

Task B.3.7 On-site waste disposal systems and non-onsite disposal system pollution sources.

B.3.7 On-site Sewage Disposal Systems (using data set 1.1)

On-Site Disposal Summary.

On-site Disposal (example map)

Community Wastewater Disposal (example map)

Data Set 1.1

Loudoun County Groundwater, Well, and Pollution Sources

Well construction and groundwater information in database (MS Access) with locations in GIS maintained by B&D and Health Department. Source of most data from paper files generated during Health Department well permitting process (e.g., GW2 well construction form). Subset of WellPoll database, which includes well data and pollution sources data. Data on ~18,500 wells dating from 1930 to present, with information of varying quality and completeness including: location (VA state plane coordinates), surface elevation (62% complete), well depth (70%), casing depth (65%), static water level (53%) {but of suspect accuracy}, total yield (60%), depth of primary yield zone (60%), and transmissivity (~250 values).

Also includes groundwater quality data. Water quality data for a limited number of parameters are entered in the database for some wells (~2,100) constructed and tested prior to 2002. Water quality data provided digitally to B&D by National Testing Labs started in 2002 and is available for approximately 2,250 wells. These data are considered level A quality and typically consist of 100 physical/chemical water quality parameters per well for a total of more than 200,000 individual analyses. NTL data linked to the groundwater database by Health Department Permit No.

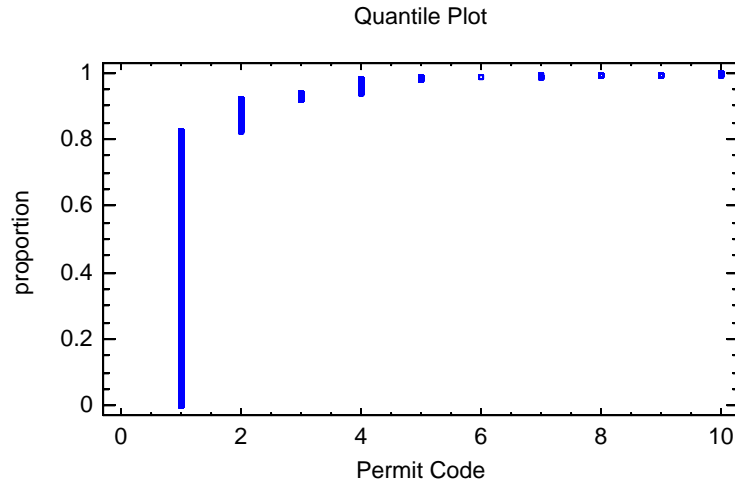
Also includes data on potential pollution sources – primarily on-site sewage disposal systems (e.g., drainfields) but also other sites such as cemeteries, landfills, chemical storage sites, etc. Currently approximately 15,000 records with site ID numbers and corresponding points in GIS. Data in some of the old records may be obsolete. Currently, data are obtained primarily from the Health Department sewage disposal system permitting process.

Task B.3.7 On-site waste disposal systems and non-onsite disposal system pollution sources.

Analysis of On-site disposal systems from Loudoun County Health Dept. data. This is a detailed analysis of the distribution both spatially and temporally of ten types of permitted on-site disposal systems. Includes a table with descriptions of the ten permit types.

Also includes a table showing the distribution of non-onsite disposal pollution sources as identified by VDH. These sources are shown by major watershed and by rock class.

Analysis of On-Site Disposal systems in Loudoun County. Data from County Dept. of Health. See table at bottom of document for descriptions of Permit Codes.



Tabulation - Permit Code (Year)

Data variable: Permit Code

Selection variable: Year

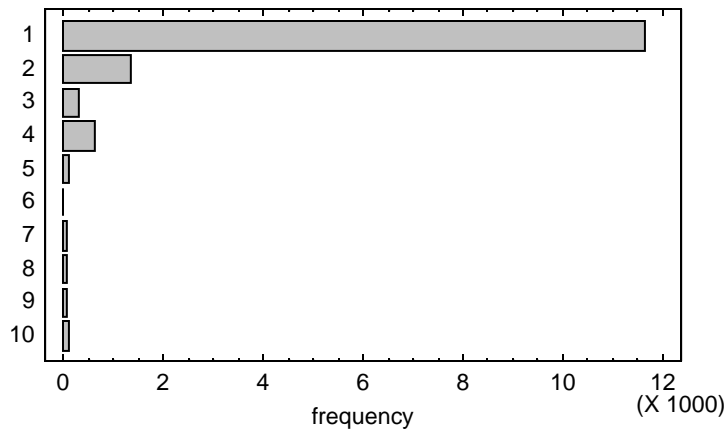
Number of observations: 14016

Number of unique values: 10

The StatAdvisor

This procedure counts the number of times each of the 10 unique values of Permit Code occurs. It then displays tables and graphs of the tabulation.

Barchart for Permit Code



Frequency Table for Permit Code

<i>Class</i>	<i>Value</i>	<i>Frequency</i>	<i>Relative Frequency</i>	<i>Cumulative Frequency</i>	<i>Cum. Rel. Frequency</i>
1	1	11581	0.8263	11581	0.8263
2	2	1305	0.0931	12886	0.9194
3	3	279	0.0199	13165	0.9393
4	4	581	0.0415	13746	0.9807
5	5	76	0.0054	13822	0.9862
6	6	2	0.0001	13824	0.9863
7	7	43	0.0031	13867	0.9894
8	8	35	0.0025	13902	0.9919
9	9	29	0.0021	13931	0.9939
10	10	85	0.0061	14016	1.0000

The StatAdvisor

This table shows the number of times each value of Permit Code occurred, as well as percentages and cumulative statistics. For example, in 11581 rows of the data file Permit Code equaled 1. This represents 82.627% of the 14016 values in the file. The rightmost two columns give cumulative counts and percentages from the top of the table down.

Crosstabulation - Year by Permit Code

Row variable: Year

Column variable: Permit Code

Number of observations: 14015

Number of rows: 66

Number of columns: 10

The StatAdvisor

This procedure constructs a two-way table showing the frequency of occurrence of unique pairs of values for Year and Permit Code. It constructs a 66 by 10 contingency table for the data and displays the results in various ways. Of particular interest are the tests for independence between rows and columns, which you can select from the list of Tabular Options.

Frequency Table for Year by Permit Code

	1	2	3	4	5	6	7	8	9	10	Row Total
1939	2	0	0	0	0	0	0	0	0	0	2
	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%
1940	4	0	0	0	0	0	0	0	0	0	4
	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.03%
1942	1	0	0	0	0	0	0	0	0	0	1
	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%
1943	1	0	0	0	0	0	0	0	0	0	1
	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%
1946	3	0	0	0	0	0	0	0	0	0	3
	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.02%
1947	20	0	0	0	0	0	0	0	0	0	20
	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.14%
1948	27	0	0	0	0	0	0	0	0	0	27
	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.19%
1949	25	1	0	0	0	0	0	0	0	0	26
	96.15%	3.85%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.19%
1950	35	0	0	0	0	0	0	0	0	0	35
	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.25%
1951	47	0	0	0	0	0	0	0	0	0	47
	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.34%
1952	73	0	0	0	0	0	0	0	0	0	73
	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.52%

1953	80	0	0	0	0	0	0	0	0	0	80
	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.57%
1954	94	0	0	0	0	0	0	0	0	0	94
	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.67%
1955	111	0	0	0	0	0	0	0	0	0	111
	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.79%
1956	140	1	0	0	0	0	0	0	0	0	141
	99.29%	0.71%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.01%
1957	142	0	0	0	0	0	0	0	0	0	142
	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.01%
1958	137	0	0	0	0	0	0	0	0	0	137
	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.98%
1959	183	0	0	0	0	0	0	0	0	0	183
	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.31%
1960	178	0	0	0	0	0	0	0	0	0	178
	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.27%
1961	182	0	0	0	0	0	0	0	0	0	182
	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.30%
1962	186	0	0	0	1	0	0	0	0	0	187
	99.47%	0.00%	0.00%	0.00%	0.53%	0.00%	0.00%	0.00%	0.00%	0.00%	1.33%
1963	168	0	0	0	0	0	0	0	0	0	168
	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.20%
1964	244	0	0	0	0	0	0	0	0	0	244
	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.74%
1965	231	0	0	0	1	0	0	0	0	0	232
	99.57%	0.00%	0.00%	0.00%	0.43%	0.00%	0.00%	0.00%	0.00%	0.00%	1.66%
1966	240	0	0	0	0	0	0	0	0	0	240
	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.71%
1967	185	1	0	0	0	0	0	0	0	0	186
	99.46%	0.54%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.33%
1968	187	1	0	0	1	0	0	0	0	0	189
	98.94%	0.53%	0.00%	0.00%	0.53%	0.00%	0.00%	0.00%	0.00%	0.00%	1.35%
1969	207	0	0	0	0	0	0	0	0	0	207
	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.48%
1970	214	0	0	0	0	0	0	0	0	0	214
	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.53%
1971	215	0	0	0	0	0	0	0	0	0	215
	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.53%
1972	309	0	0	1	0	0	0	0	0	0	310
	99.68%	0.00%	0.00%	0.32%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.21%
1973	323	0	1	0	0	0	0	0	0	0	324
	99.69%	0.00%	0.31%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.31%
1974	301	0	0	0	0	0	0	0	0	0	301
	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.15%
1975	182	0	0	0	0	0	0	0	0	0	182
	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.30%
1976	259	0	0	0	0	0	0	0	0	0	259
	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.85%
1977	273	1	0	0	0	0	0	1	0	0	275
	99.27%	0.36%	0.00%	0.00%	0.00%	0.00%	0.00%	0.36%	0.00%	0.00%	1.96%
1978	262	0	0	0	0	0	0	0	0	0	262
	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.87%
1979	275	0	0	0	3	0	0	0	0	0	278
	98.92%	0.00%	0.00%	0.00%	1.08%	0.00%	0.00%	0.00%	0.00%	0.00%	1.98%
1980	254	0	0	0	0	0	0	0	0	0	254
	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.81%
1981	240	0	0	0	0	0	0	0	0	0	240
	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.71%

1982	186	0	0	0	0	0	0	0	0	0	186
	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.33%
1983	159	0	0	0	1	0	0	0	0	0	160
	99.38%	0.00%	0.00%	0.00%	0.63%	0.00%	0.00%	0.00%	0.00%	0.00%	1.14%
1984	230	0	0	0	1	0	0	0	0	0	231
	99.57%	0.00%	0.00%	0.00%	0.43%	0.00%	0.00%	0.00%	0.00%	0.00%	1.65%
1985	290	0	0	0	2	0	0	0	0	0	292
	99.32%	0.00%	0.00%	0.00%	0.68%	0.00%	0.00%	0.00%	0.00%	0.00%	2.08%
1986	382	1	0	0	4	0	0	0	0	0	387
	98.71%	0.26%	0.00%	0.00%	1.03%	0.00%	0.00%	0.00%	0.00%	0.00%	2.76%
1987	395	0	0	0	5	0	0	0	0	0	400
	98.75%	0.00%	0.00%	0.00%	1.25%	0.00%	0.00%	0.00%	0.00%	0.00%	2.85%
1988	459	0	0	0	1	0	0	0	0	0	460
	99.78%	0.00%	0.00%	0.00%	0.22%	0.00%	0.00%	0.00%	0.00%	0.00%	3.28%
1989	388	1	0	0	3	0	0	0	0	0	392
	98.98%	0.26%	0.00%	0.00%	0.77%	0.00%	0.00%	0.00%	0.00%	0.00%	2.80%
1990	191	0	0	0	3	0	0	0	0	0	194
	98.45%	0.00%	0.00%	0.00%	1.55%	0.00%	0.00%	0.00%	0.00%	0.00%	1.38%
1991	200	0	0	0	1	0	0	0	0	0	201
	99.50%	0.00%	0.00%	0.00%	0.50%	0.00%	0.00%	0.00%	0.00%	0.00%	1.43%
1992	210	0	0	0	5	0	0	0	0	0	215
	97.67%	0.00%	0.00%	0.00%	2.33%	0.00%	0.00%	0.00%	0.00%	0.00%	1.53%
1993	204	0	0	0	1	0	0	0	0	0	205
	99.51%	0.00%	0.00%	0.00%	0.49%	0.00%	0.00%	0.00%	0.00%	0.00%	1.46%
1994	243	0	0	0	1	0	0	0	0	0	244
	99.59%	0.00%	0.00%	0.00%	0.41%	0.00%	0.00%	0.00%	0.00%	0.00%	1.74%
1995	176	0	0	0	1	0	0	0	0	0	177
	99.44%	0.00%	0.00%	0.00%	0.56%	0.00%	0.00%	0.00%	0.00%	0.00%	1.26%
1996	126	1	0	0	0	0	0	0	0	0	127
	99.21%	0.79%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.91%
1997	204	0	0	0	1	0	0	0	0	0	205
	99.51%	0.00%	0.00%	0.00%	0.49%	0.00%	0.00%	0.00%	0.00%	0.00%	1.46%
1998	254	0	0	1	0	0	0	0	0	0	255
	99.61%	0.00%	0.00%	0.39%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.82%
1999	326	1	0	1	0	0	0	0	0	0	328
	99.39%	0.30%	0.00%	0.30%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.34%
2000	443	2	0	2	0	0	0	0	0	0	447
	99.11%	0.45%	0.00%	0.45%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.19%
2001	211	67	2	1	0	0	0	1	0	62	344
	61.34%	19.48%	0.58%	0.29%	0.00%	0.00%	0.00%	0.29%	0.00%	18.02%	2.45%
2002	32	315	2	1	0	0	0	1	0	23	374
	8.56%	84.22%	0.53%	0.27%	0.00%	0.00%	0.00%	0.27%	0.00%	6.15%	2.67%
2003	3	329	0	2	0	0	0	1	0	0	335
	0.90%	98.21%	0.00%	0.60%	0.00%	0.00%	0.00%	0.30%	0.00%	0.00%	2.39%
2004	17	432	10	7	0	0	2	1	0	0	469
	3.62%	92.11%	2.13%	1.49%	0.00%	0.00%	0.43%	0.21%	0.00%	0.00%	3.35%
2005	9	148	263	172	2	0	0	1	2	0	597
	1.51%	24.79%	44.05%	28.81%	0.34%	0.00%	0.00%	0.17%	0.34%	0.00%	4.26%
2006	3	3	1	391	38	2	31	10	7	0	486
	0.62%	0.62%	0.21%	80.45%	7.82%	0.41%	6.38%	2.06%	1.44%	0.00%	3.47%
2007	0	0	0	1	0	0	10	19	20	0	50
	0.00%	0.00%	0.00%	2.00%	0.00%	0.00%	20.00%	38.00%	40.00%	0.00%	0.36%
Column Total	11581	1305	279	580	76	2	43	35	29	85	14015
	82.63%	9.31%	1.99%	4.14%	0.54%	0.01%	0.31%	0.25%	0.21%	0.61%	100.00%

Cell contents:

Observed frequency

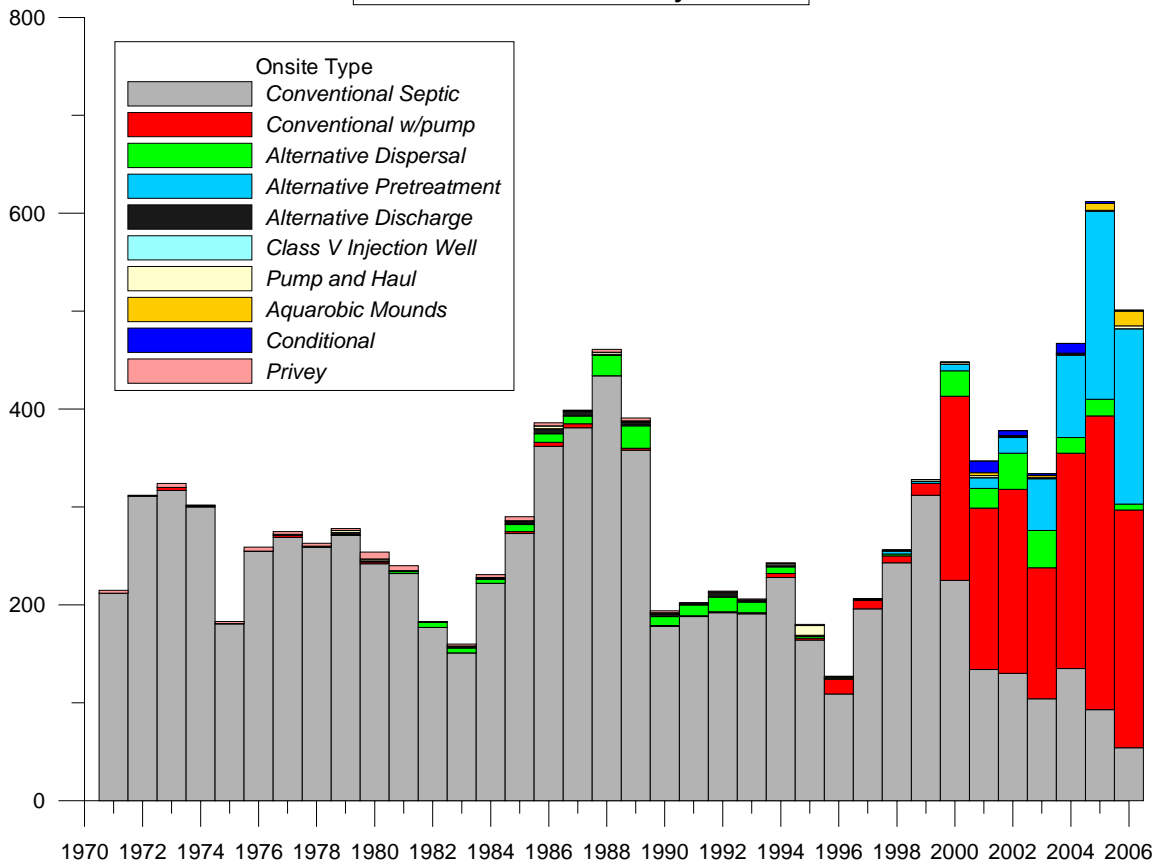
Percentage of row

The StatAdvisor

This table shows how often the 66 values of Year occur together with each of the 10 values of Permit Code. The first number in each cell of the table is the count or frequency. The second number shows that cell's percentage of the row in which it falls. For example, there were 2 times when Year equaled 1939 and Permit Code equaled 1. This represents 100.0% of the 2 times when Year equaled 1939.

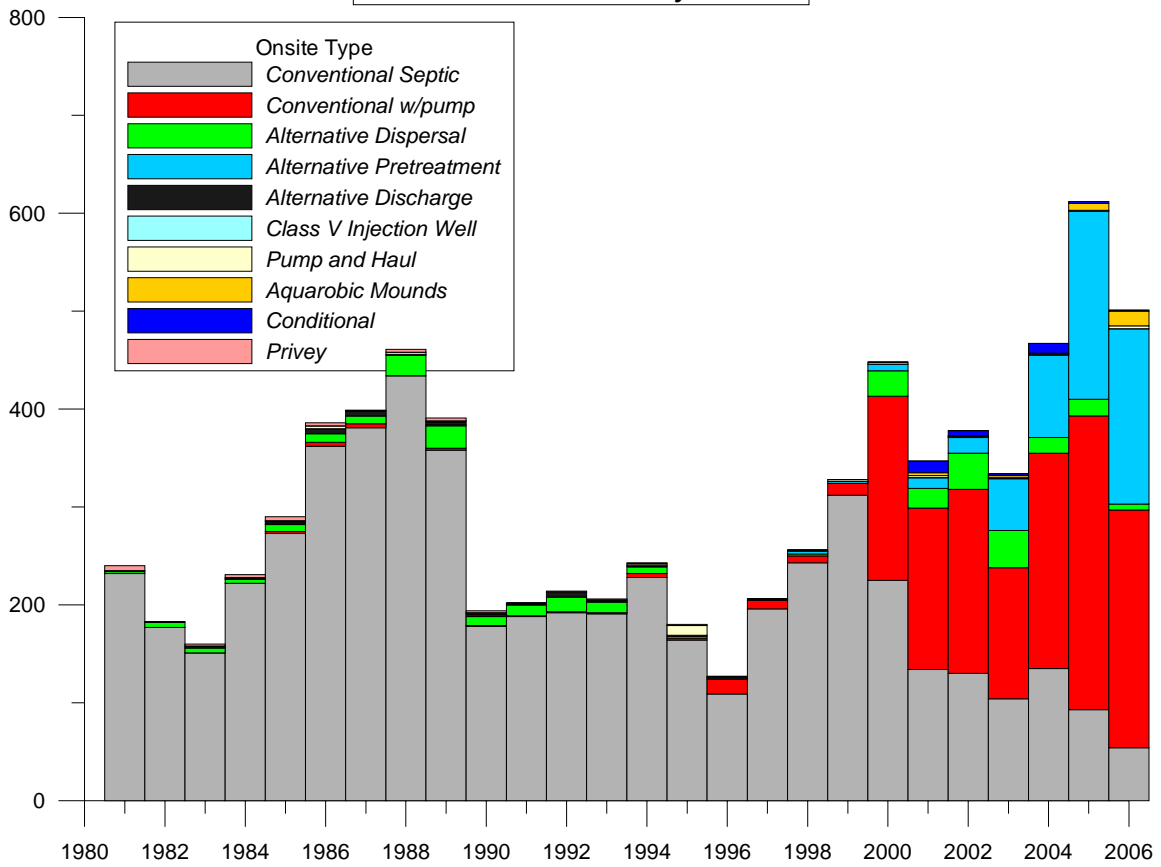
tbl_OnSite_Permit_type	
OnSite_State_Permit_type	Permit_type_description
1. Conventional (Septic with Gravity)	Septic tank with traditional gravity fed drainfield.
2. Conventional (Pump)	Traditional septic tank with above grade drainfield, pump required.
3. Alternative Dispersal System Only	Non-traditional dispersals, such as drip irrigation, mounds, peat, etc...
4. Alternative Pretreatment System	Pre-treatment units required prior to dispersal.
5. Alternative Dischargeing	Discharges to sewage treatment plants. Tracking numbers will be "PSTP".
6. Commercial/Class 5 Well	Systems permitted by state as Class 5 injection wells.
7. Pump & Haul	No dispersal system. Tank is pumped.
8. Experimental	Aquarobic Mounds
9. Conditional	Conditions placed on system, such as water conservation devices.
10. Privy	No dispersal.

Total Systems and System Types for On-Site Waste Water Systems



Low numbers in 1995-1996 due to limited input of electronic data. Data exists as paper records, to be entered later.

Total Systems and System Types for On-Site Waste Water Systems



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Summary of Non-Onsite Disposal Systems Pollution Sources

Source Type	Total	#	Watershed	#	Rock Class
PSBD Building (mostly barns)	33	2	Broad Run	16	Igneous
		10	Catoctin Creek	7	Igneous extrusive
		1	Clarks Run	6	Igneous intrusive
		2	Direct to Potomac	3	Metasedimentary
		6	Dutchman Creek	1	Sedimentary
		3	North Fork Catoctin Creek		
		9	Piney Run		
PCEM Cemeteries	163	11	Beaverdam Creek	59	Igneous
		25	Broad Run	13	Igneous extrusive
		7	Bull Run	16	Igneous intrusive
		7	Catoctin Creek	9	Metasedimentary
		3	Clarks Run	66	Sedimentary
		11	Cub Run		
		6	Direct to Potomac		
		3	Dutchman Creek		
		2	Limestone Branch		
		38	Lower Goose Creek		
		7	North Fork Catoctin Creek		
		10	North Fork Goose Creek		
		4	Piney Run		
		8	South Fork Catoctin Creek		
21	Upper Goose Creek				
PSCS Chemical Storage (Mostly UST's)	499	54	Beaverdam Creek	205	Igneous
		64	Broad Run	48	Igneous extrusive
		9	Bull Run	69	Igneous intrusive
		54	Catoctin Creek	17	Metasedimentary
		6	Clarks Run	129	Sedimentary
		21	Cub Run		
		49	Direct to Potomac		
		20	Dutchman Creek		
		19	Dutchman Creek		
		18	Limestone Branch		
		63	Lower Goose Creek		
		14	North Fork Catoctin Creek		
		33	North Fork Goose Creek		
		8	Piney Run		
		22	South Fork Catoctin Creek		
6	Sugarland Run				
39	Upper Goose Creek				

