09
SSE	5.91E-07	1.35E-06	7.94E-07	3.86E-07	2.33E-07	9.93E-08	3.30E-08	1.51E-08	9.07E-09	6.19E-09

Table 1-7: X/Q and D/Q values for no decay, depleted and undepleted, at each receptor location

Release ID	Type of Location	Sector	Distance (miles)	Distance (meters)	X/Q (sec/m^3) No Decay Undepleted	X/Q (sec/m^3) No Decay Depleted	D/Q (m^{-2})
P	EAB	S	0.71	1137	1.10E-06	1.10E-06	1.10E-08
P	EAB	SSW	1.03	1652	1.20E-06	1.10E-06	6.00E-09
P	EAB	SW	0.77	1241	**1.40E-06**	1.30E-06	9.90E-09
P	EAB	WSW	0.73	1169	3.40E-07	3.20E-07	2.30E-09
P	EAB	W	0.59	942	1.10E-07	1.00E-07	9.60E-10
P	EAB	WNW	0.53	847	1.60E-07	1.50E-07	1.60E-09
P	EAB	NW	0.53	847	3.80E-07	3.50E-07	4.20E-09
P	EAB	NNW	0.53	858	5.00E-07	4.60E-07	5.70E-09
P	EAB	N	0.58	928	8.00E-07	7.40E-07	9.20E-09
P	EAB	NNE	0.77	1236	**1.40E-06**	1.30E-06	1.30E-08
P	EAB	NE	1.09	1762	7.00E-07	6.60E-07	4.50E-09
P	EAB	ENE	0.77	1242	6.30E-07	5.90E-07	6.50E-09
P	EAB	E	0.58	940	5.50E-07	5.10E-07	7.10E-09
P	EAB	ESE	0.57	919	4.60E-07	4.30E-07	6.30E-09
P	EAB	SE	0.57	919	4.80E-07	4.50E-07	5.40E-09
P	EAB	SSE	0.57	925	7.80E-07	7.20E-07	1.00E-08
P	GARDEN	SSW	4.56	7338	7.20E-07	6.90E-07	8.40E-10
P	GARDEN	SW	1.74	2807	7.50E-07	7.20E-07	2.00E-09
P	GARDEN	WSW	4.21	6780	9.30E-08	9.10E-08	8.20E-11
P	GARDEN	W	2.64	4244	5.30E-08	5.20E-08	7.00E-11
P	GARDEN	WNW	0.71	1143	1.40E-07	1.30E-07	1.20E-09
P	GARDEN	NW	0.8	1289	2.70E-07	2.50E-07	2.40E-09
P	GARDEN	NNW	1.13	1821	2.70E-07	2.50E-07	1.70E-09
P	GARDEN	N	2.06	3310	2.30E-07	2.20E-07	7.90E-10
P	GARDEN	NNE	1.25	2006	7.90E-07	7.40E-07	4.30E-09
P	GARDEN	NE	4.13	6648	9.00E-07	8.70E-07	7.50E-10
P	GARDEN	ENE	3.47	5588	4.90E-07	4.60E-07	5.50E-10
P	GARDEN	E	2.4	3861	6.80E-07	6.50E-07	9.90E-10
P	GARDEN	ESE	2.73	4388	3.70E-07	3.50E-07	5.50E-10
P	GARDEN	SE	4.48	7204	1.50E-07	1.40E-07	2.00E-10
P	MILK COW/GOAT	S	4.77	7681	3.70E-07	3.30E-07	4.70E-10
P	MILK COW/GOAT	WSW	4.6	7406	8.50E-08	8.20E-08	6.80E-11
P	MILK COW/GOAT	W	1.46	2348	7.30E-08	7.00E-08	2.30E-10
P	MILK COW/GOAT	WNW	0.75	1214	1.40E-07	1.30E-07	1.10E-09
P	MILK COW/GOAT	NW	0.99	1586	2.10E-07	2.00E-07	1.60E-09
P	MILK COW/GOAT	NNW	2.19	3520	1.30E-07	1.30E-07	4.10E-10
P	MILK COW/GOAT	N	2.12	3417	2.30E-07	2.20E-07	7.40E-10
P	MILK COW/GOAT	NNE	2.22	3571	4.30E-07	4.10E-07	1.20E-09
P	MILK COW/GOAT	NE	4.13	6648	9.00E-07	8.70E-07	7.50E-10
P	MILK COW/GOAT	ENE	3.81	6135	4.10E-07	3.80E-07	4.40E-10
P	MILK COW/GOAT	E	2.51	4036	6.20E-07	5.90E-07	8.90E-10
P	MILK COW/GOAT	ESE	2.71	4362	3.70E-07	3.50E-07	5.60E-10
P	HOUSE	W	1.46	2348	7.30E-08	7.00E-08	2.30E-10
P	HOUSE	WNW	0.73	1169	1.40E-07	1.30E-07	1.20E-09
P	HOUSE	NW	0.69	1103	3.10E-07	2.90E-07	3.10E-09
P	SCHOOL	WNW	2.64	4243	5.30E-08	5.10E-08	1.00E-10
P	ANIMAL FOR MEAT	S	4.77	7681	3.70E-07	3.30E-07	4.70E-10
P	ANIMAL FOR MEAT	WSW	4.6	7406	8.50E-08	8.20E-08	6.80E-11
P	ANIMAL FOR MEAT	W	1.46	2348	7.30E-08	7.00E-08	2.30E-10
P	ANIMAL FOR MEAT	WNW	0.75	1214	1.40E-07	1.30E-07	1.10E-09
P	ANIMAL FOR MEAT	NW	0.99	1586	2.10E-07	2.00E-07	1.60E-09
P	ANIMAL FOR MEAT	NNW	2.19	3520	1.30E-07	1.30E-07	4.10E-10
P	ANIMAL FOR MEAT	N	2.12	3417	2.30E-07	2.20E-07	7.40E-10
P	ANIMAL FOR MEAT	NNE	2.22	3571	4.30E-07	4.10E-07	1.20E-09
P	ANIMAL FOR MEAT	NE	4.13	6648	9.00E-07	8.70E-07	7.50E-10
P	ANIMAL FOR MEAT	ENE	3.81	6135	4.10E-07	3.80E-07	4.40E-10
P	ANIMAL FOR MEAT	E	2.4	3861	6.80E-07	6.50E-07	9.90E-10
P	ANIMAL FOR MEAT	ESE	2.71	4362	3.70E-07	3.50E-07	5.60E-10

Table 1-8: Annual Average X/Q (sec/m^3) for a 2.26 day decay, undepleted for each 22.5° sector at the distances (miles) shown at the top

SECTOR	0.25	0.5	0.75	1	1.5	2	2.5	3	3.5	4	4.5
S	3.54E-06	1.39E-06	1.12E-06	8.44E-07	6.83E-07	2.01E-06	1.25E-06	8.55E-07	6.27E-07	4.83E-07	3.86E-07
SSW	4.82E-06	1.81E-06	1.52E-06	1.22E-06	8.97E-07	6.76E-07	5.26E-07	4.21E-07	3.47E-07	7.92E-07	6.91E-07
SW	4.86E-06	1.77E-06	1.46E-06	1.17E-06	8.58E-07	6.48E-07	5.06E-07	4.07E-07	3.36E-07	2.84E-07	2.44E-07
WSW	1.05E-06	3.94E-07	3.38E-07	2.90E-07	2.37E-07	1.92E-07	1.56E-07	1.30E-07	1.10E-07	9.48E-08	8.29E-08
W	3.26E-07	1.23E-07	1.05E-07	8.67E-08	7.11E-08	6.10E-08	5.32E-08	4.70E-08	4.18E-08	3.76E-08	3.41E-08
WNW	4.26E-07	1.65E-07	1.42E-07	1.15E-07	8.60E-08	6.72E-08	5.44E-08	4.54E-08	3.88E-08	2.66E-07	2.13E-07
NW	1.07E-06	3.96E-07	2.96E-07	2.05E-07	1.27E-07	9.12E-08	7.05E-08	5.72E-08	1.94E-07	3.32E-07	2.66E-07
NNW	1.31E-06	5.23E-07	4.17E-07	3.03E-07	1.99E-07	1.46E-07	1.15E-07	9.40E-08	2.89E-07	4.44E-07	3.55E-07
N	2.33E-06	9.06E-07	6.89E-07	4.89E-07	3.19E-07	2.37E-07	1.88E-07	1.55E-07	1.32E-07	1.14E-07	1.00E-07
NNE	5.80E-06	2.06E-06	1.46E-06	1.00E-06	6.47E-07	4.78E-07	3.76E-07	3.08E-07	2.60E-07	2.24E-07	1.96E-07
NE	4.12E-06	1.49E-06	1.08E-06	7.69E-07	5.15E-07	3.84E-07	3.01E-07	1.06E-06	1.17E-06	9.02E-07	7.23E-07
ENE	2.31E-06	8.85E-07	6.53E-07	4.58E-07	2.92E-07	1.46E-06	9.06E-07	6.24E-07	4.59E-07	3.55E-07	2.84E-07
E	1.50E-06	6.28E-07	4.85E-07	3.53E-07	6.08E-07	9.66E-07	5.99E-07	4.11E-07	3.02E-07	2.32E-07	1.86E-07
ESE	1.21E-06	5.18E-07	3.95E-07	2.74E-07	1.14E-06	6.79E-07	4.21E-07	2.89E-07	2.13E-07	1.64E-07	1.31E-07
SE	1.38E-06	5.39E-07	4.27E-07	3.15E-07	1.29E-06	7.54E-07	4.66E-07	3.20E-07	2.35E-07	1.81E-07	1.44E-07
SSE	2.26E-06	8.79E-07	6.73E-07	4.79E-07	2.07E-06	1.25E-06	7.73E-07	5.31E-07	3.91E-07	3.01E-07	2.41E-07

Table 1-9: Annual Average X/Q (sec/m3) for a 2.26 day decay, undepleted for each 22.5° sector at the distances (miles) shown at the top

SECTOR	5	7.5	10	15	20	25	30	35	40	45	50
S	3.17E-07	1.57E-07	9.82E-08	5.29E-08	3.36E-08	2.34E-08	1.73E-08	1.32E-08	1.05E-08	8.45E-09	6.96E-09
SSW	5.67E-07	2.81E-07	1.76E-07	9.45E-08	6.01E-08	4.18E-08	3.09E-08	2.37E-08	1.87E-08	1.52E-08	1.25E-08
SW	2.51E-07	3.46E-07	2.17E-07	1.17E-07	7.46E-08	5.19E-08	3.82E-08	2.93E-08	2.31E-08	1.86E-08	1.53E-08
WSW	7.35E-08	1.96E-07	1.24E-07	6.71E-08	4.27E-08	2.97E-08	2.18E-08	1.66E-08	1.30E-08	1.05E-08	8.54E-09
W	3.11E-08	1.17E-07	7.34E-08	3.94E-08	2.48E-08	1.70E-08	1.23E-08	9.28E-09	7.19E-09	5.69E-09	4.58E-09
WNW	1.76E-07	8.81E-08	5.55E-08	2.99E-08	1.89E-08	1.30E-08	9.48E-09	7.17E-09	5.58E-09	4.44E-09	3.59E-09
NW	2.19E-07	1.10E-07	6.93E-08	3.73E-08	2.36E-08	1.62E-08	1.18E-08	8.91E-09	6.93E-09	5.50E-09	4.45E-09
NNW	2.92E-07	1.46E-07	9.18E-08	4.93E-08	3.11E-08	2.14E-08	1.56E-08	1.18E-08	9.18E-09	7.30E-09	5.92E-09
N	8.93E-08	5.83E-08	1.45E-07	7.82E-08	4.95E-08	3.42E-08	2.50E-08	1.90E-08	1.49E-08	1.19E-08	9.68E-09
NNE	1.74E-07	1.13E-07	3.15E-07	1.70E-07	1.08E-07	7.49E-08	5.48E-08	4.17E-08	3.27E-08	2.62E-08	2.13E-08
NE	5.96E-07	2.99E-07	1.89E-07	1.03E-07	6.56E-08	4.57E-08	3.38E-08	2.59E-08	2.04E-08	1.65E-08	1.36E-08
ENE	2.34E-07	1.17E-07	7.36E-08	3.98E-08	2.54E-08	1.77E-08	1.30E-08	9.97E-09	7.86E-09	6.34E-09	5.20E-09
E	1.52E-07	7.56E-08	4.74E-08	2.55E-08	1.62E-08	1.13E-08	8.28E-09	6.34E-09	5.00E-09	4.03E-09	3.31E-09
ESE	1.08E-07	5.37E-08	3.37E-08	1.82E-08	1.16E-08	8.06E-09	5.94E-09	4.54E-09	3.58E-09	2.89E-09	2.37E-09
SE	1.18E-07	5.88E-08	3.69E-08	2.00E-08	1.28E-08	9.01E-09	6.70E-09	5.18E-09	4.13E-09	3.37E-09	2.79E-09
SSE	1.98E-07	9.85E-08	6.19E-08	3.33E-08	2.12E-08	1.47E-08	1.08E-08	8.27E-09	6.50E-09	5.23E-09	4.29E-09

Table 1-10: X/Q (sec/m^3) for a 2.26 day decay, undepleted at each 22.5° sector for each segment (miles) shown at the top

SECTOR	.5-1	1-2	2-3	3-4	4-5	5-10	10-20	20-30	30-40	40-50
S	1.06E-06	1.31E-06	1.29E-06	6.37E-07	3.89E-07	1.66E-07	5.44E-08	2.37E-08	1.33E-08	8.49E-09
SSW	1.45E-06	8.71E-07	5.24E-07	5.38E-07	6.75E-07	2.98E-07	9.73E-08	4.23E-08	2.39E-08	1.52E-08
SW	1.40E-06	8.34E-07	5.04E-07	3.37E-07	2.59E-07	2.68E-07	1.21E-07	5.25E-08	2.95E-08	1.87E-08
WSW	3.29E-07	2.29E-07	1.55E-07	1.10E-07	8.30E-08	1.37E-07	6.89E-08	3.00E-08	1.67E-08	1.05E-08
W	1.01E-07	7.01E-08	5.28E-08	4.17E-08	3.40E-08	7.84E-08	4.05E-08	1.72E-08	9.35E-09	5.72E-09
WNW	1.35E-07	8.41E-08	5.42E-08	1.27E-07	2.15E-07	9.31E-08	3.07E-08	1.32E-08	7.22E-09	4.46E-09
NW	2.78E-07	1.29E-07	7.07E-08	2.08E-07	2.68E-07	1.16E-07	3.83E-08	1.64E-08	8.98E-09	5.53E-09
NNW	3.90E-07	1.99E-07	1.15E-07	2.92E-07	3.58E-07	1.55E-07	5.07E-08	2.17E-08	1.19E-08	7.35E-09
N	6.48E-07	3.20E-07	1.88E-07	1.32E-07	1.00E-07	1.04E-07	8.04E-08	3.46E-08	1.92E-08	1.20E-08
NNE	1.39E-06	6.51E-07	3.76E-07	2.60E-07	1.96E-07	2.16E-07	1.75E-07	7.57E-08	4.20E-08	2.63E-08
NE	1.03E-06	5.13E-07	6.26E-07	1.04E-06	7.29E-07	3.16E-07	1.05E-07	4.62E-08	2.61E-08	1.66E-08
ENE	6.18E-07	8.46E-07	9.40E-07	4.67E-07	2.87E-07	1.24E-07	4.09E-08	1.79E-08	1.00E-08	6.37E-09
E	4.58E-07	7.11E-07	6.22E-07	3.06E-07	1.87E-07	8.01E-08	2.62E-08	1.14E-08	6.38E-09	4.05E-09
ESE	3.68E-07	7.44E-07	4.37E-07	2.16E-07	1.32E-07	5.68E-08	1.87E-08	8.15E-09	4.58E-09	2.90E-09
SE	4.02E-07	8.35E-07	4.84E-07	2.38E-07	1.46E-07	6.23E-08	2.06E-08	9.10E-09	5.22E-09	3.38E-09
SSE	6.33E-07	1.35E-06	8.02E-07	3.97E-07	2.43E-07	1.04E-07	3.43E-08	1.49E-08	8.32E-09	5.26E-09

Table 1-11: Annual Average X/Q (sec/m3) for an 8.00 day decay, depleted for each 22.5° sector at the distances (miles) shown at the top

SECTOR	0.25	0.5	0.75	1	1.5	2	2.5	3	3.5	4	4.5
S	3.30E-06	1.29E-06	1.05E-06	8.00E-07	6.60E-07	2.00E-06	1.22E-06	8.28E-07	6.02E-07	4.59E-07	3.64E-07
SSW	4.49E-06	1.67E-06	1.42E-06	1.16E-06	8.68E-07	6.58E-07	5.13E-07	4.12E-07	3.40E-07	8.07E-07	7.01E-07
SW	4.53E-06	1.63E-06	1.36E-06	1.11E-06	8.28E-07	6.30E-07	4.93E-07	3.98E-07	3.30E-07	2.80E-07	2.41E-07
WSW	9.82E-07	3.63E-07	3.17E-07	2.78E-07	2.31E-07	1.88E-07	1.54E-07	1.29E-07	1.10E-07	9.48E-08	8.33E-08
W	3.04E-07	1.13E-07	9.81E-08	8.29E-08	6.92E-08	6.00E-08	5.28E-08	4.70E-08	4.22E-08	3.81E-08	3.48E-08
WNW	3.97E-07	1.52E-07	1.33E-07	1.10E-07	8.33E-08	6.55E-08	5.33E-08	4.47E-08	3.83E-08	2.77E-07	2.21E-07
NW	9.96E-07	3.64E-07	2.74E-07	1.92E-07	1.20E-07	8.68E-08	6.75E-08	5.51E-08	1.99E-07	3.45E-07	2.75E-07
NNW	1.22E-06	4.84E-07	3.89E-07	2.86E-07	1.90E-07	1.41E-07	1.11E-07	9.16E-08	2.97E-07	4.60E-07	3.67E-07
N	2.17E-06	8.38E-07	6.42E-07	4.60E-07	3.04E-07	2.28E-07	1.82E-07	1.51E-07	1.29E-07	1.13E-07	9.95E-08
NNE	5.40E-06	1.90E-06	1.34E-06	9.34E-07	6.13E-07	4.58E-07	3.63E-07	3.00E-07	2.54E-07	2.20E-07	1.94E-07
NE	3.84E-06	1.37E-06	1.00E-06	7.21E-07	4.92E-07	3.70E-07	2.92E-07	1.08E-06	1.19E-06	9.13E-07	7.28E-07
ENE	2.15E-06	8.17E-07	6.07E-07	4.31E-07	2.78E-07	1.46E-06	8.99E-07	6.12E-07	4.47E-07	3.42E-07	2.72E-07
E	1.40E-06	5.84E-07	4.55E-07	3.35E-07	6.01E-07	9.61E-07	5.87E-07	3.98E-07	2.90E-07	2.21E-07	1.76E-07
ESE	1.14E-06	4.83E-07	3.70E-07	2.59E-07	1.15E-06	6.71E-07	4.11E-07	2.79E-07	2.03E-07	1.56E-07	1.23E-07
SE	1.29E-06	4.97E-07	3.99E-07	2.98E-07	1.29E-06	7.42E-07	4.52E-07	3.06E-07	2.22E-07	1.70E-07	1.34E-07
SSE	2.11E-06	8.13E-07	6.28E-07	4.52E-07	2.08E-06	1.23E-06	7.55E-07	5.13E-07	3.74E-07	2.86E-07	2.27E-07

Table 1-12: Annual Average X/Q (sec/m3) for an 8.00 day decay, depleted for each 22.5° sector at the distances (miles) shown at the top

SECTOR	5	7.5	10	15	20	25	30	35	40	45	50
S	2.97E-07	1.44E-07	8.87E-08	4.70E-08	2.98E-08	2.08E-08	1.54E-08	1.19E-08	9.52E-09	7.77E-09	6.47E-09
SSW	5.72E-07	2.78E-07	1.72E-07	9.14E-08	5.80E-08	4.06E-08	3.02E-08	2.34E-08	1.87E-08	1.53E-08	1.28E-08
SW	2.51E-07	3.56E-07	2.22E-07	1.19E-07	7.62E-08	5.36E-08	4.00E-08	3.11E-08	2.50E-08	2.05E-08	1.71E-08
WSW	7.41E-08	2.08E-07	1.31E-07	7.10E-08	4.58E-08	3.24E-08	2.43E-08	1.90E-08	1.53E-08	1.26E-08	1.05E-08
W	3.19E-08	1.26E-07	7.93E-08	4.31E-08	2.78E-08	1.96E-08	1.47E-08	1.14E-08	9.18E-09	7.53E-09	6.29E-09
WNW	1.81E-07	9.00E-08	5.65E-08	3.07E-08	1.97E-08	1.39E-08	1.04E-08	8.10E-09	6.50E-09	5.33E-09	4.45E-09
NW	2.26E-07	1.12E-07	7.05E-08	3.83E-08	2.47E-08	1.74E-08	1.30E-08	1.01E-08	8.12E-09	6.65E-09	5.55E-09
NNW	3.00E-07	1.49E-07	9.30E-08	5.03E-08	3.23E-08	2.27E-08	1.70E-08	1.32E-08	1.06E-08	8.65E-09	7.21E-09
N	8.91E-08	5.98E-08	1.58E-07	8.58E-08	5.52E-08	3.90E-08	2.93E-08	2.28E-08	1.83E-08	1.51E-08	1.26E-08
NNE	1.73E-07	1.15E-07	3.44E-07	1.87E-07	1.21E-07	8.57E-08	6.44E-08	5.03E-08	4.05E-08	3.33E-08	2.79E-08
NE	5.96E-07	2.94E-07	1.84E-07	9.95E-08	6.39E-08	4.51E-08	3.37E-08	2.63E-08	2.11E-08	1.73E-08	1.45E-08
ENE	2.23E-07	1.09E-07	6.80E-08	3.65E-08	2.33E-08	1.64E-08	1.22E-08	9.47E-09	7.58E-09	6.21E-09	5.17E-09
E	1.43E-07	6.96E-08	4.31E-08	2.29E-08	1.45E-08	1.02E-08	7.54E-09	5.83E-09	4.66E-09	3.80E-09	3.17E-09
ESE	1.01E-07	4.92E-08	3.06E-08	1.63E-08	1.04E-08	7.29E-09	5.42E-09	4.21E-09	3.36E-09	2.75E-09	2.29E-09
SE	1.09E-07	5.29E-08	3.26E-08	1.73E-08	1.09E-08	7.64E-09	5.68E-09	4.40E-09	3.52E-09	2.88E-09	2.40E-09
SSE	1.85E-07	9.05E-08	5.62E-08	3.00E-08	1.91E-08	1.34E-08	9.93E-09	7.70E-09	6.15E-09	5.03E-09	4.19E-09

Table 1-13: X/Q (sec/m^3) for an 8.00 day decay, depleted at each 22.5° sector for each segment (miles) shown at the top

SECTOR	.5-1	1-2	2-3	3-4	4-5	5-10	10-20	20-30	30-40	40-50
S	9.90E-07	1.29E-06	1.27E-06	6.12E-07	3.67E-07	1.53E-07	4.86E-08	2.10E-08	1.20E-08	7.81E-09
SSW	1.36E-06	8.41E-07	5.12E-07	5.39E-07	6.84E-07	2.96E-07	9.44E-08	4.11E-08	2.36E-08	1.54E-08
SW	1.31E-06	8.03E-07	4.92E-07	3.30E-07	2.56E-07	2.73E-07	1.23E-07	5.42E-08	3.13E-08	2.06E-08
WSW	3.10E-07	2.23E-07	1.53E-07	1.09E-07	8.33E-08	1.44E-07	7.30E-08	3.27E-08	1.91E-08	1.26E-08
W	9.47E-08	6.82E-08	5.24E-08	4.20E-08	3.47E-08	8.43E-08	4.43E-08	1.98E-08	1.15E-08	7.56E-09
WNW	1.27E-07	8.13E-08	5.31E-08	1.31E-07	2.23E-07	9.54E-08	3.15E-08	1.41E-08	8.15E-09	5.35E-09
NW	2.58E-07	1.21E-07	6.77E-08	2.14E-07	2.78E-07	1.19E-07	3.94E-08	1.76E-08	1.02E-08	6.68E-09
NNW	3.65E-07	1.90E-07	1.11E-07	3.00E-07	3.70E-07	1.58E-07	5.18E-08	2.30E-08	1.33E-08	8.69E-09
N	6.05E-07	3.05E-07	1.82E-07	1.29E-07	9.95E-08	1.10E-07	8.83E-08	3.95E-08	2.30E-08	1.51E-08
NNE	1.28E-06	6.15E-07	3.63E-07	2.54E-07	1.94E-07	2.30E-07	1.93E-07	8.66E-08	5.06E-08	3.34E-08
NE	9.59E-07	4.88E-07	6.27E-07	1.05E-06	7.34E-07	3.12E-07	1.03E-07	4.56E-08	2.64E-08	1.74E-08
ENE	5.75E-07	8.39E-07	9.35E-07	4.54E-07	2.75E-07	1.16E-07	3.76E-08	1.66E-08	9.53E-09	6.23E-09
E	4.30E-07	7.02E-07	6.11E-07	2.95E-07	1.77E-07	7.42E-08	2.37E-08	1.03E-08	5.87E-09	3.82E-09
ESE	3.46E-07	7.39E-07	4.28E-07	2.07E-07	1.25E-07	5.24E-08	1.69E-08	7.37E-09	4.23E-09	2.76E-09
SE	3.76E-07	8.26E-07	4.71E-07	2.26E-07	1.36E-07	5.64E-08	1.79E-08	7.74E-09	4.43E-09	2.89E-09
SSE	5.91E-07	1.34E-06	7.86E-07	3.80E-07	2.29E-07	9.63E-08	3.10E-08	1.35E-08	7.75E-09	5.05E-09

Table 1-14: D/Q (m^{-2}) at each 22.5° sector for each distance (miles) shown at the top

SECTOR	0.25	0.5	0.75	1	1.5	2	2.5	3	3.5	4	4.5
S	3.73E-08	1.66E-08	1.07E-08	6.10E-09	2.83E-09	3.44E-09	2.03E-09	1.33E-09	9.33E-10	6.92E-10	5.33E-10
SSW	3.50E-08	1.59E-08	1.06E-08	6.27E-09	2.82E-09	1.59E-09	1.01E-09	7.03E-10	5.14E-10	9.80E-10	8.66E-10
SW	3.50E-08	1.56E-08	1.04E-08	6.09E-09	2.72E-09	1.52E-09	9.65E-10	6.66E-10	4.86E-10	3.69E-10	2.89E-10
WSW	7.02E-09	3.24E-09	2.23E-09	1.36E-09	6.29E-10	3.60E-10	2.33E-10	1.62E-10	1.19E-10	9.11E-11	7.15E-11
W	2.36E-09	1.12E-09	7.77E-10	4.70E-10	2.15E-10	1.22E-10	7.79E-11	5.40E-11	3.96E-11	3.01E-11	2.36E-11
WNW	3.58E-09	1.68E-09	1.15E-09	6.88E-10	3.13E-10	1.78E-10	1.14E-10	7.92E-11	5.80E-11	1.49E-10	1.15E-10
NW	1.10E-08	4.51E-09	2.77E-09	1.53E-09	6.43E-10	3.48E-10	2.17E-10	1.47E-10	1.33E-10	2.15E-10	1.65E-10
NNW	1.36E-08	6.09E-09	3.83E-09	2.14E-09	9.14E-10	4.98E-10	3.12E-10	2.13E-10	1.94E-10	3.18E-10	2.45E-10
N	2.46E-08	1.09E-08	6.77E-09	3.72E-09	1.56E-09	8.36E-10	5.18E-10	3.52E-10	2.54E-10	1.92E-10	1.50E-10
NNE	5.51E-08	2.24E-08	1.32E-08	6.97E-09	2.82E-09	1.49E-09	9.15E-10	6.17E-10	4.44E-10	3.34E-10	2.60E-10
NE	4.23E-08	1.73E-08	1.03E-08	5.49E-09	2.25E-09	1.19E-09	7.36E-10	6.12E-10	1.08E-09	8.03E-10	6.19E-10
ENE	2.81E-08	1.16E-08	6.90E-09	3.70E-09	1.52E-09	1.98E-09	1.17E-09	7.64E-10	5.38E-10	3.98E-10	3.07E-10
E	1.93E-08	8.64E-09	5.21E-09	2.85E-09	1.55E-09	1.53E-09	8.98E-10	5.88E-10	4.14E-10	3.07E-10	2.36E-10
ESE	1.65E-08	7.46E-09	4.52E-09	2.47E-09	2.25E-09	1.15E-09	6.77E-10	4.43E-10	3.12E-10	2.31E-10	1.78E-10
SE	1.44E-08	6.27E-09	4.04E-09	2.31E-09	2.49E-09	1.30E-09	7.65E-10	5.01E-10	3.53E-10	2.61E-10	2.01E-10
SSE	2.79E-08	1.21E-08	7.55E-09	4.20E-09	3.75E-09	1.96E-09	1.16E-09	7.57E-10	5.32E-10	3.95E-10	3.04E-10

Table 1-15: D/Q (m^{-2}) at each 22.5° sector for each distance (miles) shown at the top

SECTOR	5	7.5	10	15	20	25	30	35	40	45	50
S	4.24E-10	1.88E-10	1.14E-10	5.76E-11	3.49E-11	2.34E-11	1.68E-11	1.26E-11	9.78E-12	7.81E-12	6.38E-12
SSW	6.89E-10	3.06E-10	1.85E-10	9.37E-11	5.67E-11	3.80E-11	2.72E-11	2.05E-11	1.59E-11	1.27E-11	1.04E-11
SW	2.46E-10	3.19E-10	1.93E-10	9.77E-11	5.91E-11	3.96E-11	2.84E-11	2.13E-11	1.66E-11	1.32E-11	1.08E-11
WSW	5.74E-11	1.06E-10	6.43E-11	3.25E-11	1.97E-11	1.32E-11	9.44E-12	7.09E-12	5.51E-12	4.40E-12	3.60E-12
W	1.90E-11	4.31E-11	2.61E-11	1.32E-11	7.98E-12	5.35E-12	3.83E-12	2.88E-12	2.24E-12	1.79E-12	1.46E-12
WNW	9.13E-11	4.06E-11	2.46E-11	1.24E-11	7.52E-12	5.04E-12	3.61E-12	2.71E-12	2.11E-12	1.69E-12	1.38E-12
NW	1.31E-10	5.84E-11	3.54E-11	1.79E-11	1.08E-11	7.25E-12	5.20E-12	3.90E-12	3.04E-12	2.42E-12	1.98E-12
NNW	1.95E-10	8.65E-11	5.24E-11	2.65E-11	1.60E-11	1.08E-11	7.70E-12	5.78E-12	4.50E-12	3.59E-12	2.93E-12
N	1.20E-10	5.46E-11	9.38E-11	4.74E-11	2.87E-11	1.92E-11	1.38E-11	1.04E-11	8.05E-12	6.43E-12	5.25E-12
NNE	2.08E-10	9.42E-11	1.95E-10	9.84E-11	5.95E-11	3.99E-11	2.86E-11	2.15E-11	1.67E-11	1.33E-11	1.09E-11
NE	4.92E-10	2.18E-10	1.32E-10	6.69E-11	4.05E-11	2.71E-11	1.95E-11	1.46E-11	1.14E-11	9.07E-12	7.40E-12
ENE	2.44E-10	1.08E-10	6.56E-11	3.32E-11	2.01E-11	1.35E-11	9.65E-12	7.24E-12	5.63E-12	4.50E-12	3.67E-12
E	1.88E-10	8.34E-11	5.05E-11	2.55E-11	1.55E-11	1.04E-11	7.42E-12	5.57E-12	4.33E-12	3.46E-12	2.83E-12
ESE	1.42E-10	6.28E-11	3.81E-11	1.92E-11	1.16E-11	7.81E-12	5.60E-12	4.20E-12	3.27E-12	2.61E-12	2.13E-12
SE	1.60E-10	7.10E-11	4.30E-11	2.18E-11	1.32E-11	8.83E-12	6.33E-12	4.75E-12	3.69E-12	2.95E-12	2.41E-12
SSE	2.42E-10	1.07E-10	6.50E-11	3.29E-11	1.99E-11	1.33E-11	9.55E-12	7.17E-12	5.58E-12	4.46E-12	3.64E-12

Table 1-16: D/Q (m^{-2}) at each 22.5° sector for each segment (miles) shown at the top

SECTOR	.5-1	1-2	2-3	3-4	4-5	5-10	10-20	20-30	30-40	40-50
S	9.97E-09	3.83E-09	2.12E-09	9.54E-10	5.40E-10	2.08E-10	6.00E-11	2.38E-11	1.27E-11	7.86E-12
SSW	9.87E-09	3.04E-09	1.04E-09	7.45E-10	8.34E-10	3.37E-10	9.76E-11	3.87E-11	2.07E-11	1.28E-11
SW	9.64E-09	2.93E-09	9.92E-10	4.93E-10	2.97E-10	2.47E-10	1.02E-10	4.03E-11	2.15E-11	1.33E-11
WSW	2.07E-09	6.72E-10	2.39E-10	1.21E-10	7.21E-11	7.67E-11	3.38E-11	1.34E-11	7.16E-12	4.43E-12
W	7.16E-10	2.30E-10	8.00E-11	4.01E-11	2.38E-11	3.02E-11	1.37E-11	5.44E-12	2.91E-12	1.80E-12
WNW	1.06E-09	3.36E-10	1.17E-10	9.88E-11	1.16E-10	4.48E-11	1.30E-11	5.13E-12	2.74E-12	1.70E-12
NW	2.61E-09	7.09E-10	2.24E-10	1.68E-10	1.67E-10	6.44E-11	1.86E-11	7.38E-12	3.94E-12	2.44E-12
NNW	3.58E-09	1.00E-09	3.22E-10	2.47E-10	2.48E-10	9.54E-11	2.76E-11	1.09E-11	5.84E-12	3.62E-12
N	6.33E-09	1.72E-09	5.36E-10	2.58E-10	1.51E-10	8.66E-11	4.94E-11	1.96E-11	1.05E-11	6.47E-12
NNE	1.25E-08	3.15E-09	9.50E-10	4.51E-10	2.63E-10	1.64E-10	1.03E-10	4.06E-11	2.17E-11	1.34E-11
NE	9.71E-09	2.50E-09	8.08E-10	8.42E-10	6.26E-10	2.41E-10	6.97E-11	2.76E-11	1.48E-11	9.13E-12
ENE	6.53E-09	2.21E-09	1.22E-09	5.49E-10	3.11E-10	1.20E-10	3.46E-11	1.37E-11	7.32E-12	4.53E-12
E	4.92E-09	1.83E-09	9.41E-10	4.23E-10	2.39E-10	9.19E-11	2.66E-11	1.05E-11	5.63E-12	3.48E-12
ESE	4.26E-09	1.81E-09	7.09E-10	3.19E-10	1.80E-10	6.93E-11	2.01E-11	7.95E-12	4.24E-12	2.63E-12
SE	3.76E-09	1.92E-09	8.02E-10	3.60E-10	2.04E-10	7.83E-11	2.27E-11	8.98E-12	4.80E-12	2.97E-12
SSE	7.06E-09	3.06E-09	1.21E-09	5.44E-10	3.08E-10	1.18E-10	3.42E-11	1.36E-11	7.25E-12	4.49E-12

Table 1-17: X/Q and D/Q values for 2.26 and 8 day decay, as shown below, at each receptor location

Release ID	Type of Location	Sector	Distance (miles)	Distance (meters)	X/Q (sec/m^3) 2.26 Day Decay Undepleted	X/Q (sec/m^3) 8.00 Day Decay Depleted	D/Q (m^{-2})
P	EAB	S	0.71	1137	1.10E-06	1.10E-06	1.10E-08
P	EAB	SSW	1.03	1652	1.20E-06	1.10E-06	6.00E-09
P	EAB	SW	0.77	1241	1.40E-06	1.30E-06	9.90E-09
P	EAB	WSW	0.73	1169	3.40E-07	3.20E-07	2.30E-09
P	EAB	W	0.59	942	1.10E-07	1.00E-07	9.60E-10
P	EAB	WNW	0.53	847	1.60E-07	1.50E-07	1.60E-09
P	EAB	NW	0.53	847	3.80E-07	3.50E-07	4.20E-09
P	EAB	NNW	0.53	858	5.00E-07	4.60E-07	5.70E-09
P	EAB	N	0.58	928	8.00E-07	7.40E-07	9.20E-09
P	EAB	NNE	0.77	1236	1.40E-06	1.30E-06	1.30E-08
P	EAB	NE	1.09	1762	7.00E-07	6.60E-07	4.50E-09
P	EAB	ENE	0.77	1242	6.30E-07	5.90E-07	6.50E-09
P	EAB	E	0.58	940	5.50E-07	5.10E-07	7.10E-09
P	EAB	ESE	0.57	919	4.60E-07	4.30E-07	6.30E-09
P	EAB	SE	0.57	919	4.80E-07	4.50E-07	5.40E-09
P	EAB	SSE	0.57	925	7.80E-07	7.20E-07	1.00E-08
P	GARDEN	SSW	4.56	7338	6.70E-07	6.80E-07	8.40E-10
P	GARDEN	SW	1.74	2807	7.50E-07	7.20E-07	2.00E-09
P	GARDEN	WSW	4.21	6780	8.90E-08	9.00E-08	8.20E-11
P	GARDEN	W	2.64	4244	5.10E-08	5.10E-08	7.00E-11
P	GARDEN	WNW	0.71	1143	1.40E-07	1.30E-07	1.20E-09
P	GARDEN	NW	0.8	1289	2.70E-07	2.50E-07	2.40E-09
P	GARDEN	NNW	1.13	1821	2.70E-07	2.50E-07	1.70E-09
P	GARDEN	N	2.06	3310	2.30E-07	2.20E-07	7.90E-10
P	GARDEN	NNE	1.25	2006	7.90E-07	7.40E-07	4.30E-09
P	GARDEN	NE	4.13	6648	8.50E-07	8.60E-07	7.50E-10
P	GARDEN	ENE	3.47	5588	4.70E-07	4.50E-07	5.50E-10
P	GARDEN	E	2.4	3861	6.50E-07	6.40E-07	9.90E-10
P	GARDEN	ESE	2.73	4388	3.50E-07	3.40E-07	5.50E-10
P	GARDEN	SE	4.48	7204	1.50E-07	1.40E-07	2.00E-10
P	MILK COW/GOAT	S	4.77	7681	3.50E-07	3.20E-07	4.70E-10
P	MILK COW/GOAT	WSW	4.6	7406	8.10E-08	8.10E-08	6.80E-11
P	MILK COW/GOAT	W	1.46	2348	7.20E-08	7.00E-08	2.30E-10
P	MILK COW/GOAT	WNW	0.75	1214	1.40E-07	1.30E-07	1.10E-09
P	MILK COW/GOAT	NW	0.99	1586	2.10E-07	2.00E-07	1.60E-09
P	MILK COW/GOAT	NNW	2.19	3520	1.30E-07	1.30E-07	4.10E-10
P	MILK COW/GOAT	N	2.12	3417	2.20E-07	2.10E-07	7.40E-10
P	MILK COW/GOAT	NNE	2.22	3571	4.30E-07	4.10E-07	1.20E-09
P	MILK COW/GOAT	NE	4.13	6648	8.50E-07	8.60E-07	7.50E-10
P	MILK COW/GOAT	ENE	3.81	6135	3.90E-07	3.80E-07	4.40E-10
P	MILK COW/GOAT	E	2.51	4036	5.90E-07	5.80E-07	8.90E-10
P	MILK COW/GOAT	ESE	2.71	4362	3.60E-07	3.50E-07	5.60E-10
P	HOUSE	W	1.46	2348	7.20E-08	7.00E-08	2.30E-10
P	HOUSE	WNW	0.73	1169	1.40E-07	1.30E-07	1.20E-09
P	HOUSE	NW	0.69	1103	3.10E-07	2.90E-07	3.10E-09
P	SCHOOL	WNW	2.64	4243	5.20E-08	5.10E-08	1.00E-10
P	ANIMAL FOR MEAT	S	4.77	7681	3.50E-07	3.20E-07	4.70E-10
P	ANIMAL FOR MEAT	WSW	4.6	7406	8.10E-08	8.10E-08	6.80E-11
P	ANIMAL FOR MEAT	W	1.46	2348	7.20E-08	7.00E-08	2.30E-10
P	ANIMAL FOR MEAT	WNW	0.75	1214	1.40E-07	1.30E-07	1.10E-09
P	ANIMAL FOR MEAT	NW	0.99	1586	2.10E-07	2.00E-07	1.60E-09
P	ANIMAL FOR MEAT	NNW	2.19	3520	1.30E-07	1.30E-07	4.10E-10
P	ANIMAL FOR MEAT	N	2.12	3417	2.20E-07	2.10E-07	7.40E-10
P	ANIMAL FOR MEAT	NNE	2.22	3571	4.30E-07	4.10E-07	1.20E-09
P	ANIMAL FOR MEAT	NE	4.13	6648	8.50E-07	8.60E-07	7.50E-10
P	ANIMAL FOR MEAT	ENE	3.81	6135	3.90E-07	3.80E-07	4.40E-10
P	ANIMAL FOR MEAT	E	2.4	3861	6.50E-07	6.40E-07	9.90E-10
P	ANIMAL FOR MEAT	ESE	2.71	4362	3.60E-07	3.50E-07	5.60E-10

Tennessee Valley Authority

Atmospheric Dispersion Values for Routine Operations Based on Revision 15 of the AP1000 DCD

(7 pages: Tables 1-1 through 1-17)

Attachment 2.7-1B
Atmospheric Dispersion Values for Routine Operations Based on Revision 15 of the AP1000 DCD

Table 2-1: Annual Average X/Q (sec/m^3) for no decay, undepleted for each 22.5° sector at the distances (miles) shown at the top

SECTOR	0.25	0.5	0.75	1	1.5	2	2.5	3	3.5	4	4.5
S	3.54E-06	1.39E-06	1.12E-06	8.46E-07	6.88E-07	2.06E-06	1.29E-06	8.88E-07	6.56E-07	5.09E-07	4.09E-07
SSW	4.82E-06	1.81E-06	1.51E-06	1.22E-06	9.04E-07	6.85E-07	5.35E-07	4.30E-07	3.56E-07	8.33E-07	7.33E-07
SW	4.86E-06	1.76E-06	1.45E-06	1.17E-06	8.63E-07	6.56E-07	5.14E-07	4.16E-07	3.45E-07	2.93E-07	2.53E-07
WSW	1.06E-06	3.93E-07	3.38E-07	2.91E-07	2.40E-07	1.95E-07	1.60E-07	1.33E-07	1.14E-07	9.87E-08	8.69E-08
W	3.26E-07	1.22E-07	1.05E-07	8.70E-08	7.18E-08	6.21E-08	5.46E-08	4.86E-08	4.37E-08	3.96E-08	3.62E-08
WNW	4.26E-07	1.64E-07	1.42E-07	1.15E-07	8.66E-08	6.80E-08	5.54E-08	4.65E-08	4.00E-08	2.86E-07	2.32E-07
NW	1.07E-06	3.94E-07	2.95E-07	2.05E-07	1.28E-07	9.21E-08	7.16E-08	5.85E-08	2.05E-07	3.58E-07	2.90E-07
NNW	1.31E-06	5.21E-07	4.16E-07	3.03E-07	2.00E-07	1.48E-07	1.17E-07	9.63E-08	3.05E-07	4.77E-07	3.86E-07
N	2.33E-06	9.03E-07	6.88E-07	4.89E-07	3.21E-07	2.40E-07	1.91E-07	1.59E-07	1.36E-07	1.19E-07	1.05E-07
NNE	5.80E-06	2.06E-06	1.45E-06	1.00E-06	6.50E-07	4.83E-07	3.83E-07	3.15E-07	2.68E-07	2.32E-07	2.05E-07
NE	4.12E-06	1.49E-06	1.08E-06	7.70E-07	5.19E-07	3.89E-07	3.07E-07	1.10E-06	1.23E-06	9.60E-07	7.75E-07
ENE	2.31E-06	8.81E-07	6.52E-07	4.59E-07	2.93E-07	1.50E-06	9.41E-07	6.53E-07	4.84E-07	3.77E-07	3.04E-07
E	1.50E-06	6.26E-07	4.85E-07	3.54E-07	6.15E-07	9.94E-07	6.20E-07	4.28E-07	3.17E-07	2.46E-07	1.98E-07
ESE	1.21E-06	5.16E-07	3.94E-07	2.74E-07	1.17E-06	6.98E-07	4.36E-07	3.02E-07	2.24E-07	1.74E-07	1.40E-07
SE	1.38E-06	5.36E-07	4.26E-07	3.16E-07	1.31E-06	7.70E-07	4.79E-07	3.31E-07	2.44E-07	1.89E-07	1.52E-07
SSE	2.25E-06	8.75E-07	6.72E-07	4.80E-07	2.11E-06	1.28E-06	8.02E-07	5.55E-07	4.11E-07	3.20E-07	2.58E-07

Table 2-2: Annual Average X/Q (sec/m^3) for no decay, undepleted for each 22.5° sector at the distances (miles) shown at the top

SECTOR	5	7.5	10	15	20	25	30	35	40	45	50
S	3.38E-07	1.73E-07	1.12E-07	6.46E-08	4.39E-08	3.26E-08	2.56E-08	2.09E-08	1.76E-08	1.51E-08	1.31E-08
SSW	6.06E-07	3.10E-07	2.01E-07	1.15E-07	7.82E-08	5.80E-08	4.55E-08	3.71E-08	3.11E-08	2.66E-08	2.32E-08
SW	2.63E-07	3.86E-07	2.52E-07	1.46E-07	9.97E-08	7.44E-08	5.87E-08	4.80E-08	4.04E-08	3.48E-08	3.04E-08
WSW	7.75E-08	2.22E-07	1.46E-07	8.61E-08	5.94E-08	4.47E-08	3.55E-08	2.92E-08	2.47E-08	2.13E-08	1.87E-08
W	3.33E-08	1.35E-07	8.92E-08	5.27E-08	3.65E-08	2.75E-08	2.18E-08	1.80E-08	1.52E-08	1.32E-08	1.16E-08
WNW	1.93E-07	1.01E-07	6.68E-08	3.94E-08	2.72E-08	2.05E-08	1.63E-08	1.34E-08	1.14E-08	9.83E-09	8.63E-09
NW	2.41E-07	1.27E-07	8.37E-08	4.95E-08	3.42E-08	2.58E-08	2.05E-08	1.69E-08	1.43E-08	1.24E-08	1.09E-08
NNW	3.20E-07	1.68E-07	1.10E-07	6.48E-08	4.47E-08	3.36E-08	2.67E-08	2.19E-08	1.86E-08	1.60E-08	1.40E-08
N	9.42E-08	6.38E-08	1.73E-07	1.01E-07	6.98E-08	5.24E-08	4.16E-08	3.42E-08	2.89E-08	2.49E-08	2.18E-08
NNE	1.83E-07	1.23E-07	3.75E-07	2.21E-07	1.53E-07	1.15E-07	9.13E-08	7.52E-08	6.37E-08	5.50E-08	4.82E-08
NE	6.44E-07	3.36E-07	2.21E-07	1.29E-07	8.89E-08	6.67E-08	5.29E-08	4.35E-08	3.67E-08	3.16E-08	2.77E-08
ENE	2.52E-07	1.31E-07	8.57E-08	5.01E-08	3.44E-08	2.57E-08	2.04E-08	1.67E-08	1.41E-08	1.22E-08	1.06E-08
E	1.64E-07	8.42E-08	5.48E-08	3.17E-08	2.16E-08	1.61E-08	1.27E-08	1.04E-08	8.72E-09	7.49E-09	6.54E-09
ESE	1.16E-07	5.99E-08	3.91E-08	2.28E-08	1.56E-08	1.17E-08	9.22E-09	7.57E-09	6.38E-09	5.50E-09	4.81E-09
SE	1.25E-07	6.40E-08	4.14E-08	2.38E-08	1.61E-08	1.20E-08	9.38E-09	7.65E-09	6.42E-09	5.50E-09	4.80E-09
SSE	2.13E-07	1.10E-07	7.20E-08	4.19E-08	2.87E-08	2.14E-08	1.69E-08	1.39E-08	1.17E-08	1.01E-08	8.83E-09

Table 2-3: Annual Average X/Q (sec/m^3) for no decay, undepleted for each 22.5° sector for each segment (miles) shown at the top

SECTOR	.5-1	1-2	2-3	3-4	4-5	5-10	10-20	20-30	30-40	40-50
S	1.06E-06	1.33E-06	1.33E-06	6.66E-07	4.12E-07	1.83E-07	6.59E-08	3.28E-08	2.10E-08	1.51E-08
SSW	1.45E-06	8.77E-07	5.33E-07	5.59E-07	7.15E-07	3.27E-07	1.18E-07	5.84E-08	3.72E-08	2.67E-08
SW	1.40E-06	8.39E-07	5.12E-07	3.46E-07	2.69E-07	2.99E-07	1.49E-07	7.49E-08	4.82E-08	3.48E-08
WSW	3.29E-07	2.31E-07	1.58E-07	1.14E-07	8.69E-08	1.56E-07	8.76E-08	4.49E-08	2.93E-08	2.13E-08
W	1.01E-07	7.08E-08	5.42E-08	4.35E-08	3.61E-08	9.21E-08	5.36E-08	2.76E-08	1.80E-08	1.32E-08
WNW	1.35E-07	8.47E-08	5.52E-08	1.36E-07	2.33E-07	1.06E-07	4.01E-08	2.06E-08	1.35E-08	9.84E-09
NW	2.77E-07	1.29E-07	7.18E-08	2.21E-07	2.92E-07	1.33E-07	5.03E-08	2.60E-08	1.70E-08	1.24E-08
NNW	3.89E-07	2.00E-07	1.17E-07	3.11E-07	3.89E-07	1.76E-07	6.60E-08	3.38E-08	2.20E-08	1.60E-08
N	6.47E-07	3.22E-07	1.91E-07	1.36E-07	1.05E-07	1.19E-07	1.03E-07	5.27E-08	3.43E-08	2.49E-08
NNE	1.39E-06	6.54E-07	3.83E-07	2.68E-07	2.05E-07	2.48E-07	2.25E-07	1.16E-07	7.54E-08	5.50E-08
NE	1.03E-06	5.17E-07	6.46E-07	1.09E-06	7.81E-07	3.53E-07	1.32E-07	6.71E-08	4.36E-08	3.17E-08
ENE	6.17E-07	8.66E-07	9.75E-07	4.92E-07	3.07E-07	1.38E-07	5.10E-08	2.59E-08	1.68E-08	1.22E-08
E	4.58E-07	7.25E-07	6.43E-07	3.22E-07	1.99E-07	8.88E-08	3.23E-08	1.62E-08	1.04E-08	7.51E-09
ESE	3.68E-07	7.60E-07	4.52E-07	2.27E-07	1.41E-07	6.31E-08	2.32E-08	1.17E-08	7.59E-09	5.50E-09
SE	4.02E-07	8.50E-07	4.97E-07	2.48E-07	1.53E-07	6.76E-08	2.43E-08	1.20E-08	7.68E-09	5.51E-09
SSE	6.32E-07	1.38E-06	8.31E-07	4.18E-07	2.60E-07	1.16E-07	4.27E-08	2.16E-08	1.39E-08	1.01E-08

Table 2-4: Annual Average X/Q (sec/m^3) for no decay, depleted for each 22.5° sector at the distances (miles) shown at the top

SECTOR	0.25	0.5	0.75	1	1.5	2	2.5	3	3.5	4	4.5
S	3.30E-06	1.28E-06	1.04E-06	8.00E-07	6.61E-07	2.01E-06	1.23E-06	8.38E-07	6.10E-07	4.66E-07	3.70E-07
SSW	4.49E-06	1.66E-06	1.41E-06	1.16E-06	8.69E-07	6.60E-07	5.16E-07	4.15E-07	3.43E-07	8.19E-07	7.13E-07
SW	4.53E-06	1.62E-06	1.36E-06	1.11E-06	8.30E-07	6.32E-07	4.96E-07	4.01E-07	3.33E-07	2.82E-07	2.44E-07
WSW	9.82E-07	3.62E-07	3.17E-07	2.78E-07	2.32E-07	1.89E-07	1.55E-07	1.30E-07	1.11E-07	9.60E-08	8.45E-08
W	3.04E-07	1.13E-07	9.78E-08	8.29E-08	6.94E-08	6.03E-08	5.32E-08	4.74E-08	4.27E-08	3.87E-08	3.54E-08
WNW	3.97E-07	1.52E-07	1.33E-07	1.10E-07	8.34E-08	6.57E-08	5.36E-08	4.50E-08	3.87E-08	2.83E-07	2.26E-07
NW	9.96E-07	3.62E-07	2.73E-07	1.92E-07	1.21E-07	8.71E-08	6.78E-08	5.54E-08	2.02E-07	3.53E-07	2.82E-07
NNW	1.22E-06	4.81E-07	3.88E-07	2.86E-07	1.90E-07	1.41E-07	1.12E-07	9.23E-08	3.01E-07	4.70E-07	3.75E-07
N	2.17E-06	8.34E-07	6.40E-07	4.59E-07	3.04E-07	2.29E-07	1.83E-07	1.52E-07	1.30E-07	1.14E-07	1.01E-07
NNE	5.40E-06	1.89E-06	1.34E-06	9.32E-07	6.14E-07	4.59E-07	3.65E-07	3.02E-07	2.56E-07	2.23E-07	1.96E-07
NE	3.84E-06	1.37E-06	9.96E-07	7.20E-07	4.92E-07	3.71E-07	2.93E-07	1.09E-06	1.21E-06	9.30E-07	7.42E-07
ENE	2.15E-06	8.13E-07	6.05E-07	4.31E-07	2.78E-07	1.48E-06	9.09E-07	6.20E-07	4.54E-07	3.48E-07	2.78E-07
E	1.40E-06	5.82E-07	4.54E-07	3.35E-07	6.03E-07	9.69E-07	5.93E-07	4.03E-07	2.94E-07	2.25E-07	1.79E-07
ESE	1.13E-06	4.81E-07	3.69E-07	2.59E-07	1.16E-06	6.77E-07	4.15E-07	2.83E-07	2.06E-07	1.58E-07	1.26E-07
SE	1.29E-06	4.94E-07	3.97E-07	2.98E-07	1.30E-06	7.46E-07	4.56E-07	3.09E-07	2.25E-07	1.72E-07	1.36E-07
SSE	2.10E-06	8.08E-07	6.26E-07	4.52E-07	2.09E-06	1.24E-06	7.63E-07	5.20E-07	3.79E-07	2.91E-07	2.31E-07

Table 2-5: Annual Average X/Q (sec/m^3) for no decay, depleted for each 22.5° sector at the distances (miles) shown at the top

SECTOR	5	7.5	10	15	20	25	30	35	40	45	50
S	3.02E-07	1.48E-07	9.22E-08	4.99E-08	3.22E-08	2.30E-08	1.74E-08	1.37E-08	1.12E-08	9.33E-09	7.92E-09
SSW	5.83E-07	2.86E-07	1.79E-07	9.69E-08	6.28E-08	4.48E-08	3.40E-08	2.69E-08	2.19E-08	1.83E-08	1.56E-08
SW	2.54E-07	3.67E-07	2.31E-07	1.27E-07	8.30E-08	5.97E-08	4.56E-08	3.63E-08	2.97E-08	2.49E-08	2.13E-08
WSW	7.53E-08	2.15E-07	1.37E-07	7.63E-08	5.05E-08	3.66E-08	2.81E-08	2.25E-08	1.85E-08	1.56E-08	1.34E-08
W	3.26E-08	1.31E-07	8.38E-08	4.69E-08	3.11E-08	2.26E-08	1.74E-08	1.39E-08	1.15E-08	9.68E-09	8.31E-09
WNW	1.86E-07	9.36E-08	5.96E-08	3.32E-08	2.20E-08	1.59E-08	1.22E-08	9.77E-09	8.05E-09	6.78E-09	5.81E-09
NW	2.32E-07	1.17E-07	7.45E-08	4.16E-08	2.75E-08	1.99E-08	1.53E-08	1.23E-08	1.01E-08	8.51E-09	7.30E-09
NNW	3.08E-07	1.55E-07	9.81E-08	5.44E-08	3.59E-08	2.60E-08	1.99E-08	1.59E-08	1.31E-08	1.10E-08	9.40E-09
N	9.06E-08	6.15E-08	1.66E-07	9.25E-08	6.11E-08	4.43E-08	3.41E-08	2.72E-08	2.24E-08	1.89E-08	1.62E-08
NNE	1.76E-07	1.18E-07	3.62E-07	2.02E-07	1.34E-07	9.74E-08	7.50E-08	6.01E-08	4.96E-08	4.18E-08	3.59E-08
NE	6.09E-07	3.04E-07	1.93E-07	1.07E-07	6.99E-08	5.05E-08	3.86E-08	3.08E-08	2.53E-08	2.12E-08	1.81E-08
ENE	2.28E-07	1.13E-07	7.11E-08	3.90E-08	2.55E-08	1.83E-08	1.40E-08	1.11E-08	9.08E-09	7.61E-09	6.49E-09
E	1.46E-07	7.18E-08	4.49E-08	2.44E-08	1.58E-08	1.13E-08	8.58E-09	6.78E-09	5.53E-09	4.62E-09	3.93E-09
ESE	1.03E-07	5.08E-08	3.19E-08	1.74E-08	1.14E-08	8.14E-09	6.20E-09	4.92E-09	4.02E-09	3.36E-09	2.86E-09
SE	1.11E-07	5.42E-08	3.37E-08	1.82E-08	1.17E-08	8.32E-09	6.29E-09	4.96E-09	4.04E-09	3.36E-09	2.85E-09
SSE	1.89E-07	9.35E-08	5.87E-08	3.21E-08	2.09E-08	1.50E-08	1.14E-08	9.03E-09	7.38E-09	6.17E-09	5.26E-09

Table 2-6: Annual Average X/Q (sec/m^3) for no decay, depleted for each 22.5° sector for each segment (miles) shown at the top

SECTOR	.5-1	1-2	2-3	3-4	4-5	5-10	10-20	20-30	30-40	40-50
S	9.87E-07	1.29E-06	1.28E-06	6.20E-07	3.74E-07	1.57E-07	5.14E-08	2.32E-08	1.38E-08	9.36E-09
SSW	1.36E-06	8.42E-07	5.14E-07	5.45E-07	6.96E-07	3.04E-07	9.99E-08	4.53E-08	2.70E-08	1.84E-08
SW	1.31E-06	8.04E-07	4.94E-07	3.33E-07	2.59E-07	2.82E-07	1.31E-07	6.03E-08	3.64E-08	2.50E-08
WSW	3.09E-07	2.23E-07	1.54E-07	1.11E-07	8.45E-08	1.49E-07	7.83E-08	3.69E-08	2.26E-08	1.57E-08
W	9.45E-08	6.84E-08	5.28E-08	4.25E-08	3.53E-08	8.83E-08	4.81E-08	2.28E-08	1.40E-08	9.71E-09
WNW	1.27E-07	8.15E-08	5.34E-08	1.34E-07	2.28E-07	9.90E-08	3.41E-08	1.60E-08	9.82E-09	6.79E-09
NW	2.57E-07	1.21E-07	6.80E-08	2.18E-07	2.84E-07	1.24E-07	4.26E-08	2.01E-08	1.23E-08	8.53E-09
NNW	3.64E-07	1.90E-07	1.12E-07	3.06E-07	3.78E-07	1.64E-07	5.59E-08	2.62E-08	1.60E-08	1.10E-08
N	6.03E-07	3.05E-07	1.83E-07	1.30E-07	1.01E-07	1.15E-07	9.49E-08	4.47E-08	2.74E-08	1.90E-08
NNE	1.28E-06	6.16E-07	3.65E-07	2.56E-07	1.97E-07	2.39E-07	2.07E-07	9.82E-08	6.03E-08	4.19E-08
NE	9.56E-07	4.89E-07	6.32E-07	1.07E-06	7.48E-07	3.22E-07	1.09E-07	5.09E-08	3.09E-08	2.13E-08
ENE	5.74E-07	8.44E-07	9.45E-07	4.61E-07	2.80E-07	1.20E-07	4.01E-08	1.85E-08	1.12E-08	7.63E-09
E	4.29E-07	7.06E-07	6.17E-07	2.99E-07	1.80E-07	7.64E-08	2.51E-08	1.14E-08	6.82E-09	4.63E-09
ESE	3.45E-07	7.43E-07	4.32E-07	2.10E-07	1.27E-07	5.40E-08	1.79E-08	8.22E-09	4.94E-09	3.37E-09
SE	3.75E-07	8.30E-07	4.75E-07	2.29E-07	1.37E-07	5.77E-08	1.88E-08	8.41E-09	4.99E-09	3.37E-09
SSE	5.89E-07	1.35E-06	7.94E-07	3.86E-07	2.33E-07	9.93E-08	3.30E-08	1.51E-08	9.07E-09	6.19E-09

Table 2-7: X/Q and D/Q values for no decay, depleted and undepleted, at each receptor location

Release ID	Type of Location	Sector	Distance (miles)	Distance (meters)	X/Q (sec/m^3) No Decay Undepleted	X/Q (sec/m^3) No Decay Depleted	D/Q (m^{-2})
P	EAB	S	0.71	1145	1.10E-06	1.10E-06	1.10E-08
P	EAB	SSW	1.03	1660	1.20E-06	1.10E-06	5.90E-09
P	EAB	SW	0.78	1249	**1.40E-06**	1.30E-06	9.80E-09
P	EAB	WSW	0.73	1177	3.40E-07	3.10E-07	2.30E-09
P	EAB	W	0.59	949	1.10E-07	1.00E-07	9.60E-10
P	EAB	WNW	0.53	855	1.60E-07	1.40E-07	1.60E-09
P	EAB	NW	0.53	855	3.70E-07	3.40E-07	4.20E-09
P	EAB	NNW	0.54	866	4.90E-07	4.50E-07	5.60E-09
P	EAB	N	0.58	935	7.90E-07	7.30E-07	9.10E-09
P	EAB	NNE	0.77	1244	**1.40E-06**	1.30E-06	1.20E-08
P	EAB	NE	1.1	1769	7.00E-07	6.60E-07	4.50E-09
P	EAB	ENE	0.78	1250	6.30E-07	5.80E-07	6.40E-09
P	EAB	E	0.59	947	5.50E-07	5.10E-07	7.10E-09
P	EAB	ESE	0.58	927	4.60E-07	4.30E-07	6.30E-09
P	EAB	SE	0.58	927	4.80E-07	4.40E-07	5.40E-09
P	EAB	SSE	0.58	932	7.70E-07	7.10E-07	1.00E-08
P	GARDEN	SSW	4.56	7338	7.20E-07	6.90E-07	8.40E-10
P	GARDEN	SW	1.74	2807	7.50E-07	7.20E-07	2.00E-09
P	GARDEN	WSW	4.21	6780	9.30E-08	9.10E-08	8.20E-11
P	GARDEN	W	2.64	4244	5.30E-08	5.20E-08	7.00E-11
P	GARDEN	WNW	0.71	1143	1.40E-07	1.30E-07	1.20E-09
P	GARDEN	NW	0.8	1289	2.70E-07	2.50E-07	2.40E-09
P	GARDEN	NNW	1.13	1821	2.70E-07	2.50E-07	1.70E-09
P	GARDEN	N	2.06	3310	2.30E-07	2.20E-07	7.90E-10
P	GARDEN	NNE	1.25	2006	7.90E-07	7.40E-07	4.30E-09
P	GARDEN	NE	4.13	6648	9.00E-07	8.70E-07	7.50E-10
P	GARDEN	ENE	3.47	5588	4.90E-07	4.60E-07	5.50E-10
P	GARDEN	E	2.4	3861	6.80E-07	6.50E-07	9.90E-10
P	GARDEN	ESE	2.73	4388	3.70E-07	3.50E-07	5.50E-10
P	GARDEN	SE	4.48	7204	1.50E-07	1.40E-07	2.00E-10
P	MILK COW/GOAT	S	4.77	7681	3.70E-07	3.30E-07	4.70E-10
P	MILK COW/GOAT	WSW	4.6	7406	8.50E-08	8.20E-08	6.80E-11
P	MILK COW/GOAT	W	1.46	2348	7.30E-08	7.00E-08	2.30E-10
P	MILK COW/GOAT	WNW	0.75	1214	1.40E-07	1.30E-07	1.10E-09
P	MILK COW/GOAT	NW	0.99	1586	2.10E-07	1.90E-07	1.60E-09
P	MILK COW/GOAT	NNW	2.19	3520	1.30E-07	1.30E-07	4.10E-10
P	MILK COW/GOAT	N	2.12	3417	2.30E-07	2.20E-07	7.40E-10
P	MILK COW/GOAT	NNE	2.22	3571	4.30E-07	4.10E-07	1.20E-09
P	MILK COW/GOAT	NE	4.13	6648	9.00E-07	8.70E-07	7.50E-10
P	MILK COW/GOAT	ENE	3.81	6135	4.10E-07	3.80E-07	4.40E-10
P	MILK COW/GOAT	E	2.51	4036	6.20E-07	5.90E-07	8.90E-10
P	MILK COW/GOAT	ESE	2.71	4362	3.70E-07	3.50E-07	5.60E-10
P	HOUSE	W	1.46	2348	7.30E-08	7.00E-08	2.30E-10
P	HOUSE	WNW	0.73	1169	1.40E-07	1.30E-07	1.20E-09
P	HOUSE	NW	0.69	1103	3.10E-07	2.80E-07	3.10E-09
P	SCHOOL	WNW	2.64	4243	5.30E-08	5.10E-08	1.00E-10
P	ANIMAL	S	4.77	7681	3.70E-07	3.30E-07	4.70E-10
P	ANIMAL	WSW	4.6	7406	8.50E-08	8.20E-08	6.80E-11
P	ANIMAL FOR MEAT	W	1.46	2348	7.30E-08	7.00E-08	2.30E-10
P	ANIMAL FOR MEAT	WNW	0.75	1214	1.40E-07	1.30E-07	1.10E-09
P	ANIMAL FOR MEAT	NW	0.99	1586	2.10E-07	1.90E-07	1.60E-09
P	ANIMAL FOR MEAT	NNW	2.19	3520	1.30E-07	1.30E-07	4.10E-10
P	ANIMAL FOR MEAT	N	2.12	3417	2.30E-07	2.20E-07	7.40E-10
P	ANIMAL FOR MEAT	NNE	2.22	3571	4.30E-07	4.10E-07	1.20E-09
P	ANIMAL FOR MEAT	NE	4.13	6648	9.00E-07	8.70E-07	7.50E-10
P	ANIMAL FOR MEAT	ENE	3.81	6135	4.10E-07	3.80E-07	4.40E-10
P	ANIMAL FOR MEAT	E	2.4	3861	6.80E-07	6.50E-07	9.90E-10
P	ANIMAL FOR MEAT	ESE	2.71	4362	3.70E-07	3.50E-07	5.60E-10

Table 2-8: Annual Average X/Q (sec/m^3) for a 2.26 day decay, undepleted for each 22.5° sector at the distances (miles) shown at the top

SECTOR	0.25	0.5	0.75	1	1.5	2	2.5	3	3.5	4	4.5
S	3.53E-06	1.38E-06	1.12E-06	8.43E-07	6.83E-07	2.01E-06	1.25E-06	8.55E-07	6.27E-07	4.83E-07	3.86E-07
SSW	4.82E-06	1.80E-06	1.51E-06	1.22E-06	8.96E-07	6.76E-07	5.26E-07	4.21E-07	3.47E-07	7.92E-07	6.91E-07
SW	4.86E-06	1.76E-06	1.45E-06	1.17E-06	8.57E-07	6.48E-07	5.06E-07	4.07E-07	3.36E-07	2.84E-07	2.44E-07
WSW	1.05E-06	3.92E-07	3.37E-07	2.90E-07	2.37E-07	1.91E-07	1.56E-07	1.30E-07	1.10E-07	9.48E-08	8.29E-08
W	3.26E-07	1.22E-07	1.04E-07	8.66E-08	7.10E-08	6.10E-08	5.32E-08	4.70E-08	4.18E-08	3.76E-08	3.41E-08
WNW	4.25E-07	1.64E-07	1.41E-07	1.15E-07	8.59E-08	6.72E-08	5.44E-08	4.54E-08	3.88E-08	2.66E-07	2.13E-07
NW	1.07E-06	3.94E-07	2.95E-07	2.05E-07	1.27E-07	9.11E-08	7.05E-08	5.72E-08	1.94E-07	3.32E-07	2.66E-07
NNW	1.31E-06	5.20E-07	4.15E-07	3.02E-07	1.99E-07	1.46E-07	1.15E-07	9.40E-08	2.89E-07	4.44E-07	3.55E-07
N	2.33E-06	9.02E-07	6.86E-07	4.87E-07	3.18E-07	2.37E-07	1.88E-07	1.55E-07	1.32E-07	1.14E-07	1.00E-07
NNE	5.79E-06	2.05E-06	1.45E-06	9.99E-07	6.46E-07	4.77E-07	3.76E-07	3.08E-07	2.60E-07	2.24E-07	1.96E-07
NE	4.12E-06	1.49E-06	1.08E-06	7.67E-07	5.15E-07	3.84E-07	3.01E-07	1.06E-06	1.17E-06	9.02E-07	7.23E-07
ENE	2.30E-06	8.80E-07	6.51E-07	4.57E-07	2.91E-07	1.46E-06	9.06E-07	6.24E-07	4.59E-07	3.55E-07	2.84E-07
E	1.49E-06	6.25E-07	4.84E-07	3.53E-07	6.08E-07	9.66E-07	5.99E-07	4.11E-07	3.02E-07	2.32E-07	1.86E-07
ESE	1.21E-06	5.15E-07	3.94E-07	2.73E-07	1.14E-06	6.78E-07	4.21E-07	2.89E-07	2.13E-07	1.64E-07	1.31E-07
SE	1.38E-06	5.35E-07	4.26E-07	3.15E-07	1.29E-06	7.53E-07	4.66E-07	3.20E-07	2.35E-07	1.81E-07	1.44E-07
SSE	2.25E-06	8.74E-07	6.71E-07	4.78E-07	2.07E-06	1.25E-06	7.73E-07	5.31E-07	3.91E-07	3.01E-07	2.41E-07

Table 2-9: Annual Average X/Q (sec/m3) for a 2.26 day decay, undepleted for each 22.5° sector at the distances (miles) shown at the top

SECTOR	5	7.5	10	15	20	25	30	35	40	45	50
S	3.17E-07	1.57E-07	9.82E-08	5.29E-08	3.36E-08	2.34E-08	1.73E-08	1.32E-08	1.05E-08	8.45E-09	6.96E-09
SSW	5.67E-07	2.81E-07	1.76E-07	9.45E-08	6.01E-08	4.18E-08	3.09E-08	2.37E-08	1.87E-08	1.52E-08	1.25E-08
SW	2.51E-07	3.46E-07	2.17E-07	1.17E-07	7.46E-08	5.19E-08	3.82E-08	2.93E-08	2.31E-08	1.86E-08	1.53E-08
WSW	7.35E-08	1.96E-07	1.24E-07	6.71E-08	4.27E-08	2.97E-08	2.18E-08	1.66E-08	1.30E-08	1.05E-08	8.54E-09
W	3.11E-08	1.17E-07	7.34E-08	3.94E-08	2.48E-08	1.70E-08	1.23E-08	9.28E-09	7.19E-09	5.69E-09	4.58E-09
WNW	1.76E-07	8.81E-08	5.55E-08	2.99E-08	1.89E-08	1.30E-08	9.48E-09	7.17E-09	5.58E-09	4.44E-09	3.59E-09
NW	2.19E-07	1.10E-07	6.93E-08	3.73E-08	2.36E-08	1.62E-08	1.18E-08	8.91E-09	6.93E-09	5.50E-09	4.45E-09
NNW	2.92E-07	1.46E-07	9.18E-08	4.93E-08	3.11E-08	2.14E-08	1.56E-08	1.18E-08	9.18E-09	7.30E-09	5.92E-09
N	8.93E-08	5.83E-08	1.45E-07	7.82E-08	4.95E-08	3.42E-08	2.50E-08	1.90E-08	1.49E-08	1.19E-08	9.68E-09
NNE	1.74E-07	1.13E-07	3.15E-07	1.70E-07	1.08E-07	7.49E-08	5.48E-08	4.17E-08	3.27E-08	2.62E-08	2.13E-08
NE	5.96E-07	2.99E-07	1.89E-07	1.03E-07	6.55E-08	4.57E-08	3.38E-08	2.59E-08	2.04E-08	1.65E-08	1.36E-08
ENE	2.34E-07	1.17E-07	7.36E-08	3.98E-08	2.54E-08	1.77E-08	1.30E-08	9.97E-09	7.86E-09	6.34E-09	5.20E-09
E	1.52E-07	7.56E-08	4.74E-08	2.55E-08	1.62E-08	1.13E-08	8.28E-09	6.34E-09	5.00E-09	4.03E-09	3.31E-09
ESE	1.08E-07	5.37E-08	3.37E-08	1.82E-08	1.16E-08	8.06E-09	5.94E-09	4.54E-09	3.58E-09	2.89E-09	2.37E-09
SE	1.18E-07	5.88E-08	3.69E-08	2.00E-08	1.28E-08	9.01E-09	6.70E-09	5.18E-09	4.13E-09	3.37E-09	2.79E-09
SSE	1.98E-07	9.85E-08	6.19E-08	3.33E-08	2.12E-08	1.47E-08	1.08E-08	8.27E-09	6.50E-09	5.23E-09	4.29E-09

Table 2-10: X/Q (sec/m^3) for a 2.26 day decay, undepleted at each 22.5° sector for each segment (miles) shown at the top

SECTOR	.5-1	1-2	2-3	3-4	4-5	5-10	10-20	20-30	30-40	40-50
S	1.05E-06	1.31E-06	1.29E-06	6.37E-07	3.89E-07	1.66E-07	5.44E-08	2.37E-08	1.33E-08	8.49E-09
SSW	1.45E-06	8.70E-07	5.24E-07	5.38E-07	6.75E-07	2.98E-07	9.73E-08	4.23E-08	2.39E-08	1.52E-08
SW	1.39E-06	8.33E-07	5.04E-07	3.37E-07	2.59E-07	2.68E-07	1.21E-07	5.25E-08	2.95E-08	1.87E-08
WSW	3.28E-07	2.29E-07	1.55E-07	1.10E-07	8.29E-08	1.37E-07	6.89E-08	3.00E-08	1.67E-08	1.05E-08
W	1.00E-07	7.00E-08	5.28E-08	4.17E-08	3.40E-08	7.84E-08	4.05E-08	1.72E-08	9.35E-09	5.72E-09
WNW	1.35E-07	8.40E-08	5.42E-08	1.27E-07	2.15E-07	9.31E-08	3.07E-08	1.32E-08	7.22E-09	4.46E-09
NW	2.77E-07	1.28E-07	7.07E-08	2.08E-07	2.68E-07	1.16E-07	3.83E-08	1.64E-08	8.98E-09	5.53E-09
NNW	3.88E-07	1.98E-07	1.15E-07	2.92E-07	3.58E-07	1.55E-07	5.07E-08	2.17E-08	1.19E-08	7.35E-09
N	6.46E-07	3.20E-07	1.88E-07	1.32E-07	1.00E-07	1.04E-07	8.04E-08	3.46E-08	1.92E-08	1.20E-08
NNE	1.38E-06	6.49E-07	3.76E-07	2.60E-07	1.96E-07	2.16E-07	1.75E-07	7.57E-08	4.20E-08	2.63E-08
NE	1.03E-06	5.13E-07	6.26E-07	1.04E-06	7.29E-07	3.16E-07	1.05E-07	4.62E-08	2.61E-08	1.66E-08
ENE	6.16E-07	8.46E-07	9.40E-07	4.67E-07	2.86E-07	1.24E-07	4.09E-08	1.79E-08	1.00E-08	6.37E-09
E	4.57E-07	7.10E-07	6.22E-07	3.06E-07	1.87E-07	8.01E-08	2.62E-08	1.14E-08	6.38E-09	4.05E-09
ESE	3.67E-07	7.44E-07	4.37E-07	2.16E-07	1.32E-07	5.68E-08	1.87E-08	8.15E-09	4.58E-09	2.90E-09
SE	4.01E-07	8.35E-07	4.84E-07	2.38E-07	1.46E-07	6.23E-08	2.06E-08	9.10E-09	5.22E-09	3.38E-09
SSE	6.30E-07	1.35E-06	8.02E-07	3.97E-07	2.43E-07	1.04E-07	3.43E-08	1.49E-08	8.32E-09	5.26E-09

Table 2-11: Annual Average X/Q (sec/m3) for an 8.00 day decay, depleted for each 22.5° sector at the distances (miles) shown at the top

SECTOR	0.25	0.5	0.75	1	1.5	2	2.5	3	3.5	4	4.5
S	3.30E-06	1.28E-06	1.04E-06	7.99E-07	6.60E-07	2.00E-06	1.22E-06	8.28E-07	6.02E-07	4.59E-07	3.64E-07
SSW	4.49E-06	1.66E-06	1.41E-06	1.16E-06	8.67E-07	6.58E-07	5.13E-07	4.12E-07	3.40E-07	8.07E-07	7.01E-07
SW	4.53E-06	1.62E-06	1.36E-06	1.11E-06	8.28E-07	6.30E-07	4.93E-07	3.98E-07	3.30E-07	2.80E-07	2.41E-07
WSW	9.82E-07	3.61E-07	3.16E-07	2.78E-07	2.31E-07	1.88E-07	1.54E-07	1.29E-07	1.10E-07	9.48E-08	8.33E-08
W	3.04E-07	1.13E-07	9.77E-08	8.28E-08	6.92E-08	6.00E-08	5.28E-08	4.70E-08	4.22E-08	3.81E-08	3.48E-08
WNW	3.97E-07	1.52E-07	1.33E-07	1.10E-07	8.33E-08	6.55E-08	5.33E-08	4.47E-08	3.83E-08	2.77E-07	2.21E-07
NW	9.96E-07	3.62E-07	2.73E-07	1.91E-07	1.20E-07	8.68E-08	6.75E-08	5.51E-08	1.99E-07	3.45E-07	2.75E-07
NNW	1.22E-06	4.81E-07	3.88E-07	2.86E-07	1.90E-07	1.41E-07	1.11E-07	9.16E-08	2.97E-07	4.60E-07	3.67E-07
N	2.17E-06	8.34E-07	6.39E-07	4.59E-07	3.04E-07	2.28E-07	1.82E-07	1.51E-07	1.29E-07	1.12E-07	9.95E-08
NNE	5.40E-06	1.89E-06	1.34E-06	9.32E-07	6.12E-07	4.57E-07	3.63E-07	2.99E-07	2.54E-07	2.20E-07	1.94E-07
NE	3.84E-06	1.37E-06	9.96E-07	7.19E-07	4.91E-07	3.70E-07	2.92E-07	1.08E-06	1.19E-06	9.13E-07	7.27E-07
ENE	2.15E-06	8.13E-07	6.05E-07	4.30E-07	2.78E-07	1.46E-06	8.99E-07	6.12E-07	4.47E-07	3.42E-07	2.72E-07
E	1.40E-06	5.81E-07	4.53E-07	3.35E-07	6.01E-07	9.61E-07	5.87E-07	3.98E-07	2.90E-07	2.21E-07	1.76E-07
ESE	1.13E-06	4.80E-07	3.69E-07	2.59E-07	1.15E-06	6.71E-07	4.11E-07	2.79E-07	2.03E-07	1.56E-07	1.23E-07
SE	1.29E-06	4.94E-07	3.97E-07	2.98E-07	1.29E-06	7.42E-07	4.52E-07	3.06E-07	2.22E-07	1.70E-07	1.34E-07
SSE	2.10E-06	8.08E-07	6.25E-07	4.51E-07	2.08E-06	1.23E-06	7.55E-07	5.13E-07	3.74E-07	2.86E-07	2.27E-07

Table 2-12: Annual Average X/Q (sec/m3) for an 8.00 day decay, depleted for each 22.5° sector at the distances (miles) shown at the top

SECTOR	5	7.5	10	15	20	25	30	35	40	45	50
S	2.97E-07	1.44E-07	8.87E-08	4.70E-08	2.98E-08	2.08E-08	1.54E-08	1.19E-08	9.52E-09	7.77E-09	6.47E-09
SSW	5.72E-07	2.78E-07	1.72E-07	9.14E-08	5.80E-08	4.06E-08	3.02E-08	2.34E-08	1.87E-08	1.53E-08	1.28E-08
SW	2.51E-07	3.56E-07	2.22E-07	1.19E-07	7.62E-08	5.36E-08	4.00E-08	3.11E-08	2.50E-08	2.05E-08	1.71E-08
WSW	7.41E-08	2.08E-07	1.31E-07	7.10E-08	4.58E-08	3.24E-08	2.43E-08	1.90E-08	1.53E-08	1.26E-08	1.05E-08
W	3.19E-08	1.26E-07	7.93E-08	4.31E-08	2.78E-08	1.96E-08	1.47E-08	1.14E-08	9.18E-09	7.53E-09	6.29E-09
WNW	1.81E-07	9.00E-08	5.65E-08	3.07E-08	1.97E-08	1.39E-08	1.04E-08	8.10E-09	6.50E-09	5.33E-09	4.45E-09
NW	2.26E-07	1.12E-07	7.05E-08	3.83E-08	2.47E-08	1.74E-08	1.30E-08	1.01E-08	8.12E-09	6.65E-09	5.55E-09
NNW	3.00E-07	1.49E-07	9.30E-08	5.03E-08	3.23E-08	2.27E-08	1.70E-08	1.32E-08	1.06E-08	8.65E-09	7.21E-09
N	8.91E-08	5.98E-08	1.58E-07	8.58E-08	5.52E-08	3.90E-08	2.93E-08	2.28E-08	1.83E-08	1.51E-08	1.26E-08
NNE	1.73E-07	1.15E-07	3.44E-07	1.87E-07	1.21E-07	8.57E-08	6.44E-08	5.03E-08	4.05E-08	3.33E-08	2.79E-08
NE	5.96E-07	2.94E-07	1.84E-07	9.95E-08	6.39E-08	4.51E-08	3.37E-08	2.63E-08	2.11E-08	1.73E-08	1.45E-08
ENE	2.23E-07	1.09E-07	6.80E-08	3.65E-08	2.33E-08	1.64E-08	1.22E-08	9.47E-09	7.58E-09	6.21E-09	5.17E-09
E	1.43E-07	6.96E-08	4.31E-08	2.29E-08	1.45E-08	1.02E-08	7.54E-09	5.83E-09	4.66E-09	3.80E-09	3.17E-09
ESE	1.01E-07	4.92E-08	3.06E-08	1.63E-08	1.04E-08	7.29E-09	5.42E-09	4.21E-09	3.36E-09	2.75E-09	2.29E-09
SE	1.09E-07	5.29E-08	3.26E-08	1.73E-08	1.09E-08	7.64E-09	5.68E-09	4.40E-09	3.52E-09	2.88E-09	2.40E-09
SSE	1.85E-07	9.05E-08	5.62E-08	3.00E-08	1.91E-08	1.34E-08	9.93E-09	7.70E-09	6.15E-09	5.03E-09	4.19E-09

Table 2-13: X/Q (sec/m^3) for an 8.00 day decay, depleted at each 22.5° sector for each segment (miles) shown at the top

SECTOR	.5-1	1-2	2-3	3-4	4-5	5-10	10-20	20-30	30-40	40-50
S	9.86E-07	1.29E-06	1.27E-06	6.12E-07	3.67E-07	1.53E-07	4.86E-08	2.10E-08	1.20E-08	7.81E-09
SSW	1.36E-06	8.40E-07	5.11E-07	5.39E-07	6.84E-07	2.96E-07	9.44E-08	4.11E-08	2.36E-08	1.54E-08
SW	1.30E-06	8.02E-07	4.92E-07	3.30E-07	2.56E-07	2.73E-07	1.23E-07	5.42E-08	3.13E-08	2.06E-08
WSW	3.09E-07	2.22E-07	1.53E-07	1.09E-07	8.33E-08	1.44E-07	7.30E-08	3.27E-08	1.91E-08	1.26E-08
W	9.44E-08	6.81E-08	5.24E-08	4.20E-08	3.47E-08	8.43E-08	4.43E-08	1.98E-08	1.15E-08	7.56E-09
WNW	1.27E-07	8.13E-08	5.31E-08	1.31E-07	2.23E-07	9.54E-08	3.15E-08	1.41E-08	8.15E-09	5.35E-09
NW	2.57E-07	1.21E-07	6.77E-08	2.14E-07	2.78E-07	1.19E-07	3.94E-08	1.76E-08	1.02E-08	6.68E-09
NNW	3.63E-07	1.89E-07	1.11E-07	3.00E-07	3.70E-07	1.58E-07	5.18E-08	2.30E-08	1.33E-08	8.69E-09
N	6.02E-07	3.05E-07	1.82E-07	1.29E-07	9.95E-08	1.10E-07	8.83E-08	3.95E-08	2.30E-08	1.51E-08
NNE	1.28E-06	6.14E-07	3.63E-07	2.54E-07	1.94E-07	2.30E-07	1.93E-07	8.66E-08	5.06E-08	3.34E-08
NE	9.56E-07	4.88E-07	6.27E-07	1.05E-06	7.34E-07	3.12E-07	1.03E-07	4.56E-08	2.64E-08	1.74E-08
ENE	5.73E-07	8.38E-07	9.35E-07	4.54E-07	2.75E-07	1.16E-07	3.76E-08	1.66E-08	9.53E-09	6.23E-09
E	4.29E-07	7.02E-07	6.11E-07	2.95E-07	1.77E-07	7.42E-08	2.37E-08	1.03E-08	5.87E-09	3.82E-09
ESE	3.45E-07	7.39E-07	4.28E-07	2.07E-07	1.25E-07	5.24E-08	1.69E-08	7.37E-09	4.23E-09	2.76E-09
SE	3.74E-07	8.26E-07	4.71E-07	2.26E-07	1.36E-07	5.64E-08	1.79E-08	7.74E-09	4.43E-09	2.89E-09
SSE	5.89E-07	1.34E-06	7.86E-07	3.80E-07	2.29E-07	9.63E-08	3.10E-08	1.35E-08	7.75E-09	5.05E-09

Table 2-14: D/Q (m^{-2}) at each 22.5° sector for each distance (miles) shown at the top

SECTOR	0.25	0.5	0.75	1	1.5	2	2.5	3	3.5	4	4.5
S	3.73E-08	1.66E-08	1.07E-08	6.10E-09	2.83E-09	3.44E-09	2.03E-09	1.33E-09	9.33E-10	6.92E-10	5.33E-10
SSW	3.50E-08	1.59E-08	1.06E-08	6.27E-09	2.82E-09	1.59E-09	1.01E-09	7.03E-10	5.14E-10	9.80E-10	8.66E-10
SW	3.50E-08	1.56E-08	1.04E-08	6.09E-09	2.72E-09	1.52E-09	9.65E-10	6.66E-10	4.86E-10	3.69E-10	2.89E-10
WSW	7.02E-09	3.24E-09	2.23E-09	1.36E-09	6.29E-10	3.60E-10	2.33E-10	1.62E-10	1.19E-10	9.11E-11	7.15E-11
W	2.36E-09	1.12E-09	7.77E-10	4.70E-10	2.15E-10	1.22E-10	7.79E-11	5.40E-11	3.96E-11	3.01E-11	2.36E-11
WNW	3.58E-09	1.68E-09	1.15E-09	6.88E-10	3.13E-10	1.78E-10	1.14E-10	7.92E-11	5.80E-11	1.49E-10	1.15E-10
NW	1.10E-08	4.51E-09	2.77E-09	1.53E-09	6.43E-10	3.48E-10	2.17E-10	1.47E-10	1.33E-10	2.15E-10	1.65E-10
NNW	1.36E-08	6.09E-09	3.83E-09	2.14E-09	9.14E-10	4.98E-10	3.12E-10	2.13E-10	1.94E-10	3.18E-10	2.45E-10
N	2.46E-08	1.09E-08	6.77E-09	3.72E-09	1.56E-09	8.36E-10	5.18E-10	3.52E-10	2.54E-10	1.92E-10	1.50E-10
NNE	5.51E-08	2.24E-08	1.32E-08	6.97E-09	2.82E-09	1.49E-09	9.15E-10	6.17E-10	4.44E-10	3.34E-10	2.60E-10
NE	4.23E-08	1.73E-08	1.03E-08	5.49E-09	2.25E-09	1.19E-09	7.36E-10	6.12E-10	1.08E-09	8.03E-10	6.19E-10
ENE	2.81E-08	1.16E-08	6.90E-09	3.70E-09	1.52E-09	1.98E-09	1.17E-09	7.64E-10	5.38E-10	3.98E-10	3.07E-10
E	1.93E-08	8.64E-09	5.21E-09	2.85E-09	1.55E-09	1.53E-09	8.98E-10	5.88E-10	4.14E-10	3.07E-10	2.36E-10
ESE	1.65E-08	7.46E-09	4.52E-09	2.47E-09	2.25E-09	1.15E-09	6.77E-10	4.43E-10	3.12E-10	2.31E-10	1.78E-10
SE	1.44E-08	6.27E-09	4.04E-09	2.31E-09	2.49E-09	1.30E-09	7.65E-10	5.01E-10	3.53E-10	2.61E-10	2.01E-10
SSE	2.79E-08	1.21E-08	7.55E-09	4.20E-09	3.75E-09	1.96E-09	1.16E-09	7.57E-10	5.32E-10	3.95E-10	3.04E-10

Table 2-15: D/Q (m^{-2}) at each 22.5° sector for each distance (miles) shown at the top

SECTOR	5	7.5	10	15	20	25	30	35	40	45	50
S	4.24E-10	1.88E-10	1.14E-10	5.76E-11	3.49E-11	2.34E-11	1.68E-11	1.26E-11	9.78E-12	7.81E-12	6.38E-12
SSW	6.89E-10	3.06E-10	1.85E-10	9.37E-11	5.67E-11	3.80E-11	2.72E-11	2.05E-11	1.59E-11	1.27E-11	1.04E-11
SW	2.46E-10	3.19E-10	1.93E-10	9.77E-11	5.91E-11	3.96E-11	2.84E-11	2.13E-11	1.66E-11	1.32E-11	1.08E-11
WSW	5.74E-11	1.06E-10	6.43E-11	3.25E-11	1.97E-11	1.32E-11	9.44E-12	7.09E-12	5.51E-12	4.40E-12	3.60E-12
W	1.90E-11	4.31E-11	2.61E-11	1.32E-11	7.98E-12	5.35E-12	3.83E-12	2.88E-12	2.24E-12	1.79E-12	1.46E-12
WNW	9.13E-11	4.06E-11	2.46E-11	1.24E-11	7.52E-12	5.04E-12	3.61E-12	2.71E-12	2.11E-12	1.69E-12	1.38E-12
NW	1.31E-10	5.84E-11	3.54E-11	1.79E-11	1.08E-11	7.25E-12	5.20E-12	3.90E-12	3.04E-12	2.42E-12	1.98E-12
NNW	1.95E-10	8.65E-11	5.24E-11	2.65E-11	1.60E-11	1.08E-11	7.70E-12	5.78E-12	4.50E-12	3.59E-12	2.93E-12
N	1.20E-10	5.46E-11	9.38E-11	4.74E-11	2.87E-11	1.92E-11	1.38E-11	1.04E-11	8.05E-12	6.43E-12	5.25E-12
NNE	2.08E-10	9.42E-11	1.95E-10	9.84E-11	5.95E-11	3.99E-11	2.86E-11	2.15E-11	1.67E-11	1.33E-11	1.09E-11
NE	4.92E-10	2.18E-10	1.32E-10	6.69E-11	4.05E-11	2.71E-11	1.95E-11	1.46E-11	1.14E-11	9.07E-12	7.40E-12
ENE	2.44E-10	1.08E-10	6.56E-11	3.32E-11	2.01E-11	1.35E-11	9.65E-12	7.24E-12	5.63E-12	4.50E-12	3.67E-12
E	1.88E-10	8.34E-11	5.05E-11	2.55E-11	1.55E-11	1.04E-11	7.42E-12	5.57E-12	4.33E-12	3.46E-12	2.83E-12
ESE	1.42E-10	6.28E-11	3.81E-11	1.92E-11	1.16E-11	7.81E-12	5.60E-12	4.20E-12	3.27E-12	2.61E-12	2.13E-12
SE	1.60E-10	7.10E-11	4.30E-11	2.18E-11	1.32E-11	8.83E-12	6.33E-12	4.75E-12	3.69E-12	2.95E-12	2.41E-12
SSE	2.42E-10	1.07E-10	6.50E-11	3.29E-11	1.99E-11	1.33E-11	9.55E-12	7.17E-12	5.58E-12	4.46E-12	3.64E-12

Table 2-16: D/Q (m^{-2}) at each 22.5° sector for each segment (miles) shown at the top

SECTOR	.5-1	1-2	2-3	3-4	4-5	5-10	10-20	20-30	30-40	40-50
S	9.97E-09	3.83E-09	2.12E-09	9.54E-10	5.40E-10	2.08E-10	6.00E-11	2.38E-11	1.27E-11	7.86E-12
SSW	9.87E-09	3.04E-09	1.04E-09	7.45E-10	8.34E-10	3.37E-10	9.76E-11	3.87E-11	2.07E-11	1.28E-11
SW	9.64E-09	2.93E-09	9.92E-10	4.93E-10	2.97E-10	2.47E-10	1.02E-10	4.03E-11	2.15E-11	1.33E-11
WSW	2.07E-09	6.72E-10	2.39E-10	1.21E-10	7.21E-11	7.67E-11	3.38E-11	1.34E-11	7.16E-12	4.43E-12
W	7.16E-10	2.30E-10	8.00E-11	4.01E-11	2.38E-11	3.02E-11	1.37E-11	5.44E-12	2.91E-12	1.80E-12
WNW	1.06E-09	3.36E-10	1.17E-10	9.88E-11	1.16E-10	4.48E-11	1.30E-11	5.13E-12	2.74E-12	1.70E-12
NW	2.61E-09	7.09E-10	2.24E-10	1.68E-10	1.67E-10	6.44E-11	1.86E-11	7.38E-12	3.94E-12	2.44E-12
NNW	3.58E-09	1.00E-09	3.22E-10	2.47E-10	2.48E-10	9.54E-11	2.76E-11	1.09E-11	5.84E-12	3.62E-12
N	6.33E-09	1.72E-09	5.36E-10	2.58E-10	1.51E-10	8.66E-11	4.94E-11	1.96E-11	1.05E-11	6.47E-12
NNE	1.25E-08	3.15E-09	9.50E-10	4.51E-10	2.63E-10	1.64E-10	1.03E-10	4.06E-11	2.17E-11	1.34E-11
NE	9.71E-09	2.50E-09	8.08E-10	8.42E-10	6.26E-10	2.41E-10	6.97E-11	2.76E-11	1.48E-11	9.13E-12
ENE	6.53E-09	2.21E-09	1.22E-09	5.49E-10	3.11E-10	1.20E-10	3.46E-11	1.37E-11	7.32E-12	4.53E-12
E	4.92E-09	1.83E-09	9.41E-10	4.23E-10	2.39E-10	9.19E-11	2.66E-11	1.05E-11	5.63E-12	3.48E-12
ESE	4.26E-09	1.81E-09	7.09E-10	3.19E-10	1.80E-10	6.93E-11	2.01E-11	7.95E-12	4.24E-12	2.63E-12
SE	3.76E-09	1.92E-09	8.02E-10	3.60E-10	2.04E-10	7.83E-11	2.27E-11	8.98E-12	4.80E-12	2.97E-12
SSE	7.06E-09	3.06E-09	1.21E-09	5.44E-10	3.08E-10	1.18E-10	3.42E-11	1.36E-11	7.25E-12	4.49E-12

Table 2-17: X/Q and D/Q values for 2.26 and 8 day decay, as shown below, at each receptor location

Release ID	Type of Location	Sector	Distance (miles)	Distance (meters)	X/Q (sec/m^3) 2.26 Day Decay Undepleted	X/Q (sec/m^3) 8.00 Day Decay Depleted	D/Q (m^{-2})
P	EAB	S	0.71	1145	1.10E-06	1.10E-06	1.10E-08
P	EAB	SSW	1.03	1660	1.20E-06	1.10E-06	5.90E-09
P	EAB	SW	0.78	1249	1.40E-06	1.30E-06	9.80E-09
P	EAB	WSW	0.73	1177	3.40E-07	3.10E-07	2.30E-09
P	EAB	W	0.59	949	1.10E-07	1.00E-07	9.60E-10
P	EAB	WNW	0.53	855	1.60E-07	1.40E-07	1.60E-09
P	EAB	NW	0.53	855	3.70E-07	3.40E-07	4.20E-09
P	EAB	NNW	0.54	866	4.90E-07	4.50E-07	5.60E-09
P	EAB	N	0.58	935	7.90E-07	7.30E-07	9.10E-09
P	EAB	NNE	0.77	1244	1.40E-06	1.30E-06	1.20E-08
P	EAB	NE	1.1	1769	7.00E-07	6.60E-07	4.50E-09
P	EAB	ENE	0.78	1250	6.20E-07	5.80E-07	6.40E-09
P	EAB	E	0.59	947	5.50E-07	5.10E-07	7.10E-09
P	EAB	ESE	0.58	927	4.60E-07	4.30E-07	6.30E-09
P	EAB	SE	0.58	927	4.80E-07	4.40E-07	5.40E-09
P	EAB	SSE	0.58	932	7.70E-07	7.10E-07	1.00E-08
P	GARDEN	SSW	4.56	7338	6.70E-07	6.80E-07	8.40E-10
P	GARDEN	SW	1.74	2807	7.40E-07	7.20E-07	2.00E-09
P	GARDEN	WSW	4.21	6780	8.90E-08	9.00E-08	8.20E-11
P	GARDEN	W	2.64	4244	5.10E-08	5.10E-08	7.00E-11
P	GARDEN	WNW	0.71	1143	1.40E-07	1.30E-07	1.20E-09
P	GARDEN	NW	0.8	1289	2.70E-07	2.50E-07	2.40E-09
P	GARDEN	NNW	1.13	1821	2.70E-07	2.50E-07	1.70E-09
P	GARDEN	N	2.06	3310	2.30E-07	2.20E-07	7.90E-10
P	GARDEN	NNE	1.25	2006	7.80E-07	7.40E-07	4.30E-09
P	GARDEN	NE	4.13	6648	8.50E-07	8.60E-07	7.50E-10
P	GARDEN	ENE	3.47	5588	4.70E-07	4.50E-07	5.50E-10
P	GARDEN	E	2.4	3861	6.50E-07	6.40E-07	9.90E-10
P	GARDEN	ESE	2.73	4388	3.50E-07	3.40E-07	5.50E-10
P	GARDEN	SE	4.48	7204	1.50E-07	1.40E-07	2.00E-10
P	MILK COW/GOAT	S	4.77	7681	3.50E-07	3.20E-07	4.70E-10
P	MILK COW/GOAT	WSW	4.6	7406	8.10E-08	8.10E-08	6.80E-11
P	MILK COW/GOAT	W	1.46	2348	7.20E-08	7.00E-08	2.30E-10
P	MILK COW/GOAT	WNW	0.75	1214	1.40E-07	1.30E-07	1.10E-09
P	MILK COW/GOAT	NW	0.99	1586	2.10E-07	1.90E-07	1.60E-09
P	MILK COW/GOAT	NNW	2.19	3520	1.30E-07	1.30E-07	4.10E-10
P	MILK COW/GOAT	N	2.12	3417	2.20E-07	2.10E-07	7.40E-10
P	MILK COW/GOAT	NNE	2.22	3571	4.30E-07	4.10E-07	1.20E-09
P	MILK COW/GOAT	NE	4.13	6648	8.50E-07	8.60E-07	7.50E-10
P	MILK COW/GOAT	ENE	3.81	6135	3.90E-07	3.80E-07	4.40E-10
P	MILK COW/GOAT	E	2.51	4036	5.90E-07	5.80E-07	8.90E-10
P	MILK COW/GOAT	ESE	2.71	4362	3.60E-07	3.50E-07	5.60E-10
P	HOUSE	W	1.46	2348	7.20E-08	7.00E-08	2.30E-10
P	HOUSE	WNW	0.73	1169	1.40E-07	1.30E-07	1.20E-09
P	HOUSE	NW	0.69	1103	3.10E-07	2.80E-07	3.10E-09
P	SCHOOL	WNW	2.64	4243	5.20E-08	5.10E-08	1.00E-10
P	ANIMAL FOR MEAT	S	4.77	7681	3.50E-07	3.20E-07	4.70E-10
P	ANIMAL FOR MEAT	WSW	4.6	7406	8.10E-08	8.10E-08	6.80E-11
P	ANIMAL FOR MEAT	W	1.46	2348	7.20E-08	7.00E-08	2.30E-10
P	ANIMAL FOR MEAT	WNW	0.75	1214	1.40E-07	1.30E-07	1.10E-09
P	ANIMAL FOR MEAT	NW	0.99	1586	2.10E-07	1.90E-07	1.60E-09
P	ANIMAL FOR MEAT	NNW	2.19	3520	1.30E-07	1.30E-07	4.10E-10
P	ANIMAL FOR MEAT	N	2.12	3417	2.20E-07	2.10E-07	7.40E-10
P	ANIMAL FOR MEAT	NNE	2.22	3571	4.30E-07	4.10E-07	1.20E-09
P	ANIMAL FOR MEAT	NE	4.13	6648	8.50E-07	8.60E-07	7.50E-10
P	ANIMAL FOR MEAT	ENE	3.81	6135	3.90E-07	3.80E-07	4.40E-10
P	ANIMAL FOR MEAT	E	2.4	3861	6.50E-07	6.40E-07	9.90E-10
P	ANIMAL FOR MEAT	ESE	2.71	4362	3.60E-07	3.50E-07	5.60E-10