

State of North Carolina  
Department of Environment and Natural Resources  
Division of Water Resources

**Animal Waste Management Systems**

Request for Certificate of Coverage

Facility Currently Covered by an Expiring State Non-Discharge General Permit

On September 30, 2014, the North Carolina State Non-Discharge General Permits for Animal Waste Management Systems will expire. As required by these permits, facilities that have been issued Certificates of Coverage to operate under these State Non-Discharge General Permits must apply for renewal at least 180 days prior to their expiration date. Therefore, all applications must be received by the Division of Water Resources by no later than **April 1, 2014**.

*Please do not leave any question unanswered. Please verify all information and make any necessary corrections below.*

*Application must be signed and dated by the Permittee.*

1. Facility Number: 240109 and Certificate of Coverage Number: AWS240109

2. Facility Name: Mark and Tommy Johnson

3. Landowner's name (same as on the Waste Management Plan): Mark Johnson & Tommy Johnson

4. Landowner's mailing address: PO Box 331

City/State: Evergreen NC Zip: 284380331

Telephone Number (include area code): (910) 654-1126 E-mail:

910-770-9945

5. Facility's physical address:

City: Evergreen

State: NC

Zip: 28438

6. County where facility is located: Columbus

7. Farm Manager's name (If different than the Landowner):

8. Farm Manager's telephone number (include area code):

910-770-2772 ~ 910-770-9945

9. Integrator's name (if there is not an integrator write "None"): Murphy-Brown LLC

10. Operator in Charge (OIC) name: Thomas Johnson II Telephone Number 910-770-2772 OTC # 28707

11. Lessee's name (if there is not a lessee write "None"): None

12. Indicate animal operation type and number:

**Swine**

Wean to Finish

Wean to Feeder **6400**

Farrow to Finish

Feeder to Finish

Farrow to Wean

Farrow to Feeder

Boar/Stud

Gilts

Other

Horses - Horses

Horses - Other

**Cattle**

Dairy Calf

Dairy Heifer

Milk Cow

Dry Cow

Beef Stocker Calf

Beef Feeder

Beef Brood Cow

Other

Sheep - Sheep

Sheep - Other

**Dry Poultry**

Non Laying Chickens

Laying Chickens

Turkeys

Other

Pullets

Turkey Poult

**Wet Poultry**

Non Laying Pullets

Layers

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Mail one (1) copy of the most recent Waste Utilization Plan (WUP) along with the field maps for this facility with this completed and signed application as required by NC General Statutes 143-215.10C(d) to the address below. The WUP must be signed by the owner and a certified technical specialist.

As a second option to mailing paper copies of the application package, you can scan and email one signed copy of the application and the WUP to: [animalpermits@ncdenr.gov](mailto:animalpermits@ncdenr.gov)

I attest that this application has been reviewed by me and is accurate and complete to the best of my knowledge. I understand that, if all required parts of this application are not completed and that if all required supporting information and attachments are not included, this application package will be returned to me as incomplete. **Note:** In accordance with NC General Statutes 143-215.6A and 143-215.6B, any person who knowingly makes any false statement, representation, or certification in any application may be subject to civil penalties up to \$25,000 per violation. (18 U.S.C. Section 1001 provides a punishment by a fine of not more than \$10,000 or imprisonment of not more than 5 years, or both for a similar offense.)

Printed Name of Signing Official (Landowner, or if multiple Landowners all landowners should sign. If Landowner is a corporation, signature should be by a principal executive officer of the corporation):

Name: Tommy Johnson Title: Co. Manager  
Signature: [Signature] Date: 3-17-14

Name: MARK Johnson Title: Co manager  
Signature: [Signature] Date: 3-17-14

Name: \_\_\_\_\_ Title: \_\_\_\_\_  
Signature: \_\_\_\_\_ Date: \_\_\_\_\_

THE COMPLETED APPLICATION SHOULD BE SENT TO THE FOLLOWING ADDRESS:

**NCDENR-DWR  
Animal Feeding Operations Branch  
1636 Mail Service Center  
Raleigh, North Carolina 27699-1636**

**Telephone number: (919) 807-6464  
E-mail: [animalpermits@ncdenr.gov](mailto:animalpermits@ncdenr.gov)**

## NUTRIENT UTILIZATION PLAN

Grower(s): Mark and Tommy Johnson  
Farm Name: Mark and Tommy Johnson Nursery  
County: Columbus

Farm Capacity:	
Farrow to Wean	
Farrow to Feeder	
Farrow to Finish	
Wean to Feeder	6400
Feeder to Finish	

Storage Structure: Anaerobic Lagoon  
Storage Period: >180 days  
Application Method: Irrigation

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The waste from your animal facility must be land applied at a specified rate to prevent pollution of surface water and/or groundwater. The plant nutrients in the animal waste should be used to reduce the amount of commercial fertilizer required for the crops in the fields where the waste is to be applied.

This waste utilization plan uses nitrogen as the limiting nutrient. Waste should be analyzed before each application cycle. Annual soil tests are strongly encouraged so that all plant nutrients can be balanced for realistic yields of the crop to be grown.

Several factors are important in implementing your waste utilization plan in order to maximize the fertilizer value of the waste and to ensure that it is applied in an environmentally safe manner:

1. Always apply waste based on the needs of the crop to be grown and the nutrient content of the waste. Do not apply more nitrogen than the crop can utilize.
2. Soil types are important as they have different infiltration rates, leaching potentials, cation exchange capacities, and available water holding capacities.
3. Normally waste shall be applied to land eroding at less than 5 tons per acre per year. Waste may be applied to land eroding at 5 or more tons per acre annually, but less than 10 tons per acre per year providing that adequate filter strips are established.
4. Do not apply waste on saturated soils, when it is raining, or when the surface is frozen. Either of these conditions may result in runoff to surface waters which is not allowed under DWQ regulations.
5. Wind conditions should also be considered to avoid drift and downwind odor problems.
6. To maximize the value of the nutrients for crop production and to reduce the potential for pollution, the waste should be applied to a growing crop or applied not more than 30 days prior to planting a crop or forages breaking dormancy. Injecting the waste or disking will conserve nutrients and reduce odor problems.



This plan is based on the waste application method shown above. If you choose to change methods in the future, you need to revise this plan. Nutrient levels for different application methods are not the same.

The estimated acres needed to apply the animal waste is based on typical nutrient content for this type of facility. In some cases you may want to have plant analysis made, which could allow additional waste to be applied. Provisions shall be made for the area receiving waste to be flexible so as to accommodate changing waste analysis content and crop type. Lime must be applied to maintain pH in the optimum range for specific crop production.

This waste utilization plan, if carried out, meets the requirements for compliance with 15A NCAC 2H .0217 adopted by the Environmental Management Commission.

**AMOUNT OF WASTE PRODUCED PER YEAR ( gallons, ft<sup>3</sup>, tons, etc.):**

Capacity	Type	Waste Produced per Animal	Total
6400	Farrow to Wean	3212 gal/yr	gal/yr
	Farrow to Feeder	4015 gal/yr	gal/yr
	Farrow to Finish	10585 gal/yr	gal/yr
	Wean to Feeder	223 gal/yr	1,427,200 gal/yr
	Feeder to Finish	986 gal/yr	gal/yr
		<b>Total</b>	<b>1,427,200 gal/yr</b>

**AMOUNT OF PLANT AVAILABLE NITROGEN PRODUCED PER YEAR (lbs):**

Capacity	Type	Nitrogen Produced per Animal	Total
6400	Farrow to Wean	5.4 lbs/yr	lbs/yr
	Farrow to Feeder	6.5 lbs/yr	lbs/yr
	Farrow to Finish	26 lbs/yr	lbs/yr
	Wean to Feeder	0.48 lbs/yr	3,072 lbs/yr
	Feeder to Finish	2.3 lbs/yr	lbs/yr
		<b>Total</b>	<b>3,072 lbs/yr</b>

Applying the above amount of waste is a big job. You should plan time and have appropriate equipment to apply the waste in a timely manner.

**LAND UTILIZATION SUMMARY**

The following table describes the nutrient balance and land utilization rate for this facility. Note that the Nitrogen Balance for Crops indicates the ratio of the amount of nitrogen produced on this facility to the amount of nitrogen that the crops under irrigation may uptake and utilize in the normal growing season.

**Total Irrigated Acreage:** 30.62  
**Total N Required 1st Year:** 4519.5269  
**Total N Required 2nd Year:** 0

**Average Annual Nitrogen Requirement of Crops:** 4,519.53  
**Total Nitrogen Produced by Farm:** 3,072.00  
**Nitrogen Balance for Crops:** (1,447.53)

The following table describes the specifications of the hydrants and fields that contain the crops designated for utilization of the nitrogen produced on this facility. This chart describes the size, soil characteristics, and uptake rate for each crop in the specified crop rotation schedule for this facility.



PAN  
\*

PAN



This plan does not include commercial fertilizer. The farm should produce adequate plant available nitrogen to satisfy the requirements of the crops listed above.

The applicator is cautioned that P and K may be over applied while meeting the N requirements. In the future, regulations may require farmers in some parts of North Carolina to have a nutrient management plan that addresses all nutrients. This plan only addresses nitrogen.

In interplanted fields ( i.e. small grain, etc, interseeded in bermuda), forage must be removed through grazing, hay, and/or silage. Where grazing, plants should be grazed when they reach a height of six to nine inches. Cattle should be removed when plants are grazed to a height of four inches. In fields where small grain, etc, is to be removed for hay or silage, care should be exercised not to let small grain reach maturity, especially late in the season (i.e. April or May). Shading may result if small grain gets too high and this will definately interfere with stand of bermudagrass. This loss of stand will result in reduced yields and less nitrogen being utilized. Rather than cutting small grain for hay or silage just before heading as is the normal situation, you are encouraged to cut the small grain earlier. You may want to consider harvesting hay or silage two to three times during the season, depending on the time small grain is planted in the fall.

The ideal time to interplant small grain, etc, is late September or early October. Drilling is recommended over broadcast ng. Bermudagrass should be grazed or cut to a height of about two inches before drilling for best results.

#### CROP CODE LEGEND

Crop Code	Crop	Lbs N utilized / unit yield
A	Barley	1.6 lbs N / bushel
B	Hybrid Bermudagrass - Grazed	50 lbs N / ton
C	Hybrid Bermudagrass - Hay	50 lbs N / ton
D	Corn - Grain	1.25 lbs N / bushel
E	Corn - Silage	12 lbs N / ton
F	Cotton	0.12 lbs N / lbs lint
G	Fescue - Grazed	50 lbs N / ton
H	Fescue - Hay	50 lbs N / ton
I	Oats	1.3 lbs N / bushel
J	Rye	2.4 lbs N / bushel
K	Small Grain - Grazed	50 lbs N / acre
L	Small Grain - Hay	50 lbs N / acre
M	Grain Sorghum	2.5 lbs N / cwt
N	Wheat	2.4 lbs N / bushel
O	Soybean	4.0 lbs N / bushel
P	Pine Trees	40 lbs N / acre / yr
Q	Sorghum/sudan grazed	48.3 lbs N / ton

Acres shown in the preceding table are considered to be the usable acres excluding required buffers, filter strips along ditches, odd areas unable to be irrigated, and perimeter areas not receiving full application rates due to equipment limitations. Actual total acres in the fields listed may, and most likely will be, more than the acres shown in the tables.

See attached map showing the fields to be used for the utilization of animal waste.



## SLUDGE APPLICATION:

The following table describes the annual nitrogen accumulation rate per animal in the lagoon sludge

Farm Specifications	PAN/yr/animal	Farm Total/yr
Farrow to Wean	0.84	
Farrow to Feeder	1	
Farrow to Finish	4.1	
6400 Wean to Feeder	0.072	460.8
Feeder to Finish	0.36	

The waste utilization plan must contain provisions for periodic land application of sludge at agronomic rates. The sludge will be nutrient rich and will require precautionary measures to prevent over application of nutrients or other elements. Your production facility will produce approximately 460.8 pounds of plant available nitrogen per year will accumulate in the lagoon sludge based on the rates of accumulation listed above.

If you remove the sludge every 5 years, you will have approximately 2304 pounds of plant available nitrogen to utilize. Assuming you apply this PAN to hybrid bermuda grass hayland at the rate of 300 pounds of nitrogen per acre, you will need 7 acres of land. If you apply the sludge to corn at a rate of 125 pounds per acre, you will need 18.432 acres of land. Please note that these are only estimates of the PAN produced and the land required to utilize that PAN. Actual values may only be determined by sampling the sludge for plant available nitrogen content prior to application. Actual utilization rates will vary with soil type, crop, and realistic yield expectations for the specific application fields designated for sludge application at time of removal.

## APPLICATION OF WASTE BY IRRIGATION:

The irrigation application rate should not exceed the intake rate of the soil at the time of irrigation such that runoff or ponding occurs. This rate is limited by initial soil moisture content, soil structure, soil texture, water droplet size, and organic solids. The application amount should not exceed the available water holding capacity of the soil at the time of irrigation nor should the plant available nitrogen applied exceed the nitrogen needs of the crop.

If surface irrigation is the method of land application for this plan, it is the responsibility of the producer and irrigation designer to ensure that an irrigation system is installed to properly irrigate the acres shown in the preceding table. Failure to apply the recommended rates and amounts of nitrogen shown in the tables may make this plan invalid.

\*This is the maximum application amount allowed for the soil assuming the amount of nitrogen allowed for the crop is not over applied. In many situations, the application amount shown cannot be applied because of the nitrogen limitation. The maximum application amount shown can be applied under optimum soil conditions.

Your facility is designed for >180 days of temporary storage and the temporary storage must be removed on the average of once every 6 months. In no instance should the volume of the waste stored in your structure be within the 25 year 24 hour storm storage or one foot of freeboard except in the event of the 25 year 24 hour storm.

It is the responsibility of the producer and waste applicator to ensure that the spreader equipment is operated properly to apply the correct rates to the acres shown in the tables. Failure to apply the recommended rates and amounts of nitrogen shown in the tables may make this plan invalid.

Call your technical specialist after you receive the waste analysis report for assistance in determining the amount of waste per acre and the proper application prior to applying the waste.

## Application Rate Guide

The following is provided as a guide for establishing application rates and amounts.

Tract	Hydrant	Soil Type	Crop	Application Rate in/hr	Application Amount * inches
6434	1	Ra	Q	0.4	1
6434	2	Ra	Q	0.4	1
6434	3	Ra	B	0.4	1
6434	4	Ra	B	0.4	1
6434	5	Ra	B	0.4	1
Johnson	6	Ra	D	0.4	1
	7	Ra	D	0.4	1
	8	Ra	G	0.4	1
	9	Ra	G	0.4	1
	6	Ra	O	0.4	1
	7	Ra	O	0.4	1



**Additional Comments:**

Pulls 6-9 are option for use. Any of the crops listed may be used for pulls 6 and 7.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

## NUTRIENT UTILIZATION PLAN CERTIFICATION

Name of Farm: Mark and Tommy Johnson Nursery  
Owner: Mark and Tommy Johnson  
Manager:

### Owner/Manager Agreement:

I/we understand and will follow and implement the specifications and the operation and maintenance procedures established in the approved animal waste nutrient management plan for the farm named above. I/we know that any expansion to the existing design capacity of the waste treatment and/or storage system, or construction of new facilities, will require a new nutrient management plan and a new certification to be submitted to DWQ before the new animals are stocked.

I/we understand that I must own or have access to equipment, primarily irrigation equipment, to land apply the animal waste described in this nutrient management plan. This equipment must be available at the appropriate pumping time such that no discharge occurs from the lagoon in the event of a 25 year 24 hour storm. I also certify that the waste will be applied on the land according to this plan at the appropriate times and at rates which produce no runoff.

This plan will be filed on site at the farm office and at the office of the local Soil and Water Conservation District and will be available for review by NCDWQ upon request.

Name of Facility Owner: Mark and Tommy Johnson

Signature: 

5-1-07  
Date

Name of Manager (if different from owner): \_\_\_\_\_

Signature: \_\_\_\_\_

\_\_\_\_\_  
Date

Name of Technical Specialist: \_\_\_\_\_

Affiliation: Murphy-Brown, LLC.

Address: 2822 Hwy 24 West, PO Drawer 856

Warsaw, NC 28398

Telephone: (910) 293-3434

Signature: 

5-1-07  
Date



## IRRIGATION SYSTEM DESIGN PARAMETERS

Landowner/Operator Name: Mark and Tommy Johnson

Address: Facility 24-109

County: Columbus

Telephone: (910) 770 1508

Date: 5/1/2007

### Table 1 - Field Specifications

[illegible]





TABLE 4 - Irrigation System Specifications

	Traveling	Solid Set
	Irrigation Gun	Irrigation
Flow Rate of Sprinkler (gpm)	143	
Operating Pressure at Pump (psi)	100.0	
Design Precipitation Rate (in/hr)	0.32	
Hose Length (feet)	980	XXXXXXXXXX
Type of Speed Compensation	Mechanical	XXXXXXXXXX
Pump Type (PTO, Engine, Electric)	Engine	
Pump Power Requirement (hp)	30.0	

TABLE 5 - Thrust Block Specifications	
	THRUST BLOCK
LOCATION	AREA (sq. ft.)
90 degree bend	NA
Dead End	NA
Tee	NA
Gate Valve	NA
45 degree bend	NA

### IRRIGATION SYSTEM DESIGNER

Name: Kraig Westerbeek  
Company: Murphy - Brown  
Address: P.O. Box 759 Rose Hill, NC 28458  
Phone: 910-289-2111

#### Required Documentation



The following details of design and materials must accompany all irrigation designs:

1. A scale drawing of the proposed irrigation system which includes hydrant locations, pipelines, thrust block locations and buffer areas where applicable.
2. Assumptions and computations for determining total dynamic head and horsepower requirements.
3. Computations used to determine all mainline and lateral pipe sizes.
4. Sources and/or calculations used for determining application rates.
5. Computations used to determine the size of thrust blocks and illustrations of all thrust block configurations required in the system
6. Manufacturer's specifications for the irrigation pump, traveler and sprinkler(s).
7. Manufacturer's specifications for the irrigation pipe and/or USDA-NRCS standard for IRRIGATION WATER CONVEYANCE.
8. The information required by this form are the minimum requirements. It is the responsibility of the designer to consider all relevant factors at a particular site and address them as appropriate.
9. Irrigation pipes should not be installed in lagoon or storage pond embankments without the approval of the designer.

NOTE: A buffer strip of 50' or wider must be maintained between the limits of the irrigation system and all perennial streams and surface waters per NC Statutes.

### **Narrative of Irrigation System Operation**

This design is intended to provide 'wetted' acreage information for this existing system. Acreage shown is based on 'new and expanded' criteria. SB515 setbacks must be adhered to when operating this system.



**CALCULATIONS****Sprinkler Specifications**

Sprinkler Type: Nelson 150  
 Nozzle Size: 0.97 inches  
 Sprinkler Pressure: 60 psi  
 Flowrate(GPM): 143 gpm  
 Wetted Diameter: 260 feet \*90% manufacturer's charts

**Lane Spacings**

Desired Spacing (%): 70 %  
 Design Spacing(feet): 182 \*PVC irrigation pipe normally comes in 20' pieces,  
 so round to the nearest multiple of 20.  
 Actual Spacing (feet): 180 feet  
 Actual Spacing (%): 69 %

**Application Rate**

Application Rate =  $(96.3 \times \text{Flowrate}) / (3.1415 \times (.9 \times \text{radius})^2)$

Design App. Rate = 0.32 in/hr

300 degree arc = 0.38 in/hr

220 degree arc = 0.52 in/hr

180 degree arc = 0.64 in/hr

**Traveller Speed**

Travel speed =  $1.605 \times \text{Flowrate} / \text{Desired application amount} \times \text{Lane Spacing}$

Desired app. (in.) = 0.5 inches

300 degree arc = 2.55 ft/min

220 degree arc = 3.06 ft/min

180 degree arc = 5.10 ft/min

**Mainline Velocity**

Velocity =  $.408 \times \text{Flowrate} / \text{pipe diameter squared}$  feet/sec.\*\*

\*\*For buried pipelines, velocity should be below 5 feet per second

Pipe size: inches

Velocity= #DIV/0! ft/sec.

### Maximum Mainline Friction Loss

Most distant hydrant:  
Total distance:                      feet

Friction Loss is figured using Hazen/William's Equation

Friction Loss= #DIV/0! feet/100 feet

Max. Mainline Loss = #DIV/0! feet or #DIV/0! psi

### Total Dynamic Head

Sprinkler Pressure:                      60 psi  
Loss through traveller:                      psi  
Elevation head:                      psi  
Mainline loss: #DIV/0! psi  
Suction head and lift:                      psi  
5% fitting loss: #DIV/0! psi  
**TOTAL(TDH) = #DIV/0! psi or #DIV/0! feet**

### Horsepower Required

Horsepower = Flowrate x TDH(feet) / 3960 / Pump efficiency

Pump Description:  
Pump Efficiency:                      %

Horsepower Required: #DIV/0! Hp

### Thrust Blocking

Thrust Block Area = Thrust / Soil Bearing Strength

Thrust:                      feet  
Soil Bearing Strength:                      feet

End Cap: #DIV/0! ft2  
90 degree elbow: #DIV/0! ft2  
Tee: #DIV/0! ft2  
45 degree elbow: #DIV/0! ft2

### Pipe Pressure Rating Check

Pressure Rating of Pipe to be Used:                      psi  
Max. Pressure on system when running: #DIV/0! psi  
70% of Pressure Rating:                      0 psi

If Max. Pressure on system is less than 70% of Pressure Rating, OK

### Net Positive Suction Head Check



NPSHA:

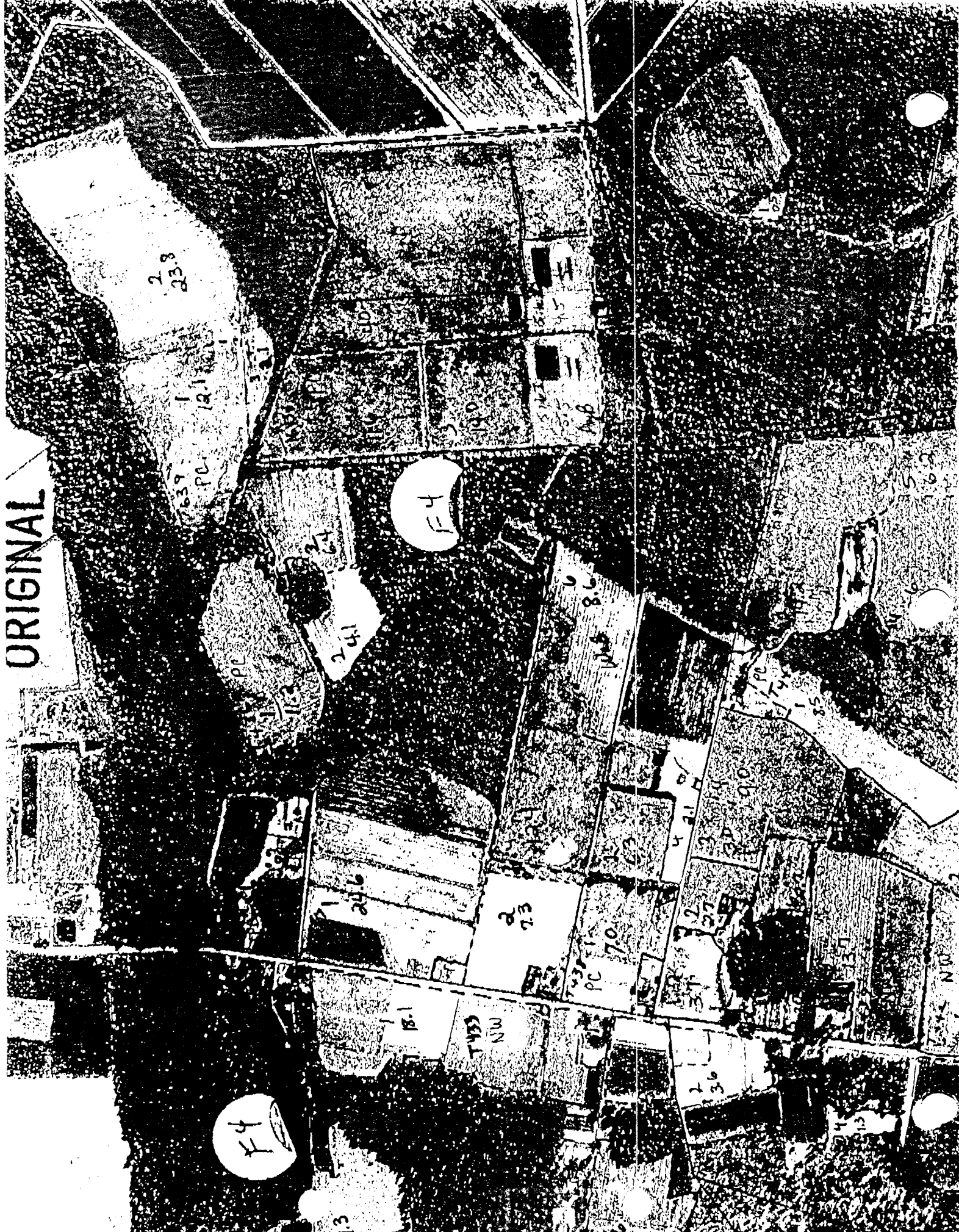
NPSHR: \*from pump curve

If  $NPSHA > NPSHR$  OK

Acreage calculations

<u>Pull No.</u>	<u>Width</u>	<u>Length</u>	<u>Start</u>	<u>Stop</u>	<u>Total Acres</u>
1	163	852	0.28	0.15	3.62
2	180	797	0.36	0.29	3.94
3	180	739	0.36	0.29	3.70
4	180	783	0.36	0.29	3.89
5	93	848	0.18	0.15	2.14
6	191.4	82	0.36	0.3	1.02
7	191.4	435	0.36	0.3	2.57
8	191.4	687	0.36	0.3	3.68
9	191.4	411	0.36	0.3	2.47





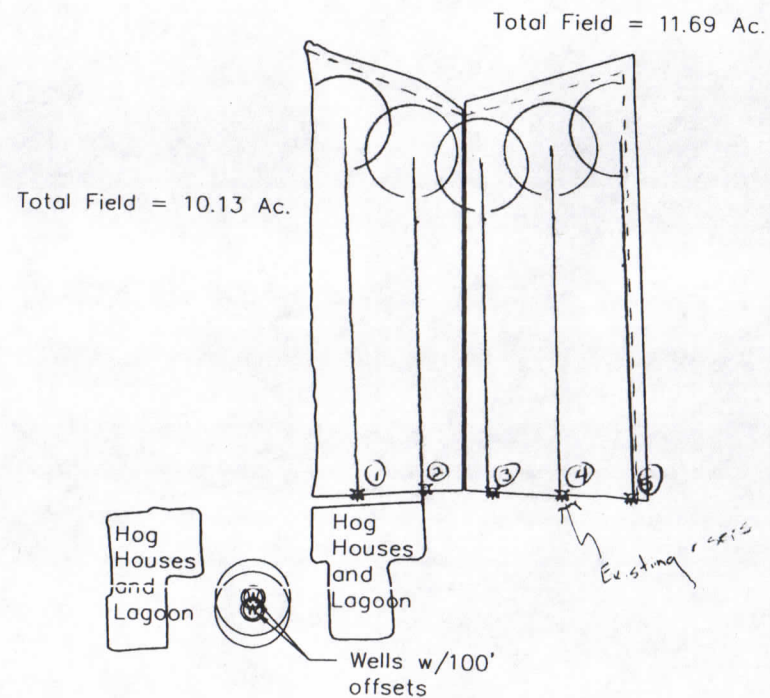
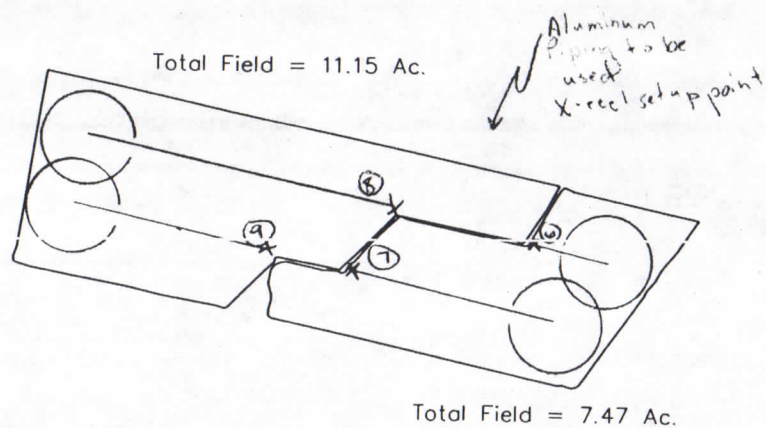
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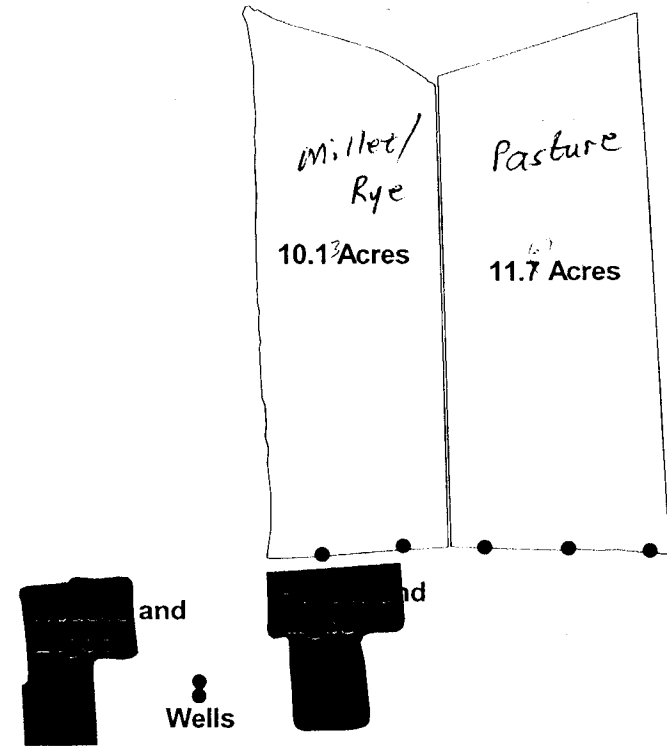
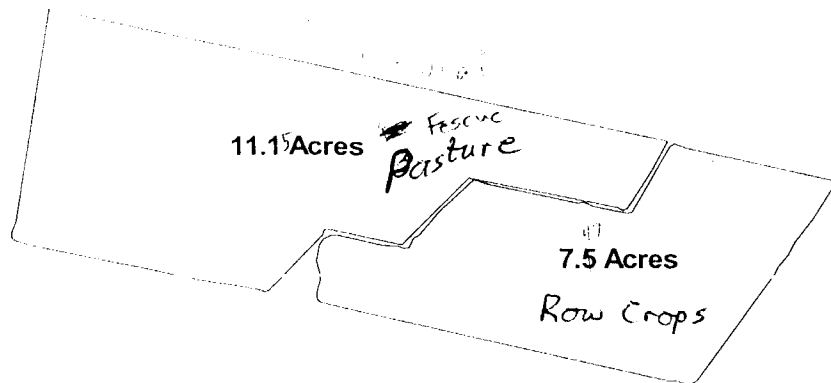


Mark Johnson  
M & T Farm  
Scale: 1"=500'



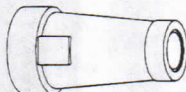
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# Mark Johnson - M&T Farm



## 150 TAPER BORE NOZZLE 150T

150T – Specify size when ordering

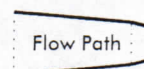
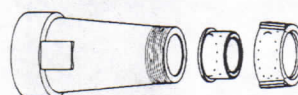
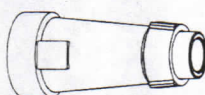


	0.70"		0.80"		0.90"		1.0"		1.1"		1.2"		1.3"		1.4"	
	9317-070		9317-080		9317-090		9317-100		9317-110		9317-120		9317-130			
PSI	GPM	DIA. FT.	GPM	DIA. FT.	GPM	DIA. FT.	GPM	DIA. FT.	GPM	DIA. FT.	GPM	DIA. FT.	GPM	DIA. FT.	GPM	DIA. FT.
50	100	250	130	270	165	290	205	310	255	330	300	345	350	360	408	373
60	110	265	143	285	182	305	225	325	275	345	330	365	385	380	446	396
70	120	280	155	300	197	320	245	340	295	360	355	380	415	395	483	412
80	128	290	165	310	210	335	260	355	315	375	380	395	445	410	516	427
90	135	300	175	320	223	345	275	365	335	390	405	410	475	425	547	442
100	143	310	185	330	235	355	290	375	355	400	425	420	500	440	577	458
110	150	320	195	340	247	365	305	385	370	410	445	430	525	450	605	471
120	157	330	204	350	258	375	320	395	385	420	465	440	545	460	632	481

## 150 TAPER RING NOZZLE 150TR

150TR = Body + Cap + 1 Taper Ring  
Specify size when ordering

COMPONENTS:  
Body #9773    Taper Ring #9238-???    Cap #6286

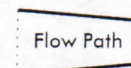
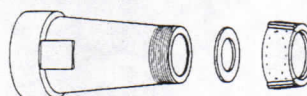
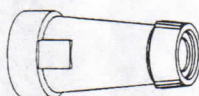


	0.88"		0.96"		1.04"		1.12"		1.2"		1.28"		1.36"	
	9238-022		9238-024		9238-026		9238-028		9238-030		9238-032		9238-034	
PSI	GPM	DIA. FT.	GPM	DIA. FT.	GPM	DIA. FT.	GPM	DIA. FT.	GPM	DIA. FT.	GPM	DIA. FT.	GPM	DIA. FT.
50	135	270	164	236	196	302	233	318	274	333	319	347	369	358
60	148	284	179	301	214	317	255	334	301	351	350	367	405	378
70	159	299	194	315	231	331	276	349	325	366	378	382	437	393
80	170	310	207	330	247	346	295	364	347	381	404	397	467	409
90	181	320	220	340	262	357	313	377	368	396	429	411	495	424
100	191	329	231	350	277	366	330	386	388	405	452	423	522	436
110	200	339	243	359	290	376	346	397	407	416	474	433	548	446
120	209	349	253	369	303	386	361	407	425	426	495	443	572	457

## 150 RING NOZZLE 150R

150R = Body + Cap + Set of 7 Rings  
Specify size when ordering

COMPONENTS:  
Body #9773    Ring #6287-???    Cap #6286



	0.86"		0.97"		1.08"		1.18"		1.26"		1.34"		1.41"		1.47"	
	6287-086		6287-097		6287-108		6287-118		6287-126		6287-134		6287-141			
PSI	GPM	DIA. FT.	GPM	DIA. FT.	GPM	DIA. FT.	GPM	DIA. FT.	GPM	DIA. FT.	GPM	DIA. FT.	GPM	DIA. FT.	GPM	DIA. FT.
50	100	245	130	265	165	285	205	300	255	320	300	335	350	350	385	353
60	110	260	143	280	182	300	225	315	275	335	330	350	385	365	423	368
70	120	270	155	290	197	310	245	330	295	350	355	365	415	380	458	383
80	128	280	165	300	210	320	260	340	315	360	380	380	445	395	490	399
90	135	290	175	310	223	330	275	350	335	370	405	390	475	405	522	409
100	143	300	185	320	235	340	290	360	355	380	425	400	500	415	550	419
110	150	310	195	330	247	350	305	370	370	390	445	410	525	425	577	429
120	157	315	204	335	258	360	320	380	385	400	465	420	545	435	603	439

Diameters are based on 24" trajectory. Big Gun® performance data has been obtained under ideal test conditions and may be adversely affected by wind, poor hydraulic entrance conditions or other factors. Nelson Irrigation Corporation makes no representation regarding droplet condition, uniformity, or application rates.