Summary of Jurisdiction Responses to the Biosolid Data Wish List

	PA	MD	VA	DE
Total pounds generated by each POTW (link thru NPDES permit) and its associated destination county/ies.	may be	Yes	Yes	Yes
Total pounds generated by septic pumpage in each county that is not sent to a POTW	may be	No	Not yet for majority of these data	Yes
Total pounds applied to the land in each county (this would account for pounds transported into the watershed AND pounds transported county-to-county	may be	Yes	Yes	Yes
Total pounds landfilled or removed from in another way in each county (not land-appliled and not transported)	may be	Yes	Yes, but incomplete	Yes
Moisture content of pounds applied to the land in each county	may be	Yes	Yes	Yes
Nutrient concentrations of pounds applied to the land in each county (Mineralized N and P, Organic N and P, Phosphate, NO3 and ammonia)	may be	Yes	Yes	Yes
Total acres receiving biosolids in each county	may be	may be	Yes	Yes
Total acres of nutrient management lands receiving biosolids in each county	may be	Yes	Yes	Yes
Types of crops that receive biosolids (acres if available)	may be	may be	Yes	Yes
Months in which biosolids may be applied for each crop type	may be	may be	Yes	Yes
Comment	but not without some significant resource data mining.	Some data not readily available, but could be obtained.		Some data not readily available, but could be obtained.

Summary of Jurisdiction Responses to the Spray Irrigation Data Wish List

	PA	MD	VA		DE
			DEQ, >1000 gpd	VDH, <=1000gpd	
Monthly total pounds by spray irrigation from a WWTP	No	Yes	Yes	Yes for annual estimates	Yes
Total acres and location receiving the wastewater irrigation	No	Yes	Yes	Yes, for location	Yes
Types of crops that receive the wastewater irrigation	No	Yes	Yes	Not for growing crops	Yes
Year spray irrigation began	No	Yes	Yes	Yes	Yes
Adjusted fertilizer application when spray irrigation is applied	No	Yes	Yes	No	Some
Comments	Only two plants indentified, no data reported		Not in database. One time estimates	Most in Shenandoah Valley	

Jurisdiction Responses to the Biosolid and Spray Irrigation Data Wish List

Pennsylvania:

Biosolid Data:

As requested we checked with our regional offices and Bureau office staff concerning your request for bio-solids data as listed below. Again none of the regions formally track the bio-solids data in a spreadsheet or in the manner as requested by EPA. Some of the information for septage (i.e. gallons) using our NPDES General Permit (PAG 09) and Bio-solids (PAG 08) may be found in our files within the annual operating reports for both the farms and generators. Typically we may have the number of dry tons, types of crops and nitrogen, phosphate, and potassium oxide content applied reported lb/acre. Class A Bio-solids NPDES General Permit (PAG 07) large scale farm applications are reported. Landscapers and individual purchase Class A bio-solids are not typically tracked as to where it goes for final application. Our regional bio-solids files are not organized by county however Bureau may be able to derive acres within a county receiving the bio-solids.

Bottom line some information you are seeking may be available but not without some significant resource data mining.

Spray Irrigation Data

During our last call, EPA requested the states explain if we have the data listed below and if that data is accessible, as well as if so in what format? In trying to account and correlate this information we assumed that if an NPDES permit was issued that some (i.e. gallons applied) of this data would be available to EPA through any, (if any) submitted and transferred Discharge Monitoring Report (DMR) data. Otherwise, the only information we would have would be that provided by the permit application or pursuant to a Water Quality Management permit (no point source discharge) issued by the Department. The only NPDES permit we discovered that involves spray irrigation is in our NWRO area. It is Cranberry Township, Butler County, Bush Creek Sewage Treatment Plant, they have a discharge to Bush Creek (we assume used when not spraying) the permit # is PA 0024571. We also discovered WQM permit issued in our NCRO area to Craftmaster Manufacturing Inc., Bradford County, Permit # 301292. However the reports only explain gallons applied and the applications define acres. We do have the Manual For Land Application of Treated Sewage and Industrial Wastewater DEP ID: 362-2000-009 forwarded previously to the parties and we do allow spray irrigation for on-site sewage treatment and disposal as per our Planning regulations Chapters 71, 72, 73 however we did not see any reporting mechanisms in those documents concerning the data you are seeking. In addition, Pa DEP Bureau of Waste Management folks also issue spray irrigation permits

(municipal or residual waste land application by spray) and we contacted them as well to see if they have any information. The Waste Management Bureau folks stated they had nothing to report.

The bottom line there is not much if any data concerning spray irrigation systems in Pennsylvania that is reported using the parameters that EPA requested.

Maryland:

Biosolid Data:

MDE's Land Management Administration has following data:

- The tons of sludge (in wet tons) generated by each WWTP and its exact destination (landfilled, land applied, transported to another WWTP, out of state, etc.).

- All sludge (again in wet tons) that is land applied in the state. This is provided on a WWTP basis, and even documents how much sludge is applied to specific farms. This also includes information on sludge that is land applied and comes from an out-of-state WWTP, and the data indicates what state and treatment plant from outside of Maryland the sludge comes from (i.e., all sludge that is land applied in Maryland is accounted for).

- Only class A and B treatment sludge is allowed to be land applied. There are only about 60 or so total WWTPs in the state that use Class A or B treatment. Therefore, every other WWTP must either landfill their sludge or ship it to another WWTP to be treated. So, all land applied sludge throughout the state must come from one of these treatment plants, or a treatment plant from out of state that has Class A or B or equivalent treatment. Class A and B treatment refers to the treatment of the actual sludge itself for pathogen destruction. Class A achieves greater pathogen destruction than Class B, but both can be land applied.

- For all class A and B WWTPs, sludge concentration data is available via constituents reports. So, for all sludge that is land applied, we do have the nitrogen and phosphorus concentration data (both total and by specific form) via these reports.

- WWTPs report % solids, which can be used to calculate % moisture content. All tons are reported as wet tons.

- Acres of sludge land application and when the sludge is applied are a little difficult. We know the total number of sewage sludge land application permits and permitted acres. However, the permitted acres are not reflective of how many acres have sludge applied to them. These data

are contained in hard copy reports only from the individual farms. These hard copy reports also detail when the sludge is land applied, and the rate at which they apply.

- All of the agricultural lands applying sewage sludge should be under a nutrient management plan. The only sludge application that is not under a nutrient management plan is for sludge applied to the reclaimed mining sites.

- Maryland Department of Agriculture does regulate when farmers can apply sludge. The old regulations on when sludge can be applied were not very strict, but MDA just released new regs. that are much more stringent. These regs. are being phased in at sites, as the farms update their nutrient management plans, so there will be some impact on fall/winter application this year. A full ban on winter application, with some emergency provisions, should be in effect by the winter of 2016.

- In addition to sludge application on agricultural fields, sludge is also applied to reclaimed areas. The land application on reclaimed areas also has to be permitted, but this is a one time deal. So, the total number of acres and amount of sludge that can be applied, and are permitted, but once again how much is applied and when is only available in hard copy reports. Even though the permitting process here is a one time deal, the sludge application can occur at different times on different areas. These reclaimed sites constitute old mining sites and/ore old landfills that they are attempting to revegetate.

- For septic sludge, we unfortunately do not have any data on what is removed or applied.

<u>Spray Irrigation Data</u>

1. *Monthly total pounds:*

   Yes, we have nutrient concentration DMR data starting in FY 2012 as well as flow data, and if we need to calculate historic loadings too, we have historic flow data, so we can estimate the nutrient concentrations for years prior to FY 2012 to come up with a loading.

2. *Total acres and location of spray fields:*

   Yes, this data is contained within the facility permits.

3. *Spray field crop types:*

   Yes, this data is also within the facility permits

4. *Year spray irrigation began:*

Yes, data is in permits.

5. *Adjusted fertilizer application rate:*

Most facilities in MD do not need to apply additional fertilizer to meet plant nutrient demands; however, there are some facilities where the nutrient concentration in the effluent is too low to meet plant demands, and additional fertilizer needs to be applied. All spray facilities need to develop a nutrient management plan, so these fertilizer application rates are available, if a facility needs to apply additional fertilizer.

Additional data elements worth tracking:

- WWTP pond storage capacity. The WWTPs are not permitted to spray during the non-growing season, which is generally speaking between 60 and 120 days; however, the storage ponds for some facilities only have a storage capacity of 60 days, so some facilities have to spray during the non-growing season when there is no plant uptake. Thus, it might be worthwhile tracking the pond storage capacity for the various facilities/outfalls.

- Plant Uptake - Assuming that this is being tracked based on crop type, which is in the wish list, but just to be sure, we figured we would point this out.

- Irrigation rate (in/week): Irrigation rate affects plant uptake, and therefore total loading from the spray facilities. Plant uptake is inversely proportional to irrigation rate. In MD, max. irrigation rate is 2 in/wk, in which case, in general, plant uptake is about 8 mg/l; however, if irrigation rate is only 1 in/wk, plant uptake is 16 mg/l.

Virginia:

Biosolid Data:

•*Total pounds generated by each POTW (link thru NPDES permit) and its associated destination county/ies*.

Total pounds land applied and destination counties is no problem – information on pounds generated and not land applied (incinerated, landfilled) may be incomplete

•*Total pounds generated by septic pumpage in each county that is not sent to a POTW*

DEQ does not have a majority of these data because much of the septage land application is still occurring under VDH authorizations

•*Total pounds applied to the land in each county (this would account for pounds transported into the watershed AND pounds transported county-to-county*

Land application data is complete and available in Access

•*Total pounds landfilled or removed from in another way in each county (not land-appliled and not transported)*

This information will be incomplete

•*Moisture content of pounds applied to the land in each county*

Moisture content is included in the land application database

•*Nutrient concentrations of pounds applied to the land in each county (Mineralized N and P, Organic N and P, Phosphate, NO3 and ammonia*)

These data are in the form of TKN, Ammonia, nitrates, total P, and total K.

•*Total acres receiving biosolids in each county*

Yes

•*Total acres of nutrient management lands receiving biosolids in each county*

Yes, all biosolids application is applied according to an NMP, so all biosolids application acres are a subset of the "nutrient management lands"

•*Types of crops that receive biosolids (acres if available)*

Yes, this information is in the database

•*Months in which biosolids may be applied for each crop type*

If this is a request for the allowable spreading schedule included in the NMPs, yes.

<u>DEQ Spray Irrigation Data</u>

DEQ could provide items #1 - #4 below for the spray irrigation sites with some digging through the files. These would be one time estimates to put into the model and not ongoing data

retrievals in subsequent years. We do not have any of this information in a database. These are typically dedicated hay fields that are not receiving supplemental fertilizers.

VDH Spray Irrigation Data

VDH permits spray systems ≤1,000 gpd and VADEQ permits any larger systems. VDH estimates there are in the ballpark of 40-50 spray systems ≤1,000 gpd permitted in Virginia, the bulk of them are in the Shenandoah Valley region.

1] Monthly total pounds by spray irrigation from a WWTP?

> We could estimate an average flow and load for each system on an annual basis similar to what we do for onsite systems.

2] Total acres and location receiving the wastewater irrigation?

> We recently added a field in our database to collect square footage of the spray field, which could be converted to acreage. However, this field is brand new and not populated. We have a 911-address for the majority of the facilities, so we could most likely geocode the address with ArcGIS to get an approximate location of the site.

3] Types of crops that receive the wastewater irrigation?

> These are typically grassed or wooded sites and are not irrigating to grow a crop.

4] Year spray irrigation began?

> We should have dates that systems go into operation.

5] Adjusted fertilizer application when spray irrigation is applied?

> We do not have facilities (typically homeowners) track supplemental fertilizer use.

Delaware:

Biosolids Data:

Total pounds generated by each POTW (link thru NPDES permit) and its associated destination county/ies. –Information for POTW's that have permits to apply biosolids is readily available. Biosolids managed in other ways, such as landfilling, are not readily available but could be obtained.

Total pounds generated by septic pumpage in each county that is not sent to a POTW – We would have the amount of septage land applied. We do not have good numbers on any septage that may be pumped and taken out of state.

Total pounds applied to the land in each county (this would account for pounds transported into the watershed AND pounds transported county-to-county - Yes

Total pounds landfilled or removed from in another way in each county (not land-appliled and not transported) – We do not have this data for all facilities, but it could be obtained.

Moisture content of pounds applied to the land in each county –Yes

Nutrient concentrations of pounds applied to the land in each county (Mineralized N and P, Organic N and P, Phosphate, NO3 and ammonia) – Yes

Total acres receiving biosolids in each county - Yes

Total acres of nutrient management lands receiving biosolids in each county - Yes

Types of crops that receive biosolids (acres if available) - Yes

Months in which biosolids may be applied for each crop type - Yes

Spray Irrigation Data:

See the table on next page.

Delaware Spray Irrigation Information

Facility Name	Average Monthly Nitrogen loading rate (pounds per month per acre)*	Average Monthly Phosphorus loading rate (pounds per month per acre)	Total acreage permitted for irrigation (acres)	Crops grown	Year irrigation began	Average amount of commercial fertilizer applied (pounds per month per acre))	Annual flow (gallons per year, 2012)
Allen's Hatchery	14	6	1.4	Orchard grass	1974	NA	253,052
Angola Beach	28	5.5	8.4	Fescue/Orchard grass	1986	NA	17,552,600
Lea Eara Farms	18.75	4	13.51	Orchard grass	1992	8.3	15,644,900
Town of Bridgeville	26.6	5.1	62.9	Corn/Barley	2007	NA	78,856,000
Baywood Greens	14.25	5.8	54	Ryegrass/Bluegrass	2000	NA	12,293,200
Cedar Village Mobile Home Park	25.8	4.3	7.6	Reed Canary Grass	1991	NA	9,418,800
Cool Branch Mobile Home Park	2.5	1.4	34	Woodlands/Reed Canary	1995	NA	5,508,271
Kenny Brothers	2.1	0.5	13.4	Soybeans	2002	NA	2,568,900
Frog Hollow	2.1	0.2	115	Bentgrass/Ryegrass	1999	NA	50,633,700
Town of Georgetown	18.4	2.9	390	Orchard grass/corn/wheat	1991	4.2	273,208,700
Hanover Foods	39.7	9.1	196.2	Reed Canary Grass	1983	NA	87,306,500
Inland Bays	12.1	2.2	432.5	corn/grain/soybeans	1990	NA	225,000,000
Town of Middletown	11.7	1.1	232.8	hay	2002	NA	367,204,000
Mountaire Farms	28.3	8.5	962	corn/grain/soybeans	1987	NA	628,000,000
Water Farm I	5.2	3.1	167	Reed Canary Grass	1993	3.1	136,300,000
PictSweet	23.3	2.5	76	corn/grain/soybeans	1988	NA	50,350,000
Piney Neck	20.7	3.2	55	grain/woodlands	1996	3.3	50,840,000
The Plantations	23.3	5.7	10.1	Orchard grass	1986	NA	15,051,000
James Thompson & Co. Inc.	9.7	1.1	50	Orchard grass	1976	NA	20,313,000
West Farms Inc.	18.3	2.3	75	corn/grain/soybeans	2000	14	9,850,000
Wolfe Neck	17.7	6.8	307	corn/grain/hay	1995	NA	498,784,500

***Includes nitrogen application from commercial fertilizers. No phosphorus was applied through commercial fertilizers.**