NAWT Waste Treatment Symposium

Altoona Water Authority

Biosolids and Hauled Waste Program

OBJECTIVES TODAY

- Learn About the AWA Treatment Facility and Biosolids Operations
- Understand a Little Bit About Local Limits
- Ask Questions

Scale In and Scale Out


HAULER'S
PLEASE PLACE ALL
SAMPLES IN THE
REFRIGERATOR

Company Name: ______________________

Truck Number: ________ Capacity: ________ gal

Truck Make and Model: ________________ License Number: ____________

SOURCES OF WASTEWATER

1. Customer Name: ______________________

Customer Address: ______________________

Customer Telephone Number: ____________

Quantity Hauled: ______ gal

Customer Signature: ______________________

2. Customer Name: ______________________

Customer Address: ______________________

Customer Telephone Number: ____________

Quantity Hauled: ______ gal

Customer Signature: ______________________

3. Customer Name: ______________________

Customer Address: ______________________

Customer Telephone Number: ____________

Quantity Hauled: ______ gal

Customer Signature: ______________________

Driver's Signature ______________________


Blast Proof Steel Works 2/8/2017 09:08:08.350 AM (GMT-4:00)


Headworks Vortex 8/8/2017 09:12:12.307 AM (GMT-4:00)

Circular Aerobic Digester

Two Circular Aerobic Digester's at the Westerly WWTF with a Capacity of 750,000 gallons per side. Each side can be independent or in series. Sludge can be fed to the thickener or the centrifuge. Capacity at the Easterly WWTF is 625,000 gallons per side.

Thickener

- Used to thicken RAS, WAS or digester sludge to 3% to 4% TSS. Returned to the Digester

Centrifuge

- Used to thicken 3% - 4% RAS to a 20% - 25% cake solid.


centrisys

Vector Attraction Reduction

- What is Vector Attraction?

  Defined as the characteristic of sewage sludge that attracts rodents, flies, mosquitoes or other organisms capable of transporting infectious agents.

  VAR is the attempt to remove the attracting sludge characteristics.

- AWA Vector Attraction Reduction Methods
  - Primarily use the Specific Oxygen Uptake Rate

    Chapter 271.933 b(4)

    Specific oxygen uptake rate (SOUR)—The mass of oxygen consumed per unit time per unit mass of total solids (dry weight basis) in the sewage sludge.

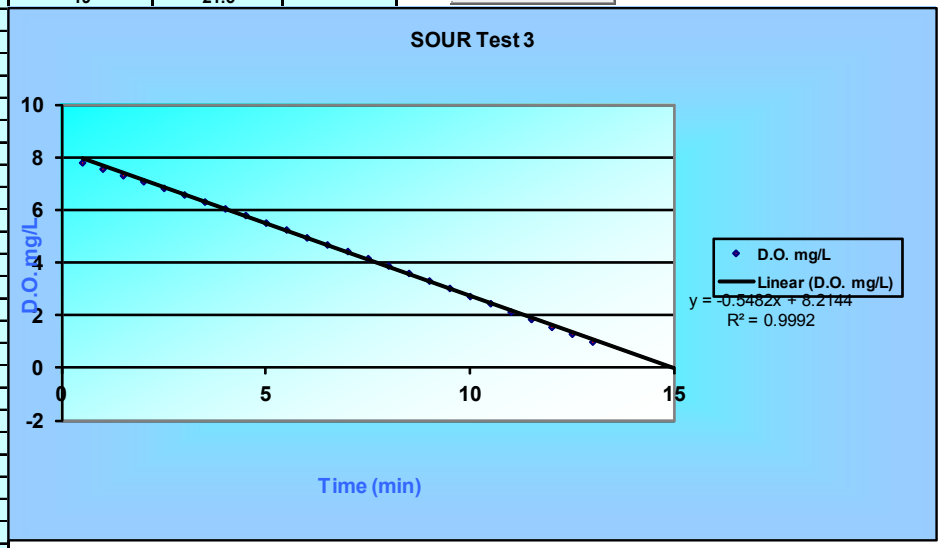
    The SOUR for sewage sludge treated in an aerobic process shall be equal to or less than 1.5 milligrams of oxygen per hour per gram of total solids (dry weight basis) at a temperature of 68°F (or 20°C).

SOUR Test Calculations

Batch ID:	WP South Dig.	Comments:
DATE:	4/10/2015	

Time in Minutes	D.O. mg/L	Tot Solids g/L	Temp C	Temp F
0.5	7.81	19	21.5	
1	7.57			
1.5	7.32			
2	7.09			
2.5	6.84			
3	6.59			
3.5	6.32			
4	6.06			
4.5	5.81			
5	5.52			
5.5	5.26			
6	4.96			
6.5	4.69			
7	4.44			
7.5	4.17			
8	3.89			
8.5	3.61			
9	3.32			
9.5	3.04			
10	2.73			
10.5	2.46			
11	2.14			
11.5	1.86			
12	1.56			
12.5	1.3			
13	1			
13.5				
14				
14.5				
15				

Print Test



Slope -0.548

Oxygen Uptake Rate 1.7 mg O_2/h/g total solids

Temp Compensation:

Temp C 21.5

Adjusted Oxygen Uptake Rate 1.6 mg O_2/h/g total solids

SOUR Test
Statistical Analysis
&
Final Results

Final Results	1.41 mg O_2/hour/g	Test PASSED
Statistical analysis	Statistical test is adequate	

RESET

NOTE: A statistical analysis will not be conducted until "Test 1" and "Test 2" are completed. If statistical analysis indicates further tests are required, conduct another SOUR test using "Test 3" Continue conducting SOUR tests until the Statistical analysis box indicates data is adequate. If all 8 tests have been completed, and the statistical analysis box still indicates data is inadequate, use the answer in the Final Results box as the final answer.

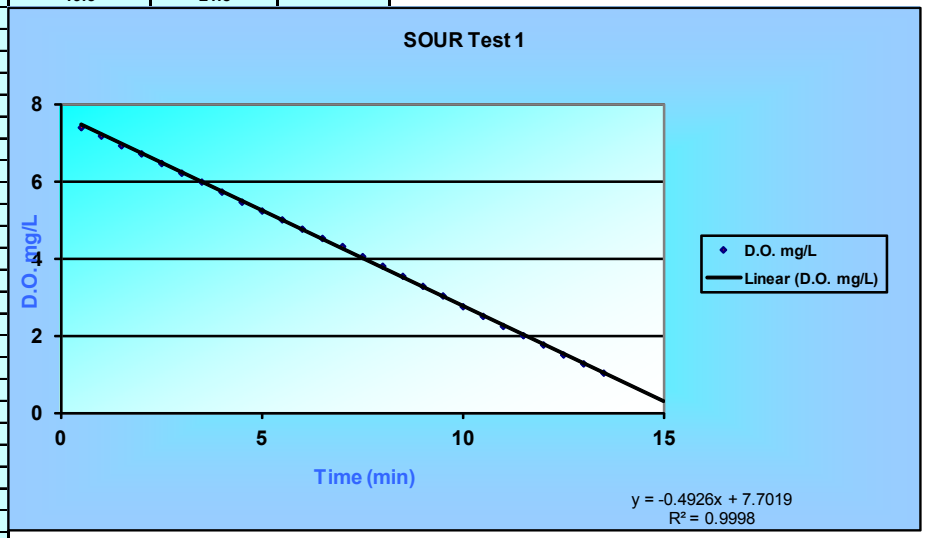
SOUR Test Calculations

Batch ID:	WP South Dige
DATE:	4/8/2015

Comments:

Print Test

Time in Minutes	D.O. mg/L	Tot Solids g/L	Temp C	Temp F
0.5	7.4	19.3	21.8	
1	7.18			
1.5	6.93			
2	6.72			
2.5	6.47			
3	6.22			
3.5	5.99			
4	5.73			
4.5	5.47			
5	5.24			
5.5	5.01			
6	4.77			
6.5	4.53			
7	4.32			
7.5	4.06			
8	3.81			
8.5	3.55			
9	3.29			
9.5	3.04			
10	2.76			
10.5	2.51			
11	2.25			
11.5	2.01			
12	1.77			
12.5	1.51			
13	1.28			
13.5	1.04			
14				
14.5				
15				



Slope -0.493

Oxygen Uptake Rate 1.5 mg O_2/h/g total solids

Temp Compensation:

Temp C 21.8

Adjusted Oxygen Uptake Rate 1.4 mg O_2/h/g total solids

SOUR Test
Statistical Analysis
&
Final Results

Final Results	1.55 mg O_2/hour/g	Test FAILED
Statistical analysis	Statistical test is adequate	

RESET

NOTE: A statistical analysis will not be conducted until "Test 1" and "Test 2" are completed. If statistical analysis indicates further tests are required, conduct another SOUR test using "Test 3" Continue conducting SOUR tests until the Statistical analysis box indicates data is adequate. If all 8 tests have been completed, and the statistical analysis box still indicates data is inadequate, use the answer in the Final Results box as the final answer.

- AWA Vector Attraction Reduction Methods
  - Second Option use the Specific Oxygen Uptake Rate. Chapter 271.933 b(3). Aka "Aquarium Test"
  - When the 38% volatile solids reduction requirement in paragraph (1) cannot be met for an aerobically digested sewage sludge, vector attraction reduction can be demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2% or less aerobically in the laboratory in a bench-scale unit for 30 additional days at 68°F (or 20°C). When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 15%, vector attraction reduction is achieved.

West Plant - South Digester

PASSED


FAILED

- AWA Vector Attraction Reduction Methods
  - Third Option use of soil/sludge incorporation. Chapter 271.933 b(10).
  - Sewage sludge applied to the land surface shall be incorporated into the soil within 6 hours after application to the land. When sewage sludge that is incorporated into the soil is Class A with respect to pathogens, the sewage sludge shall be applied within 8 hours after being discharged from the pathogen treatment process.

AWA Pathogen Reduction

- *Pathogenic organisms; disease-causing organisms*— These include, but are not limited to, certain bacteria, protozoa, viruses and viable helminth ova.
- AWA uses the Chapter 271.932 b(2).
- (i) Seven samples of the sewage sludge shall be collected at the time the sewage sludge is used.
- (ii) The geometric mean of the density of fecal coliform in the samples collected in subparagraph (i) shall be less than either 2 million most probable number per gram of total solids (dry weight basis) or 2 million colony forming units per gram of total solids (dry weight basis).

Quarterly Biosolids Analysis

- Composite Samples are pulled and sent to the Penn State Ag Labs for nutrient and Pollutant analysis.
- Sample is also analyzed for % solids to help with land application rates. Percent solids is needed for Wet Tons per Acre application rates.

PENNSTATE

[illegible]

Analysis Report for Use of Biosolids on Cropland

[illegible]

PASS OR FAIL Sludge Must Be Segregated

AWA Production Westerly WWTF

TABLE 1

2016 BIOSOLIDS GENERATED

MONTH	TOTAL DRY (METRIC TONS)
January	68.11
February	63.91
March	126.28
April	55.11
May	88.78
June	55.49
July	62.36
August	21.00
September	43.15
October	61.86
November	111.00
December	76.58
TOTAL	**833.63**

AWA Production Easterly WWTF

TABLE 1

2016 BIOSOLIDS GENERATED

MONTH	BIOSOLIDS GENERATED (METRIC TONS)
January	39.06
February	55.45
March	55.17
April	41.26
May	46.04
June	36.80
July	27.99
August	38.43
September	29.74
October	38.81
November	30.45
December	34.04
TOTAL	**473.22**

AWA Wet Tons Produced

- Total Two Plants Dry Tons

  1,307 Dry Tons

  Approximately 22% Solids

Over 6,000 Wet Tons of Biosolids that need disposed

The Biosolids Have Met the Requirements…Now What?

- Can we land apply?

  Surface Application

  Incorporation

  Reclamation. Landfill or Mining

  Must we dispose of the Biosolids by permitting the waste and paying disposal costs?

AWA Prefers Ag Land Application

- Beneficial use of nutrients for crop production
- Approximately 3.5 wet tons of the Biosolids supplies 100 lbs of Total N
- Approximately 8 wet tons of the Biosolids supplies 100 lbs of Total P
- Excellent source of nutrients as well as a soil conditioner

AWA Permits

- AWA has 8 permitted farms with 920 spreadable acres
- AWA only has 2 farms actively accepting Biosolids with 130 spreadable acres
- AWA has 2 permitted landfill application sites
- Landfill acreage varies every year based on need

Hegarty Farm

Spreadable Acres Per Field Are Determined

- Isolation Distances and Acreage Loss
    - Distance from wells
    - Property Lines
    - Wetlands
    - Road and ROW
    - Pastures
    - Sinkholes
    - Waterways

Agronomic Loading Rates per Field

- Planned Crop
- Expected Yields
- Nutrient Requirement (Nitrogen Based)
  - Biosolids Supplied
  - Residual Nitrogen (legumes, previous year)
  - Farm Applied (manure, synthetic)
- Sludge Analysis (Varies per WWTF or quarter)
- Acreage (minus non-spreadable)
- CPLR limits

3800-FM-BPNPSM0070 1/2013

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF POINT AND NON-POINT SOURCE MANAGEMENT

WORKSHEET B1
BIOSOLIDS ANNUAL AGRONOMIC LOADING RATE

Field 2A, Acres: 5.2 | Crop Hay, grass
Growing Season Year 2016 | Yield Goal 3 Ton/Acre
Site Robert Smith Farm

1.	Total crop nitrogen requirement (*From soil analysis, historical data, or Penn State Agronomy Guide*)	**1**	150	lb/acre
2.	Nitrogen provided from other sources either added to or mineralized in the soil			
a.	***Nitrogen contributions from previous years' activities***			
1.	N from previous legume crop (*Penn State Agronomy Guide*)		0	lb/acre
2.	Estimate of mineralized organic N from previous biosolids applications (*Supplemental Worksheet Part 2.a.2. from previous 2 years applications*) - This does not apply to previous residential septage applications		47.39	lb/acre
3.	Estimate of available residual N from **historical** manure applications (*Supplemental Worksheet Part 2.a.3.*)		0	lb/acre
	Sum of **(a.1. + a.2. + a.3.)**	**2a**	47.39	lb/acre
b.	***Nitrogen contributions from current year's activities***			
1.	Estimate of available N from **current** manure application (*Supplemental Worksheet Part 2.b.1.*)		0	lb/acre
2.	N from chemical fertilizers		0	lb/acre
3.	N from other sources (ex. food processing waste)		0	lb/acre
	Sum of **(b.1. + b.2. + b.3.)**	**2b**	0	lb/acre
	Total available nitrogen from other sources **(2a + 2b)**	**2**	47.39	lb/acre
3.	Adjusted crop nitrogen requirement **(Subtract 2 from 1)**	**3**	102.61	lb/acre

4. Total available nitrogen from biosolids (based on biosolids analysis)

a. NH_4-N

0.004	%NH_4	x	2,000 lb/ton		= 8	lb/ton NH_4-N	
8	NH_4 lb/ton	x	0.5	K_{vol} (*Vol. Rate Table*)	= 4		lb/ton Available NH_4

b. Org-N

0.0343	%Org-N	x	2,000 lb/ton		= 68.6	lb/ton Org-N	
68.6	Org-N lb/ton	x	0.3	K_{min} (*Min. Rate Table*)	= 20.58		lb/ton Available Org-N

Total plant available nitrogen (PAN) from biosolids **(a + b)**	**4**	24.58	lb/ton Plant Available N
5. Calculate the agronomic loading rate for biosolids application **(Divide 3 by 4)**	**5**	4.17	dry tons/acre
6. Calculate amount of biosolids to be applied	**6**	13.95	☒ **wet tons/acre or** ☐ **gallons/acre**

4.17	dry tons/acre	÷	0.2989 *(decimal)*	% solids	=	13.95	**wet tons/acre**
	wet tons/acre	x	2,000 lb/ton	÷ 8.5 lbs/gallon	=		**gallons/acre**

7. P_2O_5 and K_2O fertilizer equivalent in biosolids (based on biosolids analysis)
(Nutrient management information for the farmer)

a. 0.0205	% P in biosolids	x	2.29	=	0.0469	% P_2O_5 in biosolids	
0.0469	% P_2O_5	x	2,000 lb/ton	=	93.8	lb/ton P_2O_5	
b. 0.003	% K in biosolids	x	1.2	=	0.0036	% K_2O in biosolids	
0.0036	% K_2O	x	2,000 lb/ton	=	7.2	lb/ton K_2O	

Agronomic Loading Rates Bob Smith

Field		Planned Crop	Desired Crop Yield		Crop N Need	Applied P_2O_5	Applied K_2O	Application Method [1]	Calculated App. Rate Biosolids or Septage	Actual Rate Applied Biosolids	Actual Septage or Biosolids Application Rates		Total Field [2] Septage or Biosolids			Total Acres Spread	Planting Date
ID	Acres		bu/A	T/A	lb/A	lb/A	lb/A		DT/A or Gal/A	DT/A	WT/A	Gal/A	DT	WT	Gal		(e.g., early May)
2-A	5.2	Hay		3	150	603.13	46.3	S	6.21 DT/A	6.43 DT/A	21.54		33.48	112		5.2	Spring 2015
2-B	0.73	Hay		3	150	614.39	47.16	S	6.31 DT/A	6.55 DT/A	21.92		4.78	16		0.73	Spring 2015
2-C	3.09	Hay		3	150	580.62	44.57	S	6.06 DT/A	6.19 DT/A	20.71		19.13	64		3.09	Spring 2015
2-D	2.62	Hay		3	150	342.37	26.28	S	6.07 DT/A	3.65 DT/A	12.21		9.56	32		2.62	Spring 2015
2-E	2.01	Corn	150		150	446.49	34.27	S	4.93 DT/A	4.76 DT/A	15.92		9.56	32		2.01	Spring 2015
2-F	2.08	Corn	150		150	431.48	33.12	S	4.93 DT/A	4.6 DT/A	15.39		9.56	32		2.08	Spring 2015
2-G	1.68	Hay		3	150	667.86	51.26	S	6.58 DT/A	7.12 DT/A	23.81		11.96	40		1.68	Spring 2015
2-H	2.21	Hay		3	150	406.15	31.18	S	6.04 DT/A	4.33 DT/A	14.48		9.56	32		2.21	Spring 2015
Totals	19.62	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.0 DT/A	18.35		98.03	360		19.62	N/A

Cumulative Pollutant Loading Smith

Field		Planned Crop	Desired Crop Yield		Crop N Need	Applied P_2O_5	Applied K_2O	Application Method [1]	Calculated App. Rate Biosolids or Septage	Actual Rate Applied Biosolids	Actual Septage or Biosolids Application Rates		Total Field [2] Septage or Biosolids			Total Acres Spread	Planting Date
ID	Acres		bu/A	T/A	lb/A	lb/A	lb/A		DT/A or Gal/A	DT/A	WT/A	Gal/A	DT	WT	Gal		(e.g., early May)
2-A	5.2	Hay		3	150	603.13	46.3	S	6.21 DT/A	6.43 DT/A	21.54		33.48	112		5.2	Spring 2015
2-B	0.73	Hay		3	150	614.39	47.16	S	6.31 DT/A	6.55 DT/A	21.92		4.78	16		0.73	Spring 2015
2-C	3.09	Hay		3	150	580.62	44.57	S	6.06 DT/A	6.19 DT/A	20.71		19.13	64		3.09	Spring 2015
2-D	2.62	Hay		3	150	342.37	26.28	S	6.07 DT/A	3.65 DT/A	12.21		9.56	32		2.62	Spring 2015
2-E	2.01	Corn	150		150	446.49	34.27	S	4.93 DT/A	4.76 DT/A	15.92		9.56	32		2.01	Spring 2015
2-F	2.08	Corn	150		150	431.48	33.12	S	4.93 DT/A	4.6 DT/A	15.39		9.56	32		2.08	Spring 2015
2-G	1.68	Hay		3	150	667.86	51.26	S	6.58 DT/A	7.12 DT/A	23.81		11.96	40		1.68	Spring 2015
2-H	2.21	Hay		3	150	406.15	31.18	S	6.04 DT/A	4.33 DT/A	14.48		9.56	32		2.21	Spring 2015
Totals	19.62	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.0 DT/A	18.35		98.03	360		19.62	N/A

Preparation For Spreading

- Staking out individual fields and restricted zones
- Restricting Access to Fields (+30 days)

Preparation For Spreading

- pH testing of each field to be applied
- pH >6.0 DO THIS

Preparation For Spreading

- pH testing of each field to be applied
- pH >6.0 DO NOT DO THIS

Calculation of Spreader Rates Per Field

- Spreader Pattern? AWA 6 foot width
- Linear Footage Path per Field
- Wet Tons per Acre
- Field Acreage
- Tons per Spreader
- These go into the calculation of the Tractor Speeds and the Ram Speeds of the Spreader

Calculation of Spreader Rates Per Field

Lin Ft/[(WT/Ac *Ac)/T/Load]= Ft per Load
Ft per Load/Tractspd in Ft per min = Ram Spd

Field #	Linear Feet	Wet Tons/A	Field Acre	Field Tons	Tons/Load	#Load/Field	Whole loads	Tons to Farm	L Feet/ Load	2 mph RAM	3mph RAM	4 mph RAM	5 mph RAM	6 mph RAM	7 mph RAM	8 mph RAM
2A	37,725	20.77	5.2	108.00	8	15.429	15	105	2,515.0	14.29	9.53	7.14	5.72	4.76	4.08	3.57
2B	5,270	21.11	0.73	15.41	8	2.201	2	14	2,635.0	14.97	9.98	7.49	5.99	4.99	4.28	3.74
2C	22,400	20.27	3.09	62.63	8	8.948	8	56	2,800.0	15.91	10.61	7.95	6.36	5.30	4.55	3.98
2D	19,002	20.31	2.62	53.21	8	7.602	7	49	2,714.6	15.42	10.28	7.71	6.17	5.14	4.41	3.86
2E	14,571	16.49	2.01	33.14	8	4.735	4	28	3,642.8	20.70	13.80	10.35	8.28	6.90	5.91	5.17
2F	15,126	16.49	2.08	34.30	8	4.900	4	28	3,781.5	21.49	14.32	10.74	8.59	7.16	6.14	5.37
2G	12,169	21.99	1.68	36.94	8	5.278	5	35	2,433.8	13.83	9.22	6.91	5.53	4.61	3.95	3.46
2H	16,070	20.21	2.21	44.66	8	6.381	6	42	2,678.3	15.22	10.15	7.61	6.09	5.07	4.35	3.80
Totals			19.62	388.31				357.0								

What is Ram Speed?
Time to Empty Spreader

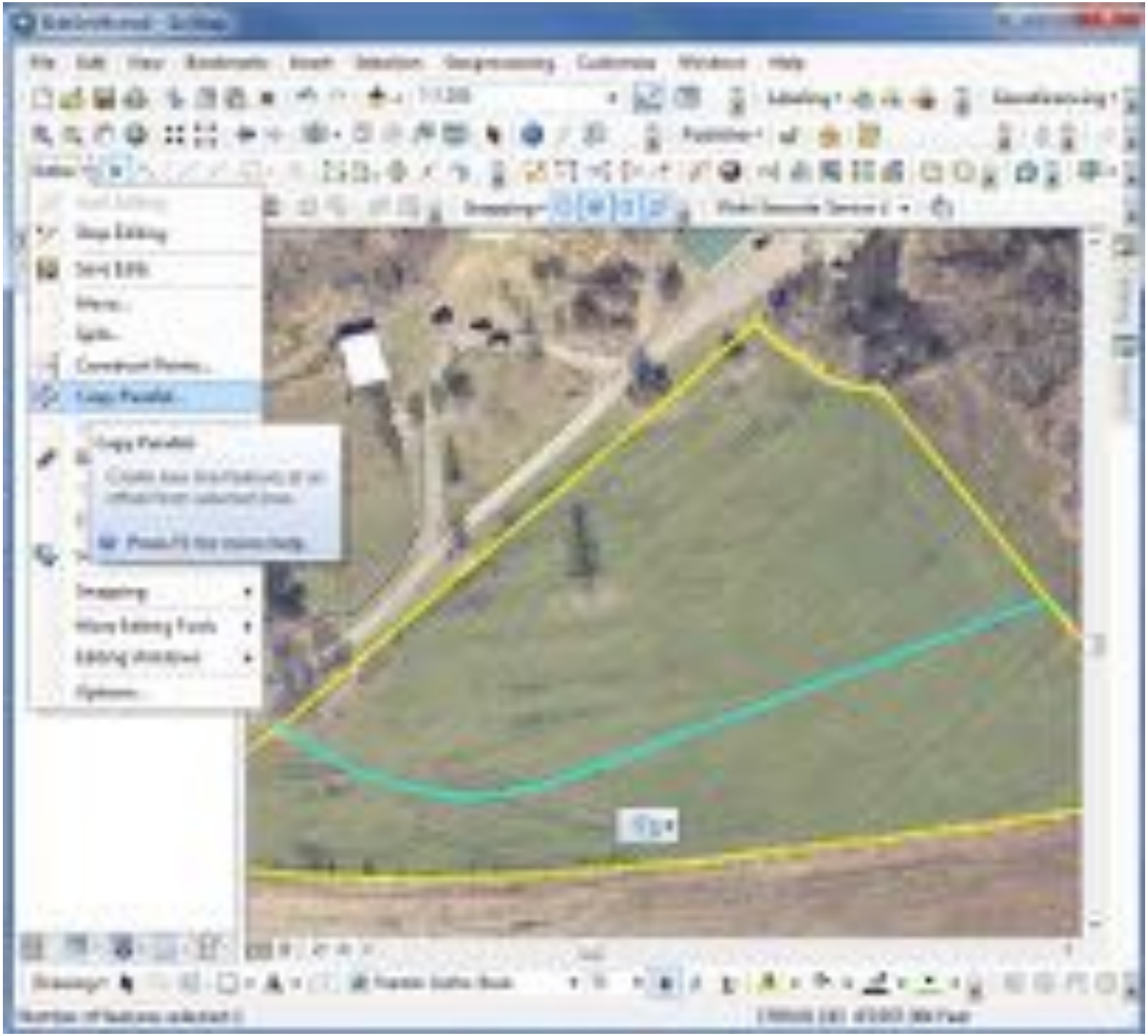

HYDRA - RAM

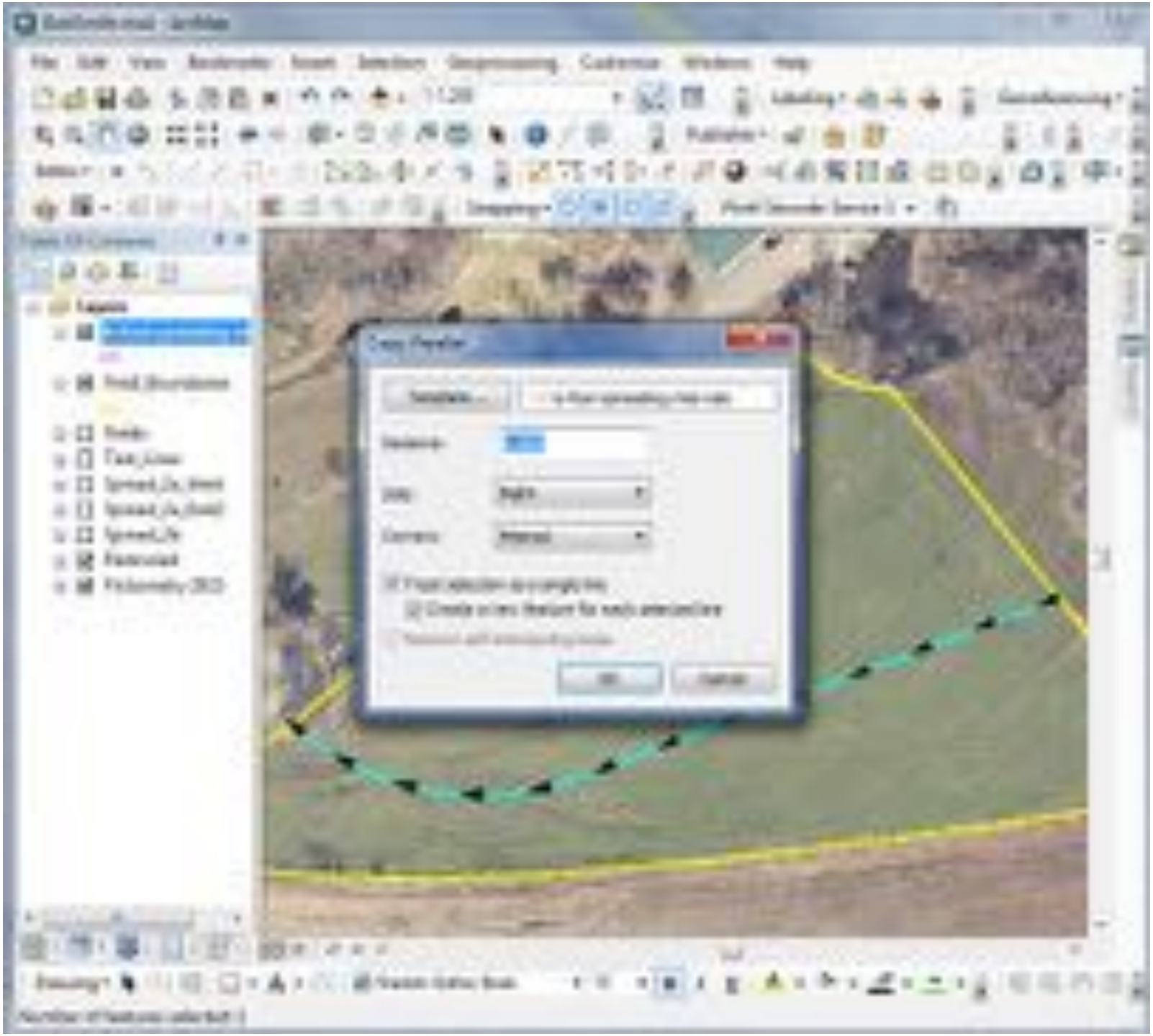

297

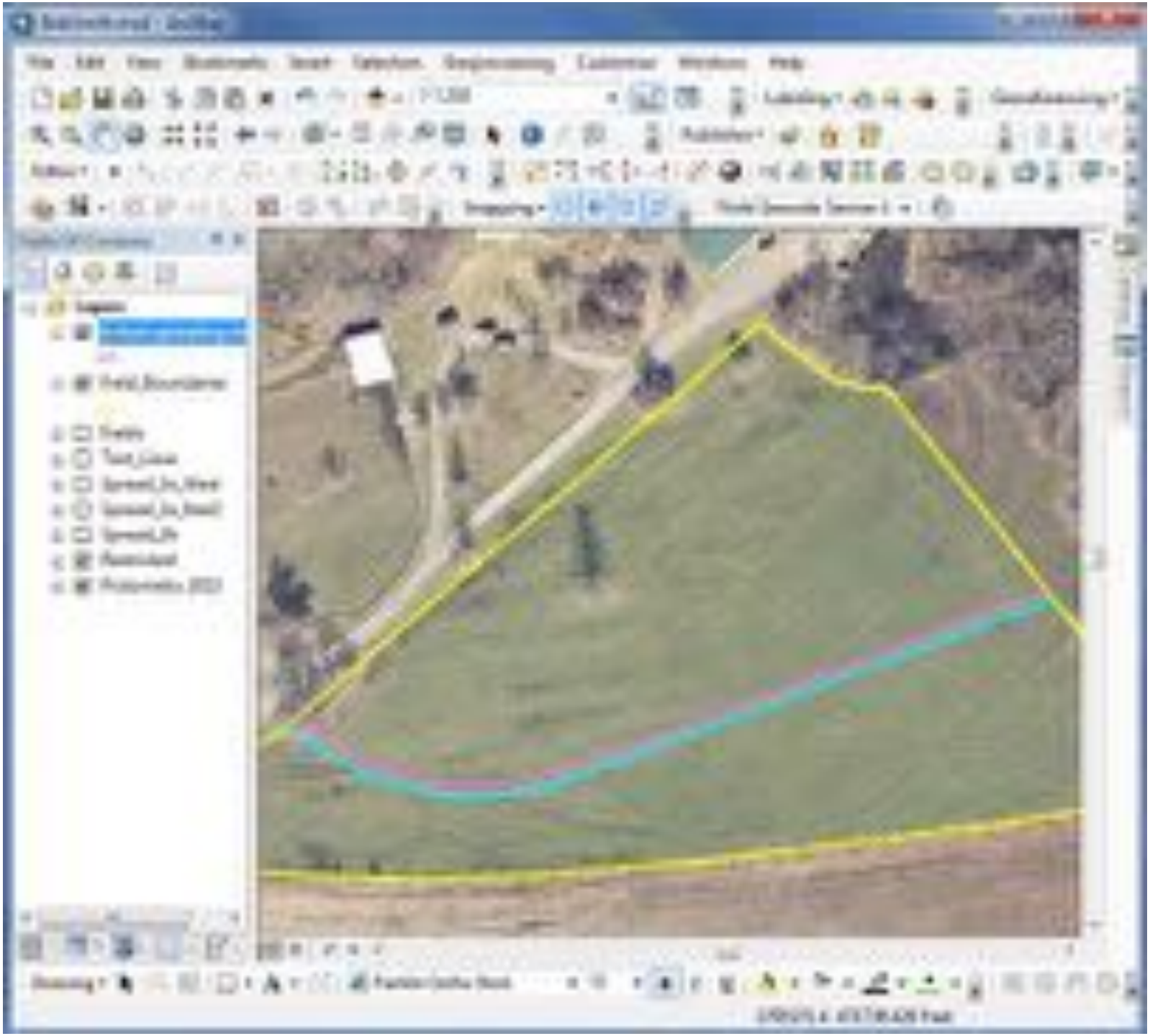

JOHN DEERE
544E

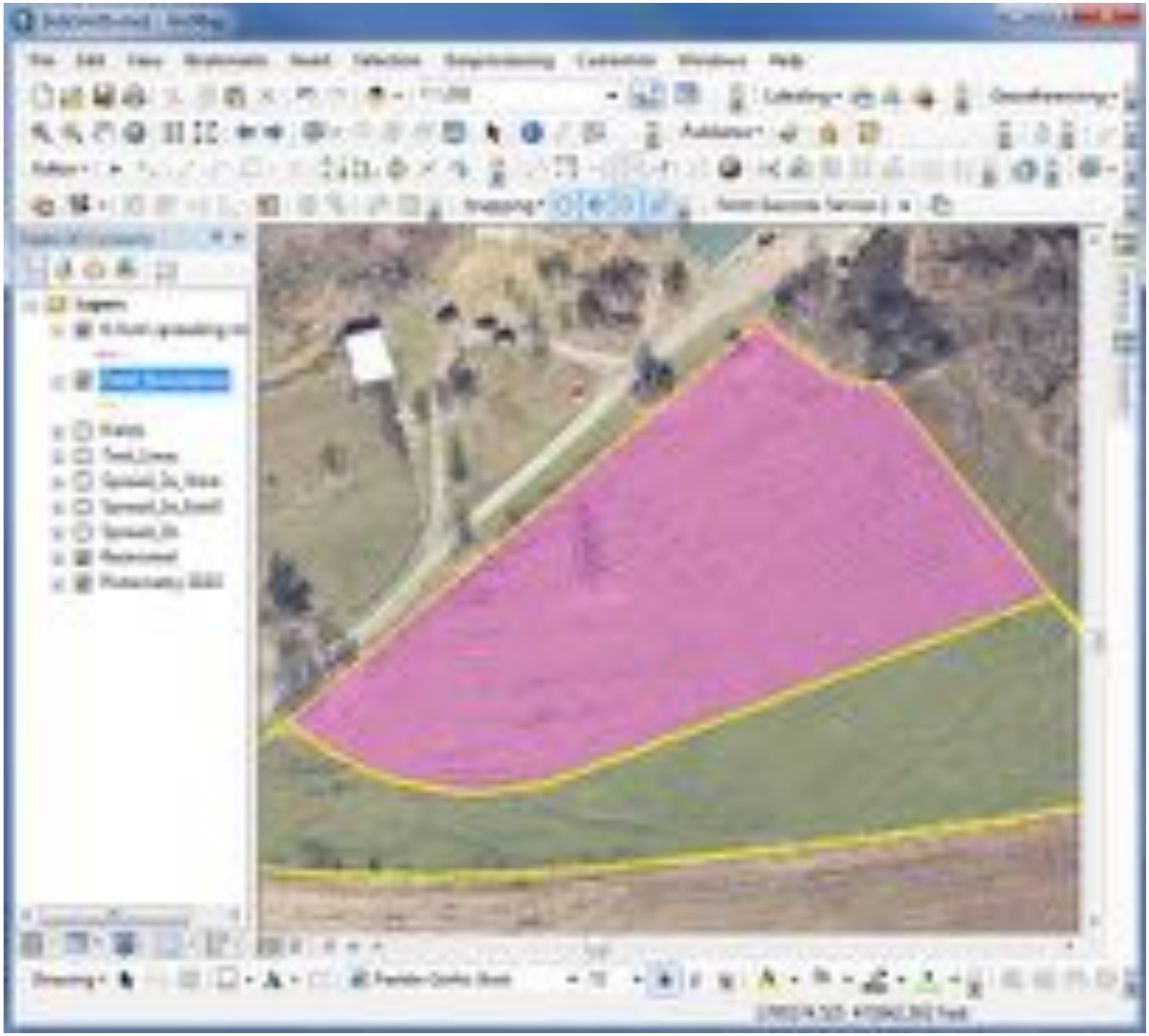
Linear Footage Calculations

- Old Way. Take Acreage divided by the average lengths and widths of the fields
- Divide Averages by Spreader Widths (6 ft)
- Hope field is not irregular in shape (good luck)
- New Way. Use GIS mapping and the following process.









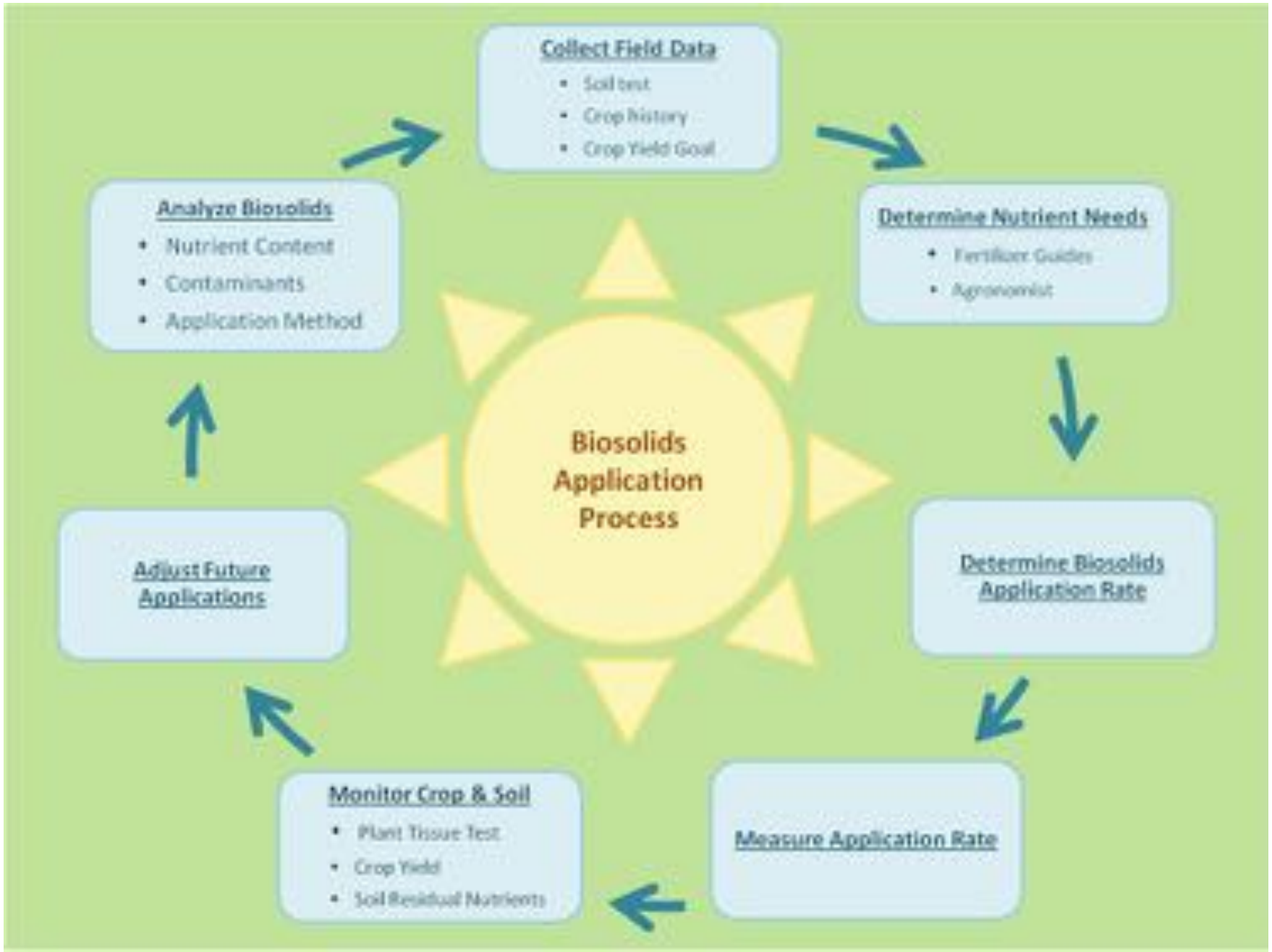

2H
2G
2F
2E
2D
2C
2B
2A
2A
SPREADING PLAN
Robert Smith Farm
Antis Township, Blair County, PA
Aerial Photo: Spring 2015, Pictometry
Field
Restricted
0
100
200
Feet

ROBERT SMITH FARM	
Field	Approximate linear length
2A (WEST)	16,778.00
2A (EAST)	16,519.00
2B	5,562.00
2C	20,511.00
2D	13,172.00
2E	16,336.00
2F	18,196.00
2G	12,070.00
2H	16,306.00
TOTAL	**135,450.00**

End Result

Land Application Site	Biosolids Hauled to Application Site (Dry Metric Tons)
Daniel Hegarty	158.15
Robert Smith	89.12
TOTAL	**247.27**

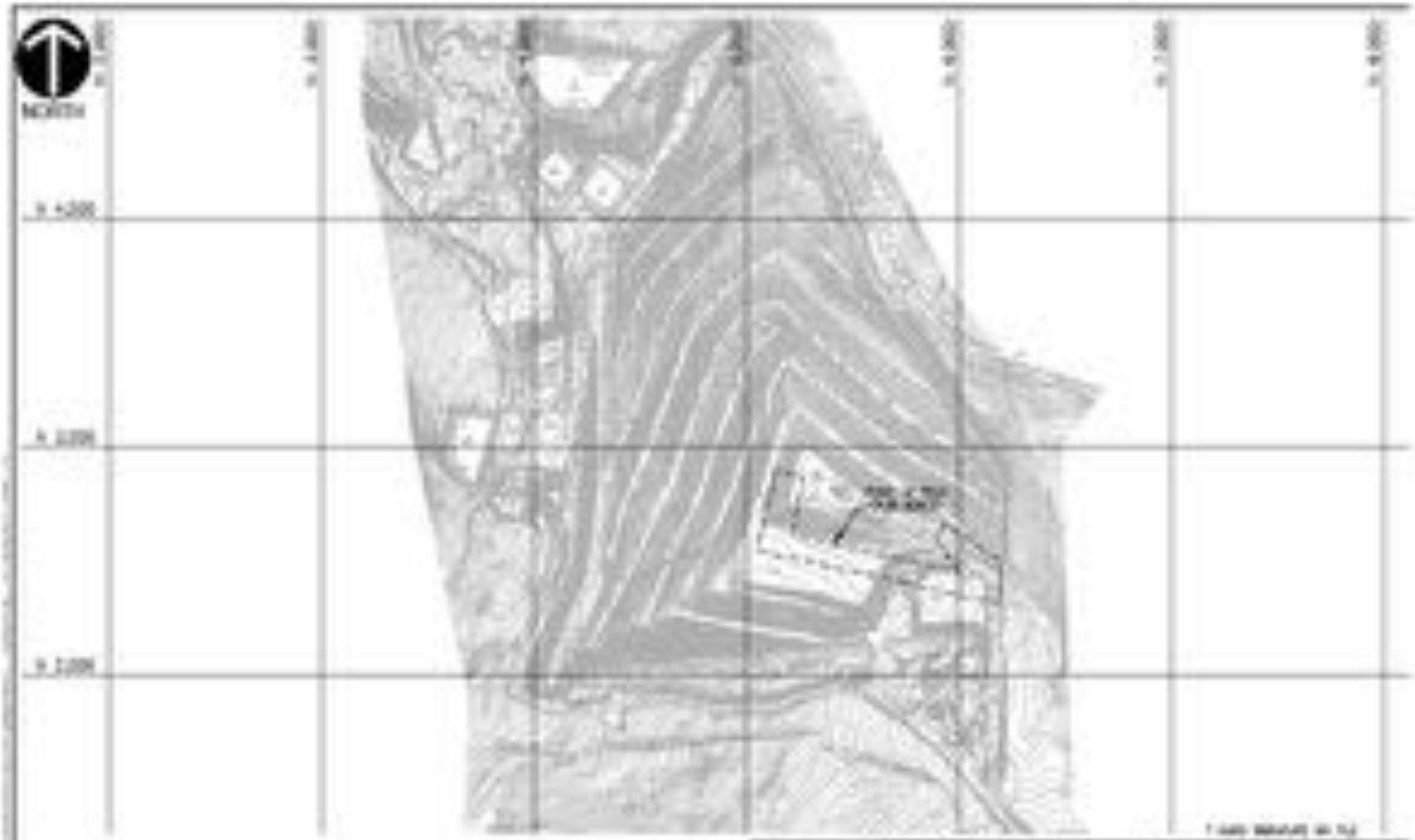
Land Application Site	Biosolids Hauled to Application Site (Dry Metric Tons)
Bernard Smith Farm	192
Laurel Highlands Landfill	167.6
Evergreen Landfill	80.7
Total	**440.3**


Biosolids Application Process
Collect Field Data
Soil test
Crop history
Crop Yield Goal
Determine Nutrient Needs
Fertilizer Guides
Agronomist
Determine Biosolids Application Rate
Measure Application Rate
Monitor Crop & Soil
Plant Tissue Test
Crop Yield
Soil Residual Nutrients
Adjust Future Applications
Analyze Biosolids
Nutrient Content
Contaminants
Application Method

Landfill Reclamation Option

- Incorporation Option if Biosolids do not meet VAR requirements
- Used to promote cover vegetation growth
- Much higher loading rates per acre
- No spreader calculations with linear footage or with tractor or RAM speeds.
- Material is spread via bulldozer
- Allowed 60 DT/Acre Approx 250 WT/Acre


CEC
Civil & Environmental Consultants, Inc.



CEC

Civil & Environmental Consultants, Inc.

STAGE 10 FIELD

Landfill Reclamation Value
Large Quantities of Sludge in Small Areas and Fast Disposal

Land Application Site	Biosolids Hauled to Application Site (Dry Metric Tons)
Bernard Smith Farm	192
Laurel Highlands Landfill	167.6
Evergreen Landfill	80.7
Total	**440.3**

AWA Last Option Landfill Disposal

- Requires Additional Analysis (Form 43)
- Waste Must be Manifested
- Limited Disposal Amounts Per Day
- $$$$$$$$$$$$$

Major Drawbacks to Land Application

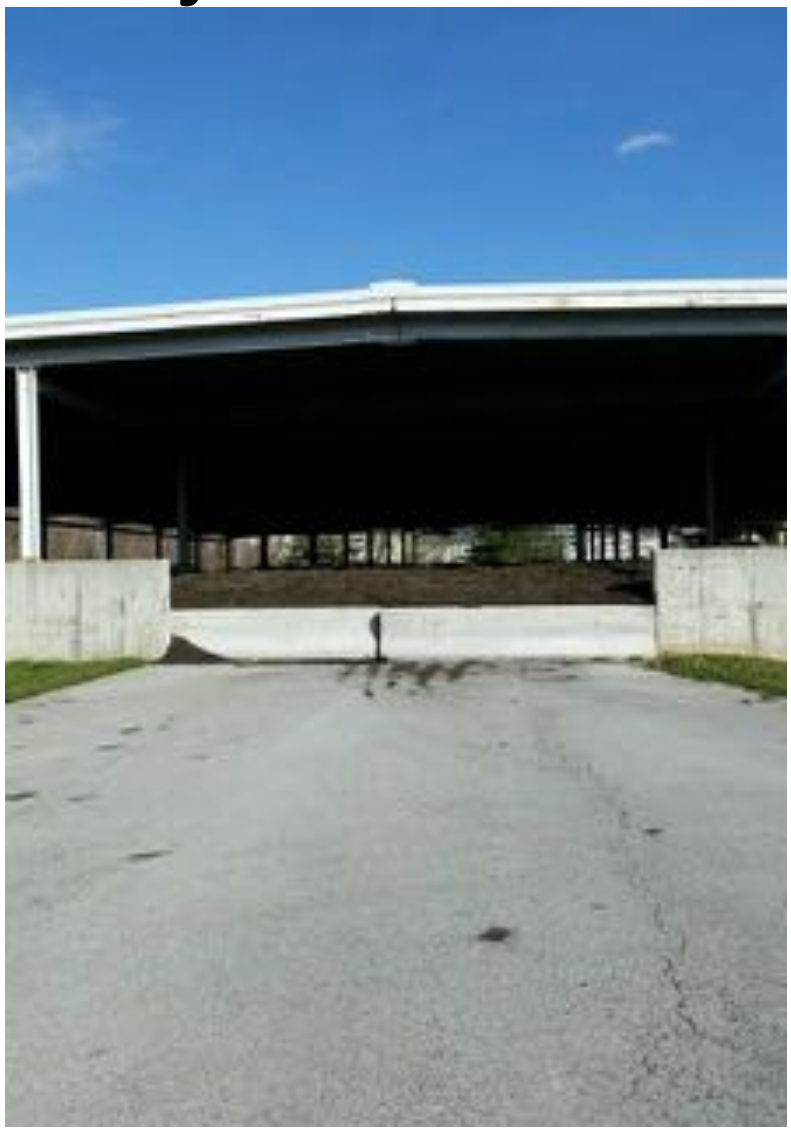
- Public Perception
- Inability to get onto the farm fields (weather, crop production schedule, etc.)
- Unable to apply at the landfill (weather, liner placement, cover schedule)
- Did I mention Public Perception??????????

Major Drawbacks to Land Application

Benner Township residents disapprove of biosolid application near well

Protesters plan blockade in Kamloops against biosolids dumping

Major Drawbacks to Land Application



Cost Benefit Analysis Assuming All Biosolids Production Costs are Similar

- Most Cost Effective – Landfill Reclamation
  - Only real cost is loading and trucking
  - $210.00 to load and truck to the landfill
  - Approximately $14.00 per Wet Ton to dispose
  - Less regulatory issues
  - Less exposure to public criticism (odor complaints, mud tracking, etc.)

Cost Benefit Analysis Assuming All Biosolids Production Costs are Similar

- Second Most Cost Effective – Land Application
  - Cost of permitting farms
  - Two loaders, trucks, spreader, staking, oversight
  - Approximately $29.00 per Wet Ton to actually apply (Quote of $31.00 per Wet Ton)
  - Reliant on farmer to not change mind on crops or fertilizer rates
  - Exposure to public criticism (odor complaints, mud tracking, etc.)

Cost Benefit Analysis Assuming All Biosolids Production Costs are Similar

- Least Cost Effective – Permitted Landfill Disposal
  - Cost of Form 43 Analysis
  - Approximately $14.00 per Wet Ton to load and truck
  - Approximately $50.00 per Wet Ton to dispose
  - Limited by landfill acceptance amounts

Future of the Program

- Attempt to secure more agricultural land
  - Farmer cooperation
    - Increased distances
    - Cost to permit and still risk a shutdown
  - AWA purchase of Land
    - Control of Crops (multi-crop rotations)
    - Control of Tillable acreage (allow for non-VAR)
    - Control of Synthetic Fertilizer (over application)

Future of the Program

- Deep Trench Hybrid Poplar Recycling
  - Looking Very Positive (Authority Owns Acres)
  - Assist With Ground Reclamation
  - Potential Water Source Quality Improvement
- Class A Potential (Heat drying)
  - Upfront capital expenditures
  - Operations costs
  - Still need to dispose of material

Future of the Program

- Regional Dryer
  - Still have a disposal expense
  - Limited by digester needs
  - Residual Biosolids still need disposed

So, why am I here?

- The most common question that I receive from hauler's is, "Why can't you take my waste?".

Reason #1

- You have not gotten permitted to haul into our facility.
- Proof of Insurance/Liability Coverage
- Disposal Procedure Training
- Safety and Security Clearance
- Billing Information

Reason #2 (Main Reason)

- Incompatible Waste Stream
  - Excessive material size (entrails, bottles, etc.)
  - FOG (we are not a grease reception facility)
  - TDS (hauler requested >300,000 mg/L)
    10 times sea water strength
  - Toxic (herbicides, pesticides, etc.)

Reason #2 (Main Reason)

- Hauled in Waste Cannot meet the EPA established Local Limits for Influent Goals.
- Local Limit is defined as the specific discharge limits developed and enforced by the Authority upon industrial and commercial facilities to implement the general and specific discharge prohibitions listed in 40 CFR chapter 403.5 (a)(1) and (b)

Easterly Wastewater Plant	
Parameter	**Daily Maximum**
Antimony –Total	0.125 mg/L
Arsenic –Total	0.017 mg/L
Benzene –Total	0.15 mg/L
Bis (2-Ethylhexyl) Phthalate	0.034 mg/L
Cadmium –Total	0.0050 mg/L
Chromium - Total	2.65 mg/L
Copper –Total	0.1900 mg/L
Cyanide –Total	0.0350 mg/L
Ethylbenzene	0.143 mg/L
Lead –Total	0.0490 mg/L
Mercury –Total	0.00095 mg/L
Molybdenum –Total	0.44 mg/L
Nickel –Total	0.435 mg/L
Nitrogen –Ammonia	47 mg/L
Nitrogen –Total	100 mg/L
PCB –Total	Non-Detectable
Phosphorus –Total	11 mg/L
Selenium –Total	0.040 mg/L
Silver –Total	0.060 mg/L
Toluene	64 mg/L
Xylene	2.8 mg/L
Zinc –Total	1.39 mg/L

Westerly Wastewater Plant	
Parameter	**Daily Maximum**
Antimony –Total	0.117 mg/L
Arsenic –Total	0.15 mg/L
Benzene –Total	0.21 mg/L
Bis (2-Ethylhexyl) Phthalate	0.35 mg/L
Cadmium –Total	0.034 mg/L
Chromium – Total	10.1 mg/L
Copper –Total	0.52 mg/L
Cyanide –Total	0.62 mg/L
Ethylbenzene	0.143 mg/L
Lead –Total	0.38 mg/L
Mercury –Total	0.0047 mg/L
Molybdenum –Total	0.68 mg/L
Nickel –Total	1.45 mg/L
Nitrogen –Ammonia	100 mg/L
Nitrogen –Total	88 mg/L
PCB –Total	Non-detectable
Phosphorus –Total	35 mg/L
Selenium –Total	0.12 mg/L
Silver –Total	1.09 mg/L
Toluene	139 mg/L
Xylene	12.4 mg/L
Zinc –Total	1.00 mg/L

National Primary Drinking Water Standards
mg/L
0.006
0.000
0.005
0.006
0.005
0.100
1.300
0.200
0.700
0.015
0.002
10.000
0.001
0.050
1.000
10.000

Facility Name:	ALTOONA CITY AUTHORITY														
Facility ID:	PAP027022	**UNITS:**	MG/L												
Location:	**INFLUENT**			Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date
	Pollutant	Goals	Frequency	1/31/2016	2/18/2016	3/31/2016	4/30/2016	5/3/2016	6/30/2016	7/22/2016	8/31/2016	9/30/2016	10/21/2016	11/30/2016	12/31/2016
01097	ANTIMONY- TOTAL	0.0086	4		<0.00579			<0.00579		<0.00579			<0.00579		
01002	ARSENIC- TOTAL	0.0158	4		<0.00501			<0.00501		<0.00501			<0.00501		
34030	BENZENE	0.0233	4		<0.00012			<0.00012		<0.00025			<0.00025		
39100	BIS (2-ETHYLHEXYL) PHTHALATE	0.0166	4		<0.0025			<0.0025		<0.003			<0.003		
00310	BOD- 5-DAY	249.25	4	94	69	109	114	83	111	142	152	150	92	126	84
01027	CADMIUM- TOTAL	0.0019	4		<0.00104			<0.00104		<0.00104			<0.00104		
01034	CHROMIUM- TOTAL	0.25	4		0.00257			<0.00104		<0.00104			<0.00104		
01042	COPPER- TOTAL	0.0685	4	<0.005	0.0145	<0.005	<0.005	0.0164	<0.005	0.0136	<0.005	<0.005	0.0149	<0.005	<0.005
00720	CYANIDE- TOTAL	0.0249	4		0.004			<0.001		0.003			0.0038		
34371	ETHYLBENZENE	5.6305	4		<0.00018			<0.00018		0.00075			<0.00037		
01051	LEAD- TOTAL	0.019	4		0.00395			<0.00338		<0.00338			<0.00338		
71900	MERCURY- TOTAL	0.0002	4		0.0000449			<0.000029		0.0000732			**0.000702**		
01062	MOLYBDENUM- TOTAL	0.0237	4		<0.00442			<0.00442		<0.00442			<0.00442		
01067	NICKEL- TOTAL	0.0504	4		<0.00764			<0.00764		<0.00764			<0.00764		
00610	NITROGEN- AMMONIA	26.7064	4		5.16			5.28		12.6			12.7		
00630	NITROGEN- TOTAL	35.6135	4		<12.35			<9.11		<22.65			<25.95		
04166	PCB- TOTAL	3E-07	4		**<0.00000799**			**<0.00000835**		**<0.0000087**			**<0.0000087**		
00665	PHOSPHORUS- TOTAL	7.1257	4		1.06			0.82		2.33			3.05		
01147	SELENIUM- TOTAL	0.0136	4		<0.00449			<0.00449		<0.00449			<0.00449		
01077	SILVER- TOTAL	0.0296	4		<0.00160			<0.005		<0.0016			<0.0016		
00530	SOLIDS- TOTAL SUSPENDED	299.085	4	81	56	98	105	101	122	158	156	154	89	118	78
34010	TOLUENE	7.0116	4		0.00298			0.00116		0.00089			<0.00026		
81551	XYLENE	0.3123	4		<0.00035			<0.00035		0.00369			<0.00107		
01092	ZINC- TOTAL	0.185	4		0.0484			0.0339		0.0408			0.0313		

Facility Name:	ALTOONA CITY AUTHORITY														
Facility ID:	PAP027014	**UNITS:**	MG/L												
Location:	**INFLUENT**			Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date
	Pollutant	Goals	Frequency	1/31/2016	2/17/2016	3/31/2016	4/30/2016	5/4/2016	6/30/2016	7/21/2016	8/30/2016	9/30/2016	10/19/2016	11/30/2016	12/31/2016
01097	ANTIMONY- TOTAL	0.0164	4		<0.00579			0.00754		<0.00579			<0.00579		
01002	ARSENIC- TOTAL	0.0095	4		<0.00501			<0.00501		<0.00501			<0.00501		
34030	BENZENE	0.0148	4		<0.00014			<0.00014		<0.00029			<0.00025		
39100	BIS (2-ETHYLHEXYL) PHTHALATE	0.0106	4		<0.005			<0.0025		**0.011**			<0.003		
00310	BOD- 5-DAY	237.335	4	77	62	94	127	73	90	99	102	107	74	121	86
01027	CADMIUM- TOTAL	0.0033	4		<0.00104			0.00198		<0.00104			<0.00104		
01034	CHROMIUM- TOTAL	0.25	4		0.00283			0.0195		<0.00104			0.00141		
01042	COPPER- TOTAL	0.0868	4		0.028			**0.22**		0.0249			0.0459		
00720	CYANIDE- TOTAL	0.0109	4		0.008			0.004		0.004			0.005		
34371	ETHYLBENZENE	4.5362	4		<0.0001			<0.0001		<0.00022			<0.00037		
01051	LEAD- TOTAL	0.0198	4		0.0159			**0.123**		<0.00338			0.00536		
71900	MERCURY- TOTAL	0.0003	4		0.0000899			**0.00076**		0.000106			**0.000322**		
01062	MOLYBDENUM- TOTAL	0.0749	4		0.00733			<0.00442		0.00842			<0.00442		
01067	NICKEL- TOTAL	0.0589	4		<0.00764			0.0162		<0.00764			<0.00764		
00610	NITROGEN- AMMONIA	27.7311	4		5.35			11.4		12.4			15.9		
00630	NITROGEN- TOTAL	36.9748	4		<12.66			<29.7		**<43.05**			<26.75		
04166	PCB- TOTAL	2E-07	4		**<0.00000742**			**<0.00000799**		**<0.000012**			**<0.00000911**		
00665	PHOSPHORUS- TOTAL	6.6026	4		1.83			5.61		4.58			3.75		
01147	SELENIUM- TOTAL	0.006	4		<0.00449			<0.00449		<0.00449			<0.00449		
01077	SILVER- TOTAL	0.0088	4		<0.0016			<0.005		<0.0016			<0.0016		
00530	SOLIDS- TOTAL SUSPENDED	351.141	4	80	66	111	178	116	135	175	189	144	108	186	127
34010	TOLUENE	5.6488	4		0.0007			0.00061		0.00157			<0.00026		
81551	XYLENE	0.2516	4		0.00137			<0.00022		<0.00077			<0.00107		
01092	ZINC- TOTAL	0.2573	4		0.0851			**0.694**		0.0765			0.0623		

Westerly Hauled Volumes 2016

MONTH	SEPTAGE (Gallons)	SLUDGE (Gallons)	OTHER (Gallons)	TOTAL (Gallons)
January	1,250	0	97,971	**99,221**
February	1,145	31343	137,629	**170,117**
March	81,832	7,546	155,665	**245,043**
April	41,520	62,749	106,837	**211,106**
May	55,582	38,684	121,514	**215,780**
June	22,616	3,309	173,207	**199,132**
July	11,960	6,479	87,097	**105,536**
August	78,082	4,004	127,469	**209,555**
September	32,738	22,557	137,425	**192,720**
October	6,362	9,970	97,962	**114,294**
November	34,899	22,158	116,999	**174,056**
December	6,604	27,726	101,797	**136,127**
TOTAL	**374,590**	**236,525**	**1,461,572**	**2,072,687**

Conclusion???

- Hydraulically and Organically, the AWA WWTF's can handle a lot of hauled waste
- Waste's must meet certain criteria to be disposed of at the plants
- The AWA is encouraging haulers to bring waste that is compatible

Contact Information

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