

EPA LD. NUMBER (copy from Item 1 of Form 1)

<b>FORM 2B NPDES</b>	<b>EPA</b>	<b>U.S. ENVIRONMENTAL PROTECTION AGENCY APPLICATIONS FOR PERMIT TO DISCHARGE WASTEWATER CONCENTRATED ANIMAL FEEDING OPERATIONS AND AQUATIC ANIMAL PRODUCTION FACILITIES</b>		
<b>I. GENERAL INFORMATION</b>		Applying for: Individual Permit <input type="checkbox"/> Coverage Under General Permit <input checked="" type="checkbox"/>		
<b>A. TYPE OF BUSINESS</b>	<b>B. CONTACT INFORMATION</b>	<b>C. FACILITY OPERATION STATUS</b>		
<input checked="" type="checkbox"/> 1. Concentrated Animal Feeding Operation (complete items B, C, D, and Section II)  <input type="checkbox"/> 2. Concentrated Aquatic Animal Production Facility (complete items B, C, and section III)	Owner/or Operator Name: <u>Phillip Troost</u> Telephone: ( <u>575</u> ) <u>365-2741</u> Address: <u>491 West Funk Road</u> Facsimile: ( _____ ) _____ City: <u>Lake Arthur</u> State: <u>NM</u> Zip Code: <u>88253</u>	<input checked="" type="checkbox"/> 1. Existing Facility  <input type="checkbox"/> 2. Proposed Facility		
<b>D. FACILITY INFORMATION</b> Name: <u>Cottonwood Springs Dairy LLC</u> Telephone: ( <u>575</u> ) <u>365-2741</u> Address: <u>491 West Funk Road (Sec 6., T. 16 S., R. 25 E., NMPM)</u> Facsimile: ( <u>575</u> ) <u>365-2473</u> City: <u>Lake Arthur</u> State: <u>NM</u> Zip Code: <u>88253</u> County: <u>Eddy</u> Latitude: <u>32 Deg. 57 Min. 6.7 Sec. North</u> Longitude: <u>104 Deg. 31 Min. 26.9 Sec. West</u>  If contract operation: Name of Integrator: <u>NA</u> Address of Integrator: <u>NA</u>				
<b>II. CONCENTRATED ANIMAL FEEDING OPERATION CHARACTERISTICS</b>				
<b>A. TYPE AND NUMBER OF ANIMALS</b>		<b>B. Manure, Litter and/or Wastewater Production and Use</b>		
2. ANIMALS		1) How much manure, litter and wastewater is generated annually by the facility? <u>12251 tons 51X10e6</u> gallons  2) If land applied how many acres of land under the control of the applicant are available for applying the CAFOs manure/litter/wastewater? _____ 380+ acres  3) How many tons of manure or litter, or gallons of wastewater produced by the CAFO will be transferred annually to other persons? tons/gallons ( <i>circle one</i> ) <u>10,975 tons</u>		
1. TYPE	NO. IN OPEN CONFINEMENT			NO. HOUSED UNDER ROOF
<input checked="" type="checkbox"/> Mature Dairy Cows	3400			
<input checked="" type="checkbox"/> Dairy Heifers	1260			
<input type="checkbox"/> Veal Calves				
<input type="checkbox"/> Cattle (not dairy or veal)				
<input type="checkbox"/> Swine (55 lbs. or over)				
<input type="checkbox"/> Swine (under 55 lbs.)				
<input type="checkbox"/> Horses				
<input type="checkbox"/> Sheep or Lambs				
<input type="checkbox"/> Turkeys				

<input type="checkbox"/> Chickens (Broilers)			
<input type="checkbox"/> Chickens (Layers)			
<input type="checkbox"/> Ducks			
<input checked="" type="checkbox"/> Other Specify <u>Dry/Calves/Close</u>	2328		
3. TOTAL ANIMALS	6988		

C.  TOPOGRAPHIC MAP

D. TYPE OF CONTAINMENT, STORAGE AND CAPACITY

1. Type of Containment	Total Capacity (in gallons)	
<input checked="" type="checkbox"/> Lagoon	15,093,418	
<input type="checkbox"/> Holding Pond		
<input type="checkbox"/> Evaporation Pond		
<input checked="" type="checkbox"/> Other: Specify <u>Runoff ponds</u>	101,013,810	

2. Report the total number of acres contributing drainage: 115 acres

3. Type of Storage	Total Number of Days	Total Capacity (gallons/tons)
<input type="checkbox"/> Anaerobic Lagoon		
<input checked="" type="checkbox"/> Storage Lagoon	60	15,093,418
<input type="checkbox"/> Evaporation Pond		
<input type="checkbox"/> Aboveground Storage Tanks		
<input type="checkbox"/> Belowground Storage Tanks		
<input type="checkbox"/> Roofed Storage Shed		
<input type="checkbox"/> Concrete Pad		
<input type="checkbox"/> Impervious Soil Pad		
<input type="checkbox"/> Other: Specify _____		

E. NUTRIENT MANAGEMENT PLAN

**Note: Effective February 27, 2009, a permit application is not complete until a nutrient management plan is submitted to the Permitting Authority.**

1. Please indicate whether a nutrient management plan has been included with this permit application.     Yes     No

2. If no, please explain:

3. Is a nutrient management plan being implemented for the facility?     Yes     No

4. The date of the last review or revision of the nutrient management plan. Date: 11/30/09

5. If not land applying, describe alternative use(s) of manure, litter, and or wastewater:  
Disposal offsite through vendor.

**F. LAND APPLICATION BEST MANAGEMENT PRACTICES**  
Please check any of the following best management practices that are being implemented at the facility to control runoff and protect water quality:

Buffers    Setbacks    Conservation tillage    Constructed wetlands    Infiltration field    Grass filter    Terrace

**III. CONCENTRATED AQUATIC ANIMAL PRODUCTION FACILITY CHARACTERISTICS**

A. For each outfall give the maximum daily flow, maximum 30-day flow, and the long-term average flow.			B. Indicate the total number of ponds, raceways, and similar structures in your facility.			
1. Outfall No.	2. Flow (gallons per day)			1. Ponds	2. Raceways	3. Other
	a. Maximum Daily	b. Maximum 30 Day	c. Long Term Average	C. Provide the name of the receiving water and the source of water used by your facility.		
			1. Receiving Water	2. Water Source		

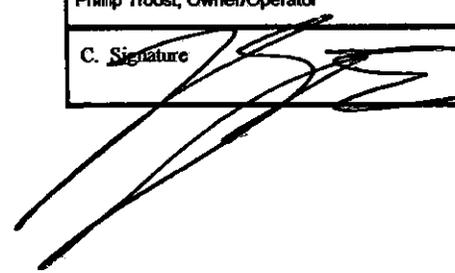
D. List the species of fish or aquatic animals held and fed at your facility. For each species, give the total weight produced by your facility per year in pounds of harvestable weight, and also give the maximum weight present at any one time.

1. Cold Water Species			2. Warm Water Species		
a. Species	b. Harvestable Weight (pounds)		a. Species	b. Harvestable Weight (pounds)	
	(1) Total Yearly	(2) Maximum		(1) Total Yearly	(2) Maximum

E. Report the total pounds of food during the calendar month of maximum feeding.	1. Month	2. Pounds of Food
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**IV. CERTIFICATION**

*I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.*

A. Name and Official Title (print or type) Phillip Troost, Owner/Operator	B. Phone No. ( 575 ) 365-2741
C. Signature 	D. Date Signed 11-25-09

**NUTRIENT MANAGEMENT PLAN  
COTTONWOOD SPRINGS DAIRY LLC  
LAKE ARTHUR, NEW MEXICO**

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**NUTRIENT MANAGEMENT PLAN  
COTTONWOOD SPRINGS DAIRY  
LAKE ARTHUR, NEW MEXICO**

**INTRODUCTION**

The following Nutrient Management Plan (NMP) is being submitted to Region 6, United States Environmental Protection Agency (USEPA) as part of the requirements to qualify under the National Pollutant Discharge Elimination System (NPDES) General Permit No. NMG010000 for Concentrated Animal Feeding Operations (CAFO).

The content of this NMP follows the general guidelines as provided in the general NMP template and the specific requires of content as stipulated in Part III.A.3 of the proposed NPDES for New Mexico. This facility is a large CAFO as defined by the USEPA.

This NMP has been developed using the Narrative Rate Approach provided in Part III.A.3.g.ii. All information provided in the NMP is the most current data available at the time of submittal.

A copy of the Comprehensive Nutrient Management Plan (CNMP) has been included with this submittal to provide the support documentation required for the NMP. The support documents in the CNMP have been referenced to the appropriate section of the NMP.

**NUTRIENT MANAGEMENT PLAN  
COTTONWOOD SPRINGS DAIRY LLC, DP-734**

<b>I. GENERAL INFORMATION</b>	
<b>A. FACILITY INFORMATION</b>	
<b>Facility Name:</b>	Cottonwood Springs Dairy
<b>Address (Physical Location):</b>	491 West Funk Rd.
<b>City:</b>	Lake Arthur
<b>State:</b>	New Mexico
<b>Zip Code:</b>	88253
<b>Owner or Operator Name:</b>	Phillip Troost, Jr.
<b>B. NUTRIENT MANAGEMENT PLAN INFORMATION</b>	
1. Indicate the date the nutrient management plan was or will be implemented: November, 2009	
(Note: A current version of the nutrient management plan must be implemented at the time of permitting and must be kept on site at the permitted facility)	
2. Indicate the date this nutrient management plan was most recently reviewed or revised:	
<b>C. TYPE AND NUMBER OF ANIMALS</b>	
1. Indicate the number and type of animals covered by this nutrient management plan.	
(Note: The NMP must address the manure, litter, and green water generated from all the animals confined and the permitted CAFO, not just the sector that meets the CAFO size threshold)	
<b>Animal Type</b>	<b>Number</b>
Milking cows	3400
Dry cows	423
Heifers	1260
Calves	1641
Close-ups, birthing cows	264
Numbers as of July 1, 2009.	
<b>D. RECORDKEEPING – GENERAL INFORMATION</b>	
<i>The following records must be maintained on site at the permitted facility for at least five years from the date they are created. It is recommended that these records be kept with the NMP.</i>	
<input checked="" type="checkbox"/> A copy of the current site-specific NMP <i>must</i> be maintained on-site at the facility.	

**NUTRIENT MANAGEMENT PLAN**  
**COTTONWOOD SPRINGS DAIRY LLC, DP-734**

**II. STORAGE**

*NPDES requirement:*

*Ensure adequate storage of manure, litter, and green water (process wastewater), including procedures to ensure proper operation and maintenance of the facilities. [40 CFR 122.42(e)(1)(i)]*

**A. STORAGE NEEDS**

1. How much manure is generated annually by the facility? 12,251 tons
2. How much litter is generated annually at the facility? NA tons
3. How much green water is generated annually by the facility?  
52,576,668 gallons
4. Are nutrients imported from external sources?  Yes  No (If no, skip to section II.B)

If yes, indicate the type and amount imported:

- a.  Manure: NA tons/year
- b.  Litter: NA tons/year
- c.  Green water: NA gallons/year
- d.  Commercial fertilizer: NA lbs/year N, NA lbs/year P
- e.  Other (e.g., biosolids) NA lbs/year N, NA lbs/year P

5. For manure, litter, and green water imported from external sources, indicate the amount stored prior to land application and the approximate storage period:

	Amount Stored	Approx. Storage Period (days)
Manure	tons	
Litter	tons	
Green water	gallons	

**B. STORAGE CAPACITY**

For each storage structure, list the storage structure ID, type of storage, and total capacity.

Storage Structure ID	Type of Storage	Total Capacity*	
		Gallons or tons	Number of days
Lagoon A	Synthetically-lined; green water	(954,734 gallons)	(Used for solid separation)
Lagoon B	Synthetically-lined; green water	4,026,753 (inc. 2-ft freeboard)	60-days
Lagoon C	Synthetically-lined; green water	10,746,566 gallons (inc. 2-ft freeboard)	60-days
Runoff pond	Clay-lined; storm water runoff	9,286,754 gallons	NA
Catchment basin	Unlined; storm water runoff	91,899,982 gallons	NA

\* Attach calculations for determining total capacity.

If storage structures are covered, describe the type of cover used: NA

**NUTRIENT MANAGEMENT PLAN  
COTTONWOOD SPRINGS DAIRY LLC, DP-734**

**C. STORAGE STRUCTURE OPERATION AND MAINTENANCE**

Describe procedures to operate and maintain storage structures to hold all wastes during the storage period, the direct precipitation and runoff from a 25-year, 24-hour storm including visual inspections, as appropriate. Attach additional sheets if needed.

Process generated greenwater is generated through wash down of the animals prior to entering the milking parlor. Greenwater from the milking parlor flows via underground pipelines to a concrete sump located southeast end of the milking parlor. From the sump, greenwater is pumped via underground pipelines to a mechanical solids screen separator. The separated liquids are stored in a three chambered synthetically lined greenwater lagoon. Further separation of solids occurs in cell A (settling chamber) and greenwater devoid of solids overflows through an overflow pipe into cell B or C (main storage chambers).

A permanent marker (paint marker or staff gauge) is installed with marks to identify the freeboard. The level of the pond is recorded on a weekly basis. Manure solids separated from green water by the screen solids separator are stored temporarily on a concrete pad located beneath the solids separator and then applied to cropland on site or transported off site.

Storm water collected in the storm water runoff pond are transferred to the lagoon or land applied with a portable trailer-mounted pump.

Cottonwood Springs Dairy land applies up to 140,000 gallons per day of green water to up to 380+ acres of irrigated cropland. All lagoons, berms, ditches and pipelines shall be inspected on a weekly basis to identify signs of erosion, foreign debris, root intrusion or leaks. Operators shall immediately remove any foreign debris in or adjacent to the lagoon, and remove deep-rooted plants from the liner and/or berms. Repairs to address erosion, cracking or settlement shall be made immediately, and operators shall submit a Corrective Action Report to the GWQB which describes actions taken to address the problems. It is recommended that the lagoon water levels be reduced below the 2ft freeboard by November 1 of each year to ensure adequate storage capacity through winter months.

Inspections and maintenance are conducted to obtain intended function of the waste storage facility.

The following Operations and Maintenance Procedures are followed:

- Do not dispose of dead animals, greases, syringes, or other wastes in the facility.
- A thorough inspection of synthetic liner, concrete sump, pits, walls, ramps, and floors for separations and/or cracks, which would indicate potential failure. This should be done each time the pond is emptied. Repairs should be made immediately.
- Inspect all roads and approaches to and from the waste storage facility frequently to determine the need for stone or other stabilizing materials. Repair roads as needed.
- All pipes, pumps, valves, gates, should be inspected a minimum of twice a year. Inspect for functional and structural soundness. Repair as needed.
- Mow the embankments twice a year and weeds should be controlled.
- Check frequently for burrowing animals. When found, remove the burrowing animals, replace embankment materials.
- Maintain appropriate warning signs.
- Immediately repair any vandalism, vehicular or livestock damage to any earthfills, spillways, outlets or other appurtenances.
- Immediately remove any foreign debris in or adjacent to the waste storage facility.

**NUTRIENT MANAGEMENT PLAN**  
**COTTONWOOD SPRINGS DAIRY LLC, DP-734**

**D. RECORDKEEPING – STORAGE**

*The following records must be maintained on site at the permitted facility for at least five (5) years from the date they are created. It is recommended that these records be kept with the NMP.*

1.  Records of weekly visual inspections of all storm water diversion devices, runoff diversion structures, and devices channeling contaminated storm water to the green water and manure storage structure.
2.  Records of daily inspections of water lines, including drinking water of cooling water lines.
3.  Records of weekly inspections of the manure, litter, and green water impoundments.
4.  Weekly records of depth of manure and green water in all liquid impoundments as indicated by the depth marker.
5.  Design documentation for all manure, litter, and green water storage structures.
6.  Documentation of all overflows from manure and green water storage structures.
7.  Documentation of all corrective actions.

**NUTRIENT MANAGEMENT PLAN  
COTTONWOOD SPRINGS DAIRY LLC, DP-734**

**III. SITE SPECIFIC CONSERVATION PRACTICES**

*NPDES requirement:*

*Identify appropriate site-specific conservation practices to be implemented, including as appropriate buffers to equivalent practices, to control runoff of pollutants to waters of the United States. [40 CFR 122.42(e)(1)(vi)]*

**BEST MANAGEMENT PRACTICES**

Please check the box next to any of the following best management practices that are being implemented at the facility to control runoff and protect water quality:

1.  Buffers
2.  Land Application Setbacks
3.  Conservation Tillage
4.  Constructed Wetlands
5.  Infiltration Field
6.  Vegetative Filter
7.  Terrace
8.  Other (specify): Diversion using earthen berm and swale structures along field boundaries and corral boundaries (NRCS Standards 362 and 356).

**B. SETBACKS (for Large CAFOs)**

1. Have you implemented 100-ft land application setbacks from all down-gradient waters of the U.S., open tile line intake structures, sinkholes, agricultural well heads, or other conduits to waters of the U.S.?
 

Yes  No
2. If no, have you implemented 35-ft vegetated buffers to all down-gradient waters of the U.S., open tile line intake structures, sinkholes, agricultural well heads, or other conduits to waters of the U.S. where applications of manure, litter or green water are prohibited within the buffer?
 

Yes  No
3. If no, have you implemented approved alternative compliance practices to the 100-ft setback or 30-ft vegetated buffer requirement?
 

Yes, please describe:  No, please explain:
4. If you are using a combination of 100-ft setbacks, 35-ft vegetated buffers, and/or approved alternative compliance practices, please indicate where each is used:

Field ID	Identify down-gradient water of the U.S. or conduit to water of the U.S.	Identify practice used (setback, buffer, or alternative)
Fields 3 and 6	Cottonwood Creek to Pecos River	>100 ft vegetated setback and 1.5 to 3 ft earthen berm and swale structures
Field 3	Cottonwood Creek to Pecos River	6 ft earthen berm on perimeter

**NUTRIENT MANAGEMENT PLAN**  
**COTTONWOOD SPRINGS DAIRY LLC, DP-734**

**C. MAP**

Attach a map(s) detailing the location of each field and waterway and each best management practice checked in III.A, above, and, for Large CAFOs, the location of setbacks identified in III.B, above.

Maps 1, 2, and 3 are enclosed in the CNMP documents.

**D. RECORDKEEPING – CONSERVATION PRACTICES**

*The following records must be maintained on site at the permitted facility for at least five years from the date they are created. It is recommended that these records be kept with the NMP.*

Records of inspections and activities conducted to maintain the effectiveness of BMPs implemented to control runoff of pollutants.

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**COTTONWOOD SPRINGS DAIRY LLC, DP-734**

**IV. MANURE, LITTER, GREEN WATER AND SOIL TESTING**

*NPDES requirement:*

*Identify protocols for appropriate testing of manure, litter, green water, and soil. [40 CFR 122.42(e)(1)(vii)]*

**A. SAMPLING FREQUENCY AND PARAMETERS**

1. Indicate the frequency of manure, litter and green water sampling:  
Sampled semiannually in the Lagoon B (south cell), see site map.
2. Indicate the frequency of soil sampling: annually
3. Indicate the form of each nutrient used for nutrient management planning.
  - a. Nitrogen: liquid/green water
  - b. Phosphorus: liquid/green water
  - c. Other: \_\_\_\_\_

**B. SAMPLING PROCEDURES AND RESULTS**

1. List the procedures used for sampling each of the following (Attach additional sheets if needed):
  - a. manure: See Part B of *General Sampling Procedures for Nutrient Management Plan* in Part XI. Supplemental Documents.
  - b. litter: N/A
  - c. green water: See Part XI. Supplemental Documents.
  - d. soil: See Part XI. Supplemental Documents.

2. Book Values

If this is the first year of NMP implementation, indicate whether book values will be used for manure, litter, and green water nutrient content:  Yes  No

3. List the nutrient content (sample results or book values) of manure, litter, green water, and soil, by field, at the CAFO. For sample results, indicate the sample date; for book value, indicate the source used to determine the values.

	Nutrient content		Date/Source
	N	P	
Manure	<0.01 lbs/ton	0.69 lbs/ton	2006 sample
Litter	NA	NA	
Green water	308 PPM (Two years of data)	10 mg/L as PO <sub>4</sub> (July 28, 2010)	lagoon samples (included)
Soil, by field (attach additional sheets if needed):			
Field ID: 1	16 PPM	113 PPM	12/21/04 soils test results (depth: 0-6")
Field ID: 2	24 PPM	246 PPM	12/21/04 test results
Field ID: 3	NA	NA	12/21/04 test results

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Field ID: 4	8 PPM	120 PPM	12/21/04 test results
Field ID: 5	14 PPM	495 PPM	12/21/04 test results
Field ID: 6	49 PPM	143 PPM	12/21/04 test results
Field ID: 7	12 PPM	56 PPM	12/21/04 test results

Copy of soil test results included in Part H Recordkeeping of CNMP; liquid analyses with 590 Jobsheet Summary information.

**C. RECORDKEEPING –MANURE, LITTER, GREEN WATER, AND SOIL TESTING**

*The following records must be maintained on site at the permitted facility for at least five (5) years from the date they are created. It is recommended that these records be kept with the NMP.*

1.  Records of manure, litter, and green water sampling.
2.  Records of nitrogen and phosphorus analysis results for manure, litter, and green water.
3.  Records of soil sampling for each field when manure, litter or green water is applied.
4.  Records of phosphorus analysis results for soil for each field where manure, litter, or green water is applied.

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COTTONWOOD SPRINGS DAIRY LLC, DP-734**

**V. LAND APPLICATION**

*Complete the information below to provide summary information on nutrient land application rates, including the source, amount, timing, and methods of land application of nutrients. In addition, complete the attached Land Application Rate Worksheet to provide detailed data to support the summary information presented below.*

**NPDES Requirement:**

*Establish protocols to land apply manure, litter or green water in accordance with site specific nutrient management practices that ensure appropriate agricultural utilization of the nutrients in the manure, litter or green water. [40 CFR 122.42(e)(1)(viii)]*

**A. NUTRIENT TRANSPORT RISK**

Indicate the method(s) used to assess the risk of nutrient transport from the land application areas to surface waters:

1.  Phosphorus Index
2.  Nitrogen Leaching Index
3.  Soil Phosphorus Threshold Values
4.  Soil Test Recommendations
5.  Other, please specify: \_\_\_\_\_

**B. LAND APPLICATION METHODS, RATES, AND TIMING**

1. For each field, identify the methods used for land application of manure/litter and green water:

Field ID	Method for land application	
	Manure/Litter	Green water
1 (18 acres)	Spreader	Side roll
2 (52 acres)	Spreader	Side roll
3 (30 acres)	Spreader	Flood and hand lines
4 (120 acres)	Spreader	Center pivot
5 (85 acres)	Spreader	Side roll
6 (36 acres)	Spreader	Side roll
7 (40 acres)	Spreader	Flood irrigated (converting to side roll)

2. Describe procedures to periodically inspect land application equipment for leaks, including the frequency and timing of inspections:

Check valves on all fresh water wells, green water pumps and on the main line from the lagoon. Pipelines are inspected daily and the ditches, drains, sump, green water lagoons, separator, meters and berms are inspected weekly. Inspection and maintenance records are kept in the CAFO permit compliance notebook. Failed components will be repaired or replaced as soon as possible and no later than 48 hours from the time of failure. (Please also refer to the Operation and Maintenance Plan, Section II.C.)

3. Equipment calibration
  - a. How often is land application equipment calibrated? Per manufacturer's

**NUTRIENT MANAGEMENT PLAN**  
**COTTONWOOD SPRINGS DAIRY LLC, DP-734**

recommendations for maintenance based on usage; field calibration based on use.

- b. Indicate the calibration ranges or increments for each piece or type of land application equipment:

Equipment Type	Calibration range or increments
Manure Spreader	Calibrated using NRCS protocols
Meters	Factory-set to NMED DP specifications; calibrated as needed.

4. For each field, indicate whether land application is nitrogen-based or phosphorus-based and provide the land application rate, as calculated in question IV.D.7 (for nitrogen) or IV.E.5 (for phosphorus) on the attached NMP Land Application Rate worksheet(s). Attach extra sheets if needed.

Field ID	Nutrient Basis (circle one)	Supplemental N source for P-based land application	Application Rate (tons or gallons/acre)	Total to be applied (lbs/acre)	
				N	P (indicate if multi-year P application)
1 (18 acres)	N <input checked="" type="checkbox"/> or P		Manure/litter: Green water:	<b>See 590 Jobsheets Summary in Part 6 of the CNMP</b>	
2 (52 acres)	N <input checked="" type="checkbox"/> or P		Manure/litter: Green water:		
3 (30 acres)	N <input checked="" type="checkbox"/> or P		Manure/litter: Green water:		
4 (120 acres)	N <input checked="" type="checkbox"/> or P		Manure/litter: Green water:		
5 (85 acres)	N <input checked="" type="checkbox"/> or P		Manure/litter: Green water:		
6 (36 acres)	N <input checked="" type="checkbox"/> or P		Manure/litter: Green water:		
7 (40 acres)	N <input checked="" type="checkbox"/> or P		Manure/litter: Green water:		

\*Fields 4,5, and 6, from LADS Oct.1, 2008-Mar 31, 2009

5. Indicate the timing for land application of manure/litter and green water:

	Daily	Other												
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Manure /litter	<input type="checkbox"/> All year <input checked="" type="checkbox"/> Growing season													
Green-water	<input type="checkbox"/> All year <input checked="" type="checkbox"/> Growing season													

**NUTRIENT MANAGEMENT PLAN**  
**COTTONWOOD SPRINGS DAIRY LLC, DP-734**

**C. NUTRIENT BALANCE**

1. Indicate the amount of each nutrient generated and/or used on the CAFO and exported annually from the CAFO:

Nutrient Source	Amount generated on the CAFO			Approximate amount applied to land owned or operated by the CAFO			Approximate amount exported from the CAFO		
	total	N (lbs)	P (lbs)	total	N (lbs)	P (lbs)	total	N (lbs)	P (lbs)
Manure	See 590 Jobsheets Application Summary in Part 6 of CNMP								
Litter	NA								
Green water	See 590 Jobsheets Application Summary in Part 6 of CNMP								
Compost	NA								
Commercial (indicate type)	NA								
Commercial (indicate type)	NA								

2. Total number of acres available for land application of manure, litter, and green water: 380+ acres

3. Indicate the minimum number of acres needed to utilize available manure, litter and green water nutrients according to realistic yield expectations and soil test recommendations (i.e., agronomic rates).

	Total generated (lbs)	Application rate (lbs N or P/acre)	Minimum acres needed
Nitrogen	See 590 Jobsheets Application Summary in Part 6 of CNMP		
Phosphorus	Not available		Not available

4. If the minimum number of acres of land available (V.C.2) is less than the acres of land needed for nutrient utilization (V.C.3), describe how excess manure, litter and green water is utilized or disposed:

**D. RECORDKEEPING – LAND APPLICATION**

*The following records must be maintained on site at the permitted facility for at least five (5) years from the date they are created. It is recommended that these records be kept with the NMP.*

1.  Documentation of the nutrient basis for land application for each field (N- or P-based)  
 2.  Documentation of the total nitrogen and phosphorus to be applied to each field including nutrients from the application of manure, litter and green water and other sources.

**NUTRIENT MANAGEMENT PLAN**  
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3.  For each application event where manure, litter or green water is applied, document the following by field:
- Date of application
  - Method of application
  - Weather conditions at the time of application and for 24 hours prior to and following application
  - Total amount of nitrogen and phosphorus applied
4.  Documentation of the crop and expected yield for each field
5.  Records of periodic land application equipment inspections
6.  For all manure transfers, the CAFO must maintain the following records:
- Date of transfer
  - Name and address of recipient
  - Approximate amount of manure, litter, and/or green water transferred

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<b>VI. ANIMAL MORTALITIES</b>
<i>NPDES Requirement: Ensure proper management of mortalities (i.e. dead animals) to ensure that they are not disposed of in a liquid manure, storm water, or green water storage or treatment system not specifically designed to treat animal mortalities. [40 CFR 122.42(e)(1)(II)]</i>
<b>A. METHOD OF ANIMAL MORTALITIES HANDLING</b>
<input type="checkbox"/> Composting <input checked="" type="checkbox"/> Rendering <input type="checkbox"/> Burial <input type="checkbox"/> Other: _____
<b>B. METHOD OF MORTALITY STORAGE PRIOR TO FINAL DISPOSAL</b>
Carcasses are stored temporarily in containment area near manure stockpile prior to being removed as needed by commercial hauler, County Services, Herford TX.
<b>C. RECORDKEEPING – ANIMAL MORTALITIES</b>
<i>The following records must be maintained on site at the permitted facility for at least five (5) years from the date they are created. It is recommended that these records be kept with the NMP.</i>
<input checked="" type="checkbox"/> Documentation of mortality handling practices.

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**VII. DIVERSION OF CLEAN WATER**

*NPDES Requirement:*

*Ensure that clean water is diverted, as appropriate, from the production area [40 CFR 122.42(e)(1)(iii)]  
There must be routine visual inspections of the CAFO production area. At a minimum, the following must be visually inspected: Weekly inspections of all storm water diversion devices, runoff diversion structures, and devices channeling contaminated storm water to the green water and manure storage structure [40 CFR 412.37(a)(1)(i)]*

**A. DIVERSION OF CLEAN WATER FROM THE PRODUCTION AREA**

Is clean water diverted from the production area?  Yes  No

If yes, please describe the clean water diversion system:

All the corrals of the dairy facility are located in SW1/4 Section 6 T16S, R25E. Runoff from most of these corrals drains directly into a drainage channel, which directs flow into the runoff pond. Runoff from a few corrals located on the northeast end of the corral area drains into the catchment basin. Surface runoff flows towards the south east into the storm water pond or the catchment basin. All storm water at the Cottonwood Springs Dairy production area is contained in the storm water pond and catchment basin.

If necessary, the storm water pond is pumped out within 14 days after a storm event in order to avoid long term storage. This storm water is either directly applied to the land application fields or pumped to the green water lagoon provided adequate storage.

To protect the contaminated runoff water leaving the property, there are berms constructed (1.5-3 ft in height) along the south and east sides of the property, between the Land Application fields and Cottonwood Creek and wherever necessary. If any potential runoff areas are found in the future, berms will be constructed.

If no, please ensure that the attached calculations for determining total storage capacity (question II.B.3) account for all runoff, including clean water than has not been diverted from the production area.

**B. RECORDKEEPING – DIVERSION OF CLEAN WATER**

*The following records must be maintained on site at the permitted facility for at least five (5) years from the date they are created. It is recommended that these records be kept with the NMP.*

Records of weekly visual inspections of all storm water diversion devices, runoff diversion structures, and devices channeling contaminated storm water to the green water and manure storage structure.

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**VIII. PREVENTION OF DIRECT CONTACT OF ANIMALS WITH  
WATERS OF THE UNITED STATES**

*NPDES Requirement:*

*Prevent direct contact of confined animals with waters of the United States [40 CFR 112.42(e)(1)(iv)]*

**A. PREVENTION OF DIRECT CONTACT**

Do the animals have access to waters of the United States within the production area?

Yes  No

**B. MEASURES TO PREVENT DIRECT CONTACT**

List the measures used to prevent direct contact (e.g. fencing) of animals with waters of the United States within the production area:

Fencing and corral locations are measures used to prevent direct contact with waters of the United States.

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**IX. CHEMICAL HANDLING**

*NPDES Requirement:*

*Ensure that chemicals and other contaminants handled on-site are not disposed of in any manure, litter, green water, or storm water storage or treatment system unless specifically designed to treat such chemicals and other contaminants. [40 CFR 112.42(e)(1)(v)]*

**A. MEASURES FOR CHEMICAL HANDLING**

Check the appropriate boxes below to indicate the measures taken to prevent pesticides, commercial fertilizers, hazardous and toxic chemicals, and petroleum by-products from contaminating green water or storm water storage and treatment systems:

Chemicals are stored in proper containers. Please describe:

Chemicals are stored in the original containers provided by the manufacturer. Smaller containers used for application are empty when not in use. For large volume applications, chemicals are transferred directly to the machinery or system used for the application. Chemicals are segregated by hazardous characteristic in order to avoid additional emergency situations due to container failure.

Chemicals are properly disposed of that have expired or will not be used. Please describe:

The volume of chemicals stored at the dairy is monitored to prevent the accumulation of expired or unused chemicals.

Chemical containers are properly disposed. Please describe:

Chemical containers must be completely empty with no residue in the container. Containers with water-soluble chemicals are triple rinsed and the rinsate added to the use cycle. Containers should be air-dried when possible. Where possible, empty containers are returned to the supplier for reuse. If the supplier will not recycle empty containers, then the rinsed container is disposed at an approved solid waste facility.

Chemical storage areas are self-contained (no drains or other pathways for spilled chemicals to exit storage area). Please describe:

The milk production areas, where chemicals are stored, have concrete floors with sumps that accumulate any surface discharge and permit the ability to control and contain any spill.

Chemical storage areas are covered to prevent contact with rain and snow. Please describe:

Chemicals are stored in milking parlor/animal hospital. Gas, diesel and hydraulic fluid are stored in the garage.

Storage areas for chemicals used in milk production are interior areas of the dairy buildings (milking parlor) or application areas such as pipe access locations. Fuels and lubricants are stored in shed areas with the heavy equipment used at the facility.

Emergency procedures and equipment are in place to contain and clean up chemical spills. Please describe:

The dairy has an emergency response plan for general operation associated with lagoons, diversion structures, fire, and pipe systems. As part this plan, the dairy has various equipment for containment of spills based on scale and type. For larger spills, the dairy has available front-end loader, backhoe and trailer mounted pumps. Temporary containment of spills on the soil in open areas can be excavated and placed on a constructed containment pad using 6-mil thick plastic

**NUTRIENT MANAGEMENT PLAN**  
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with bermed sides.

Chemical handling and equipment wash areas are designed and constructed to prevent contamination of surface waters, green water, storm water storage and treatment systems. Please describe:

Equipment washing is primarily associated with the milking parlor (milking equipment, preparation of milking cows, etc.). Both the chemicals used for the milking operation are stored and the rinsate of the milking parlor are confined to the lagoon system used for the green water retention.

All other chemicals such as petroleum products for equipment are handled in the garage/shop area. Washing of vehicles and heavy equipment onsite is limited to only the necessary portion of the equipment being repaired.

Chemicals are handled according to the label. Please describe:

Employees are provided training for proper use and storage of chemicals. The dairy maintains an MSDS binder that is available to all personnel.

**B. RECORDKEEPING – CHEMICAL HANDLING**

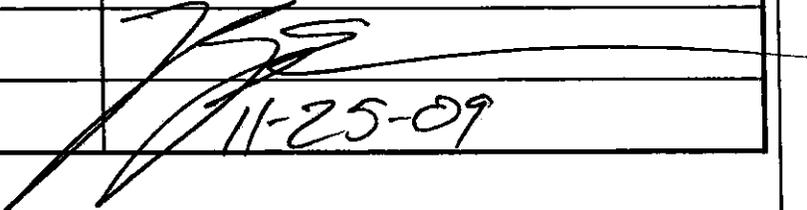
*The following records must be maintained on site at the permitted facility for at least five (5) years from the date they are created. It is recommended that these records be kept with the NMP.*

Records of inspections and maintenance activities conducted to ensure that chemical and other contaminants do not enter any manure, litter, green water, or storm water storage or treatment system not specifically designed to treat such chemicals and other contaminants.

**NUTRIENT MANAGEMENT PLAN  
COTTONWOOD SPRINGS DAIRY, DP-734**

**X. CERTIFICATION**

*I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.*

NAME AND OFFICIAL TITLE (print or type)	Phillip Troost, Owner/Operator
PHONE NO.	575-365-2741
SIGNATURE	
DATE SIGNED	11-25-09

# GENERAL SAMPLING PROCEDURES FOR NUTRIENT MANAGEMENT PLAN

**Note:** These procedures are an excerpt from the *Dairy Technical Guidance Manual for New Mexico* as prepared by New Mexico State University and Glorieta Geoscience. These procedures have been developed to satisfy the requirements of the federal General Permit and the State of New Mexico Discharge Permit.

## Laboratory Analyses Generally Required by New Mexico Environment Department (NMED) for Dairy Discharge Permits

Sample Location	Sampling Schedule	Constituents	Laboratory Analysis Method
Monitoring Well	quarterly	TKN, NO <sub>3</sub> -N, TDS, Cl	EPA Method 300.0
Green Water Lagoons	quarterly	TKN, NO <sub>3</sub> -N, TDS, Cl	See Below
Soil (LAA fields)	annually	TKN, NO <sub>3</sub> -N	See Below

Total Kjeldahl nitrogen: TKN

Nitrate – nitrogen: NO<sub>3</sub>-N

Total dissolved solids: TDS

Chloride: Cl

The laboratory that conducts the analyses must follow an approved standard method. The following table lists some common constituents that are required by NMED and the laboratory method that must be followed.

Constituents	Approved Laboratory Analysis Methods
Total Kjeldahl nitrogen: TKN	SM 4500 Norg C
Nitrate – nitrogen: NO <sub>3</sub> -N	EPA Method 300.0
Total dissolved solids: TDS	SM 2540 C
Chloride: Cl	EPA Method 300.0
Additional analyses that are sometimes required by NMED	
Ammonia: NH <sub>3</sub>	SM 4500 NH <sub>3</sub>
Biochemical Oxygen Demand: BOD	EPA Method 405.1, SM 5210
Fecal Coliform	SM 9222D
Phosphorus: P	EPA Method 200.7, 6010C
Potassium: K	EPA Method 200.7, 6010C

**Natural Resources Conservation Service (NRCS)**

The NRCS requires producers to test their soil every four years. NRCS requirements are beyond NMED requirements and provide the dairy with good background soils data. Parameters needed to complete the NRCS code 590 Nutrient Management parameters include pH (saturated paste), E.C-Saturated paste, (in mmho/cm), organic matter (as a percent), nitrate-N (ppm), TKN (ppm), phosphorous (P) (Sodium bicarbonate extractable, in ppm), water-soluble potassium (K) (in ppm), manganese (Mg), calcium (Ca), sodium (Na), copper (Cu), zinc (Zn), magnesium (Mn), iron (Fe) (all in ppm).

**A. SOIL SAMPLING PROCEDURE FOR DAIRY AND SIMILAR SITES**

**Pre-sampling Requirements:** Sample kits with proper containers and proper preservatives; sampling equipment (soil auger, post hole digger or shovel, plastic buckets, sample bags and labels, measuring tape); access to sample area, preferably with a moist to dry soil surface (Avoid sampling during wet (saturated) soil conditions).

**General Health and Safety Directives:**

**Recommended PPE:** Appropriate work attire; nitrile or latex gloves

- 1. Background:** NMED requires soil sampling to be performed at depths of 0 to 12 inches and 24 to 36 inches. These samples are analyzed for nitrate-nitrogen and total Kjeldahl nitrogen (TKN). However during this sampling event sampling and analysis need to be done per NRCS requirements that are detailed below. The New Mexico Environment Department (NMED) Discharge Permit will have specific information for sample intervals and the sampling schedule.

NRCS requirements are beyond NMED requirements and provide the dairy with good background soils data. Parameters needed to complete the NRCS Code 590 Nutrient Management parameters are found in the following table:

**Table 1. Soil Test Parameters**

Test Parameter	Units
pH (Soil Saturated Paste)	N/A
EC (Electrical Conductivity of Saturated Paste Extract)	mmhos/cm
Mg (Magnesium for SAR)	meq/L
Ca (Calcium for SAR and ammonium acetate)	meq/L
Na (Sodium for SAR)	meq/L
OM (Organic Matter)	percent
NO <sub>3</sub> -N (Nitrate from 1:5 soil: water extract)	ppm
P (Phosphorus from NaHCO <sub>3</sub> extract, Olsen test)	ppm
K (Potassium from 1:5 soil: water extract)	ppm
Texture (texture of the soil by feel method)	N/A
ESP (Exchangeable sodium percent)	percent
Micronutrients (Cu, Zn, Mn, Se, and Fe per DTPA method) NOTE: Copper, zinc, and selenium required by Part III.D.8.b of General Permit	ppm

**Additional Sources:**

NMSU has guidelines for soil sampling (Guide A-114):  
[http://cahe.nmsu.edu/pubs/\\_a/a-114.html](http://cahe.nmsu.edu/pubs/_a/a-114.html)

Soil interpretations (Guide A-122):  
[http://cahe.nmsu.edu/pubs/\\_a/a-122.html](http://cahe.nmsu.edu/pubs/_a/a-122.html)

NRCS Agronomy Technical Note 58:  
<http://www.nm.nrcs.usda.gov/technical/tech-notes/agro/ag58.pdf>  
provides instructions for use of NMSU Fertilization Interpretation Software (NRCS 590 Job sheet) and  
<http://www.nm.nrcs.usda.gov/technical/tech-notes/agro.html>  
once the user has obtained a proper soil test.

Laboratories offering analysis for soils and manure for agricultural applications are different from analytical laboratories that specialize in ground water or hazardous waste assessments. The majority of agricultural laboratory are located in the Midwest United States.

2. **Sample Locations:** Three composite samples are usually obtained for each field. Each composite sample consists of at least 15 sub-samples. A sub-sample is an individual soil core or hole at one spot in the field. Large uniform fields, such as pivots, should have 1 composite sample per 40 acres. The determination of the "field" limits (whether a sample represents two or smaller fields that are combined for the composite sample) needs to be known before sampling begins. Once the field has been determined, **randomly** select a minimum of 15 locations for the sub-samples. If you have a map available, please note their general location.
3. **Sampling Depths:** The three composite samples for each field are determined by depth: 0-12 inches (0-1 foot), 12-24 inches (1-2 foot interval), and 24-36 inches (2-3 foot interval). The 15 sub-sample locations will provide soils from each of these intervals.
4. **Sample Procedure:** The most successful sampling containers are five-gallon plastic buckets. Three buckets, each labeled with the depth interval, provides enough volume for the soil to be collected. Metal containers are not recommended since they may add metal chips to the soil sample and change the results.

Start sampling at a sub-sample location using a hand auger, a post-hole digger, or shovel. Measure the depth as you excavate so that know when to place the sample in the appropriate bucket. **Provide enough material to represent the soil interval; remember that 15 locations are to be sampled. Be careful when using a shovel to sample since the tendency to make a smaller hole at depth. This may cause the deeper soil interval to be improperly represented.**

When the sub-samples for each depth interval has been collected from all 15 locations, take one of the buckets and mix the soil with a small spade or your hand. If the bucket is too small, the soil sample can be placed in a new, clean heavy garbage bag or plastic storage container such as made by Rubbermaid™ for mixing. Prepare the sample container (usually a lined paper bag or small canvas bag supplied by the laboratory) by completing the label with the dairy name, field name, date, and the depth interval. Use a gloved or clean hand to grab small portions of the soil and put into the sample bag. Discard rocks or gravels from the soil sample. Seal the bag and proceed to the next bucket. Sample weights may be 1.5 to 2.5 pounds each.

5. **Sampling Equipment Decontamination:** Make sure that the sampling equipment is cleaned between the field composite samples. This can include a simple washing with soap and water to insure a clean surface. Examine the sampling tools to make sure that rust or other debris is removed prior to sampling. The hand auger, shovel, or post-hole digger should be clean when a new depth is reached, but this can be done with a dry cloth or a towel wetted with potable water.
6. **Sample Handling and Shipping:** Unlike water samples, the soil samples have less stringent preservation and shipping requirements. Most agricultural soil laboratories permit shipping by a fast courier such as FedEx. The samples should be sealed in a second type of bag (one-gallon plastic Zip-lock™) in the shipping container and the samples should be packaged so that they will not rupture when dropped or tossed. Include the completed Chain-of-Custody with the samples and retain a copy for your records.

Preservation with a chemical or refrigeration following the sample preparation is not required. However, samples should be kept dry, away from heat, and may be refrigerated if shipping is delayed several days.

## **B. MANURE SAMPLING PROCEDURE FOR DAIRY AND SIMILAR SITES**

**Pre-sampling Requirements:** Sampling equipment (5-gallon plastic bucket(s), shovel, plunger, sample bags (1-gallon heavy-duty sealable plastic bags) and labels, measuring tape); access to sample area.

### **General Health and Safety Directives:**

**Recommended PPE:** Appropriate work attire; nitrile or latex gloves

### **Background:**

Manure samples are handled with the same general procedures as soil sample. A composite sample should be obtained that represents the volume of manure that is to be land applied, hauled or composted. The sample can be placed in a laboratory-supplied container or a clean, quart Zip-lock™ bag. Make sure that the sample is labeled for proper identification.

### **General Guideline**

In order to avoid heterogeneity in sampling, manure samples should not be collected from bedded packs or unagitated liquid storage facilities. Following correct sampling procedure will help in accurate estimation of N and P loading. Due to the inherent difficulty in obtaining a representative sample, adequate sub-sampling is very important. Samples should be collected from manure while loading, while spreading and from stockpiled manure.

**Recommended procedure for sampling while loading or spreading:** At least five (5) samples should be collected while loading several spreader loads. Combine individual samples to form one composite sample. Mix the composite sample thoroughly by piling the manure and shoveling from outside to inside until well mixed. Fill a 1-gallon heavy-duty sealable plastic bag half-full with composite sample (approximately 1 lb). Squeeze air out and seal the sample bag securely. The sample should be stored below freezing unless delivered immediately to a lab for analysis.

**Recommended procedure for sampling from stockpiled manure:** Ten (10) sub-samples should be collected from different locations around the manure pile, at least 18 inches below the pile surface. Combine and mix the samples together in a 5-gallon bucket. Fill a 1-gallon heavy-duty sealable plastic bag half-full (approximately 1 lb) with the composite sample, squeeze air out and seal securely. Store in freezer if not delivered to a lab immediately.

**Recommended procedure for sampling liquid manure from a storage lagoon:** Liquid manure should be collected from storage lagoons that are adequately agitated before sampling (i.e. via Blue Frog agitator, pond aerator, pump). Unagitated liquid manure in storage will stratify; N and K are more concentrated in the top liquid, P is more concentrated in the bottom solids. From different locations within the lagoon, collect at least five (5) samples in a 5-gallon bucket. Mix the sub-sample liquids in the bucket with a plunger. Fill a 1-quart (500 mL) plastic bottle not more than  $\frac{3}{4}$  full with the composite sample. Store in freezer if not delivered to the lab immediately.

**Recommended procedure for sampling liquid manure during application:** Collect at least five (5) samples, using five-gallon buckets placed at representative locations around the land applied field. Combine and mix the sub-samples thoroughly (in 5-gallon bucket using plunger). Collect composite sample in a one-quart (500 mL), clean plastic bottle. Store in freezer if not delivered to the lab immediately.

## **C. GREEN WATER SAMPLING PROCEDURE FOR DAIRY AND SIMILAR SITES**

**Pre-sampling Requirements:** Sample kits with proper containers and proper preservatives; field notebook; sampling equipment (bailers or dipper); arrangements for shipping samples to laboratory.

**General Health and Safety Directives:**

**Recommended PPE:** Appropriate work attire; nitrile or latex gloves

**Lagoon Samples:** The same general procedures for ground water samples should be applied to lagoon samples. Special care should be used regarding personal safety when obtaining samples directly from the edge of lagoons as the footing in these areas can be dangerous causing falls into the lagoon. This sample should be obtained with a container that will provide a composite or mixed representative sample of the lagoon water. A sample “dipper” can be constructed by attaching a clean, plastic container with a wide opening to a length of light weight wooden pole or pipe, such as PVC. This dipper must either be a one-use sampling device that is disposed of after each sample location or must be decontaminated between sample locations as described below.

Label sample bottles immediately so there will be no confusion between samples collected from each well. Typically, bottles with preservative will be analyzed for TKN and nitrate-N. Unpreserved bottles will be analyzed for TDS and chloride. Note time of collection, the date, and the monitoring well number on sample bottle. Place the labeled sample bottles on ice as soon as they are filled and labeled.

Sample notes should have the minimum following information:

1. Site or Location (facility name)
2. Well name or number
3. Date of sample
4. Time of sample
5. Name of person performing sample
6. Preservation (such as acid type or “cold” for no preservation)
7. The type of analyses
8. Any noticeable odor, color, sediment amount in the sample

Custody-control tape may be applied to the individual bottles, or to the shipping container based upon the method of delivery to the laboratory.

**Sampling Handling:** Samples should be examined for accurate labeling for both the individual sample bottles and the Chain-of-Custody Document supplied by the analytical laboratory. The preservation of the sample includes the refrigeration with either clean ice in sealed bags or freezer packs such as Blue Ice™. The laboratory may provide freezer packs with a prepared sample kit. The laboratory will provide directions regarding shipping companies (FedEx or bus lines), and notify the laboratory of the shipment of the samples.

Packaging of the samples in a cooler must be completed so that the cooler will not be opened (such as wrapping with shipping tape and some tamper-proof tape). The samples have to be packed such that the bottles will not leak or break if the container is bumped during transit. Generally, it is recommended to seal sample bottles in Zip-lock™ (or

similar) bags and pack clean newspaper or bubble-wrap around bottles and ice packs to prevent them from moving during transit.

**Sampling Equipment Decontamination:** The dipper bucket and the portion of the dipper stick (or bailer) should be cleaned with a solution of Alconox™ (or equivalent non-phosphate cleaning product) and clean water. The Alconox™ solution should be prepared as directed on the label. Discharge of the solution should be at a location that will not impact the monitoring well or dairy operations.

**Attachment:** *Test Your Soil*, New Mexico State University Cooperative Extension Service Guide A-114, 2005

# Test Your Soil

## Guide A-114

Revised by C.R. Glover, Extension Agronomist and R.D. Baker, Area Extension Agronomist

Cooperative Extension Service  
College of Agriculture and  
Home Economics



This publication is scheduled to be updated and reissued 4/05.

Soil tests provide a scientific basis for regulating available plant nutrients. Recommendations on kinds and amounts of fertilizer to apply and soil management practices are based on test results. Tests on a sample that does not accurately represent the area are likely to be misleading. The following directions can help you take a representative sample of the area you want tested.

### Supplies

A soil auger, a soil tube, or a shovel and knife.

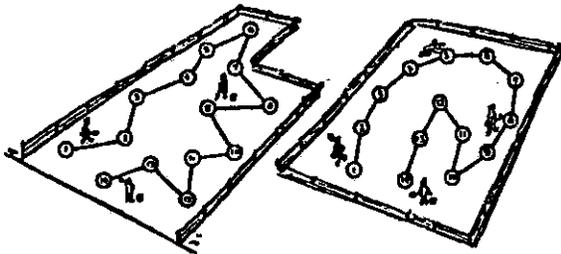
A clean bucket or other suitable container. Do not use a container made of metal.

A sample box and an information sheet, which you can get from your county agent or by writing to the Soil and Water Testing Laboratory, Box 3Q, New Mexico State University, Las Cruces, New Mexico 88003.

### Where to Sample

Take a composite sample from each area or field, but as a rule, try to limit the sample area to no more than 40 acres. If you have large trouble spots or areas that differ extremely in appearance, slope, soil structure, productivity, drainage, or soil treatment, put a composite sample from each of these areas in separate sample boxes.

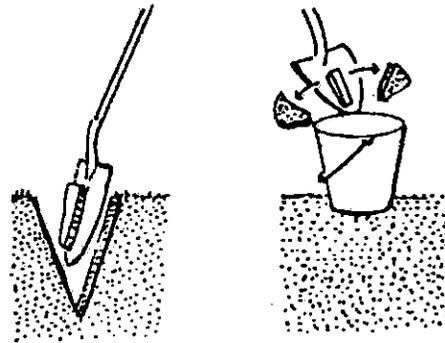
For a composite sample, take soil from at least five sites in a garden or lawn and up to 15 sites in a large field (as illustrated in the diagram). Avoid areas near a road, fence row, compost pile, fertilizer band, or other non-typical areas. *(Image not available. Please contact NMSU Agricultural Communications for a hard copy.)*



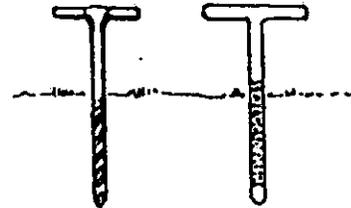
### How to Sample

At each site remove any surface litter such as straw, leaves, and old stalks.

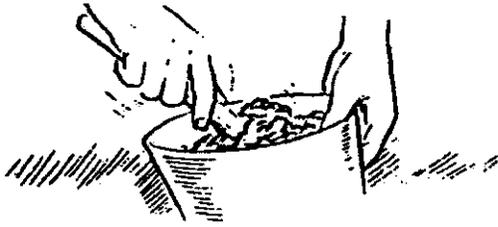
If you use a shovel and a knife, dig a hole about six inches deep. Take a slice of soil one-half inch thick and six inches deep and keep it on the shovel. From the center of this slice, cut a strip one-half inch wide from top to bottom and put it in the bucket. Repeat this at each site in the field.



If you use a soil auger or soil tube, take soil cores about six inches deep at each site and put in the bucket.



Mix the soil from all the sites in the same area. Place soil on a newspaper. Break any clods or lumps and let the sample dry at room temperature. Do not use heat for drying. Fill the sample box with the dry soil.



Label each sample with your name and a number keyed to a map of the area represented by each sample, so you will know where the sample was taken.

Complete the information sheet. Enclose it and the soil-testing fee in the package containing the soil sample so that all reach the laboratory together. If you send only one sample, place the information sheet and the soil-testing fee in the sample box with the soil.

The more information you can supply about the soil, the better the recommendations will be. Specify the crops that are to be grown. Fertilizer recommendations cannot be made if the crop to be grown is not specified.



### Mailing the Sample

Take the soil sample box and the information sheet to your county agent, or mail them directly to the Soil and Water Testing Laboratory.

### Note on Dying Plants

Grasses, vegetables, flowers, and other crops seldom die from lack of fertility. Water management, disease, and insects are some factors that can cause damage or death to plants. Check with your county agent, for *soil analysis is of little value in diagnosing these problems.*

New Mexico State University is an equal opportunity/affirmative action employer and educator. NMSU and the U.S. Department of Agriculture cooperating.

Revised April 2000

Las Cruces, NM  
1.5M

United States Department of Agriculture



Natural Resources Conservation Service  
6200 Jefferson NE, Room 305  
Albuquerque, NM 87109  
Phone: (505) 761-4400 Fax: (505) 761-4462  
Website: [www.nm.nrcs.usda.gov](http://www.nm.nrcs.usda.gov)

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December 3, 2009

Reddy Ganta  
Senior Agronomist  
Glorieta Geoscience Inc.  
P.O. Box 5727  
Santa Fe, New Mexico 87502

Dear Mr. Ganta:

This letter is to provide documentation that you are a current Certified Conservation Planner – CNMP. You are a registered Technical Service Provider, certification number TSP-06-5378, in New Mexico.

Sincerely,

A handwritten signature in black ink, appearing to read "George Chavez", written in a cursive style.

GEORGE CHAVEZ  
State Resource Conservationist

*Helping People Help the Land*

An Equal Opportunity Provider and Employer