Meeting Date
July 12, 2016

AGENDA	
Section	Consent
Item No.	II.A.7

AGENDA REPORT

BREVARD COUNTY BOARD OF COUNTY COMMISSIONERS

SUBJECT:	Permission to Bid, Award, and Execute a Lease Agreement for 128± Acres to be Used for Cattle Grazing. (D4)
DEPT/OFFICE:	Natural Resources Management Department (NRM)

Requested Action:

It is requested that the Board of County Commissioners: 1) Grant permission to bid, award to the highest bidder; and 2) Authorize the Chairman to execute a lease agreement for the purpose of cattle grazing. In accordance with Florida Statute 125.35(1)(a), the Board of County Commissioners is expressly authorized to sell and convey any real or personal property and to lease real property belonging to the County, whenever the Board determines that it is to the best interest of the County to do so.

Summary Explanation & Background:

The property consists of 128± acres located in Township 26 South, Range 36 East, Section 18, south of the South Central Regional Water Reclamation Facility, 10001 N. Wickham Road; and adjacent to the Ritch Grissom Memorial Wetlands, 3658 Charlie Corbeil Way. The property is owned by Brevard County and directly abuts the Ritch Grissom Memorial Wetlands along that site's south and east borders. The proposed contract was reviewed and approved by the Utility Services Department in January 2016.

Historically, the property was utilized for cattle grazing and is bordered by active pastures to its south. These active pastures, as well as those immediately west of the Ritch Grissom Memorial Wetlands, will become part of the future Viera Wilderness Park, and will continue to be managed through cattle grazing.

Much of the property is currently overgrown by Brazilian Peppertrees, a non-native invasive species, which provides cover for feral hogs. Feral hogs, in turn, not only pose a health and safety concern for public visitors to the Ritch Grissom Memorial Wetlands, but regularly damage turf at both the treatment facility and along the shores of the treatment wetland. In addition, the site falls within a known nesting zone for a pair of Caracara, and overgrowth by Brazilian Peppertrees degrades foraging opportunities for this protected species. Cattle grazing on the property will address all these concerns, and is recommended as a best management practice for the site. The Lessee will conduct all activities in compliance with the most recent water quality best management practices for cow/calf operations established for Florida.

Fiscal Impact: Prior to cattle grazing operations, the lessee will be required to improve the property, including but not limited to the installation and/or repair of cattle fences and removal of Brazilian Peppertrees. The Lessee will be credited for such improvements, and no net revenue is expected during the first five-year lease period. Subsequently, any revenue generated by the lease will be utilized to assist in land management of, and continued public access to, the Ritch Grissom Memorial Wetlands.

Contact: Raleigh Berry (x52423) or Virginia Barker (x52435)

Clerk to the Board instruction:

Exhibits Attached: Attachment 1: Draft Invitation to Bid

Attachment 2: BMP for Florida Cow/Calf Operations

Contract /Agreement (If attached): Reviewed by County Attorney	Yes	☒	No	☐	PR ☐

County Manager	Assistant County Manager	Department Director/Extension
Stockton Whitten		Virginia Barker/X52435 Jim Helmer/X52091

BCC-149 (Rev.1-25-13) / Electronic Form

BREVARD County
BOARD OF COUNTY COMMISSIONERS

FLORIDA'S SPACE COAST

Tammy Rowe, Clerk to the Board, 400 South Street • P.O. Box 999, Titusville, Florida 32781-0999

Telephone: (321) 637-2001
Fax: (321) 264-6972
Tammy.Rowe@brevardclerk.us

July 13, 2016

M E M O R A N D U M

TO: Virginia Barker, Natural Resources Management Director

RE: Item II.A.7., Permission to Bid, Award, and Execute Lease Agreement for 128± Acres to be Used for Cattle Grazing

The Board of Commissioners, in regular session on July 12, 2016, granted permission to bid and award to the highest bidder; authorized the Chairman to execute a lease agreement for the purpose of cattle grazing; and in accordance with Florida Statute 125.35(1)(a), the Board is expressly authorized to sell and convey any real or personal property and to lease real property belonging to the County, whenever the Board determines that it is to the best interest of the County to do so.

Your continued cooperation is always appreciated.

Sincerely,

BOARD OF COUNTY COMMISSIONERS
SCOTT ELLIS, CLERK

Tammy Rowe

Tammy Rowe, Deputy Clerk

cc: Utility Services Director
Finance
Budget

SUBMIT BIDS TO: **PURCHASING SERVICES** **2725 JUDGE FRAN JAMIESON WAY,** **BLDG. C, 3rd FLOOR, SUITE C-303** **VIERA, FL 32940**	Brevard COUNTY Purchasing Services	**INVITATION TO BID** **Bid Acknowledgment**
PROCUREMENT ANALYST: PHONE (321) 617-7390 **Leslie Rothering**	**AN EQUAL OPPORTUNITY EMPLOYER** **FLORIDA TAX EXEMPT #85-8012621749C-1** **FEDERAL TAX EXEMPT #59-6000523**	

BID SPECS. MAY BE PICKED UP AT:
Purchasing Services, 2725 Judge Fran Jamieson Way, Bldg. C, Suite 303, Viera, FL 32940

MAILING DATE:	BID TITLE:	BID NUMBER	BID OPENING DATE & TIME
(date)	CATTLE GRAZING – VIERA WETLANDS	B-5-16-38	(date) @ 3:30p.m.

PRE-BID DATE, TIME AND LOCATION: ☐ **Mandatory** ☒ **Non-Mandatory**
A pre-bid meeting will be held on (date) at 10:00 a.m. located at, 2725 Judge Fran Jamieson Way, Bldg. C, 3rd Floor, Viera, FL 32940

BIDS RECEIVED AFTER ABOVE DATE AND TIME WILL NOT BE ACCEPTED

BIDDER NAME/ADDRESS

TELEPHONE NUMBER/TOLL FREE NUMBER: _____

VENDOR MUST COMPLETE THIS AREA AND RETURN FORM NOTARIZED. FORM IS REQUIRED.
If returning as a "no bid" state reason:

FEDERAL EMPLOYER IDENTIFICATION NUMBER OR SSN:

I certify that this bid is made without prior understanding, agreement, or connections with any corporation, firm or person submitting a bid for the same materials, supplies or equipment, and is in all respects fair and without collusion or fraud. I agree to abide by all conditions of this bid and certify that I am authorized to sign this bid for the bidder. In submitting a bid to the County of Brevard, the bidder offers and agrees that if the bid is accepted, the bidder will convey, sell, assign or transfer to the County of Brevard all rights, title, and interest in and to all causes of action it may now or hereafter acquire under the Anti-trust laws of the United States and the State of Florida for price fixing relating to the particular commodities or services purchased or acquired by the County of Brevard. At the County's discretion, such assignment shall be made and become effective at the time the County tenders final payment to the bidder.

X

AUTHORIZED SIGNATURE (MANUAL)

TYPED NAME

TITLE DATE

THIS FORM MUST BE NOTARIZED BELOW

Sworn to and subscribed to me this ____ day of _____, 20___.
Personally known: ☐
Or produced identification: ☐ Type of ID: _____

Notary Signature State

My commission expires : _____
(AFFIX SEAL or STAMP)

BOND DATA

VENDOR MUST PROVIDE: **AMOUNT:**

Yes ☐ No ☒ BID BOND _____
Yes ☐ No ☒ PERFORMANCE BOND _____
Yes ☐ No ☒ LABOR, MATERIAL, PERFORMANCE BOND _____

In cases where the amount of a surety bond exceeds $500,000, the surety company must have an A. M. Best's rating as specified in this document and depending on the amount of the bond, shall have a minimum A. M. Best's financial size category ranking as follows:

BOND AMOUNT UP TO	FINANCIAL CLASS	BOND AMOUNT UP TO	FINANCIAL CLASS
$ 1,000,000	V	$ 25,000,000	IX
$ 2,500,000	VI	$ 50,000,000	X
$ 5,000,000	VII	$ 75,000,000	XI
$ 10,000,000	VIII	$ 100,000,000	XII

Bonds must be issued by Bonding Company who complies with the requirements of Florida Statutes Section 287.0935.

PAYMENT OF GOODS OR SERVICES PROVIDED AS A RESULT OF THIS SOLICITATION WILL BE MADE PER FLORIDA STATUTE. ALL FIRST TIME VENDORS MUST SUBMIT A W-9 FORM.

GENERAL CONDITIONS

1. **SUBMISSION OF BIDS:** All bids shall be submitted in a sealed envelope. The bid number, title, and opening date shall be clearly displayed on the outside of the sealed envelope. The delivery of said bid to Purchasing Services prior to the specified opening date and time is solely and strictly the responsibility of the bidder. Any bids received in Purchasing after the specified date and time will not be accepted. An original and one copy of the bid must be submitted unless otherwise noted.
2. **EXECUTION OF BID:** Bid must contain a manual signature of authorized representative in the space(s) provided. Bids must be typed or printed in ink. Use of erasable ink is not permitted. All corrections made by bidder to any bid entry must be initialed. The company name and Federal Employer Identification Number (FEID) number shall appear in the space(s) provided.
3. **BID OPENING:** Bid opening shall be public on the date and time specified. Sealed bids or proposals received by an agency pursuant to invitations to bid or requests for proposals are exempt from the provisions of subsection (1) and s. 24(a), Art. I of the State Constitution until such time as the agency provides notice of a decision or intended decision pursuant to s. 120.57(3)(a) or within 30 days after bid or proposal opening, whichever is earlier. In accordance with Florida Statute 119.071(1)(b) 2, the names of the firms submitting a competitive solicitation will be read aloud at this time of the opening. No details of the competitive solicitation will be released. Bid must be submitted on forms provided by the County. No other forms will be accepted. Telephone and telegraph bids will not be considered. No bid may be modified after opening. No bid may be withdrawn after opening for a period of ninety (90) days unless otherwise specified.
4. **BID TABULATIONS:** Bid tabulations are posted on Demand Star web page and available for download at: www.demandstar.com.
5. **CLARIFICATION/CORRECTION OF BID ENTRY:** The County of Brevard reserves the right to allow for the clarification of questionable entries and for the correction of OBVIOUS MISTAKES.
6. **INTERPRETATION:** No interpretation of the meaning of the specifications, or other contract documents will be made orally to any bidder. Every request for such interpretation must be in writing, addressed to Purchasing Services at 2725 Judge Fran Jamieson Way, Bldg. C, 3rd Floor, Suite 303 Viera, FL 32940, or faxed to the attention of the Procurement Analyst, at (321) 617-7391. To be given consideration, such requests must be received at least five (5) business days prior to the date fixed for the opening of the bid. Any and all such interpretation and supplemental instructions will be in the form of a written addendum, which, if issued will be sent to all prospective proposers at the respective addresses furnished for such purposes. Failure of any bidder to receive any such addendum or interpretation shall not relieve said bidder from any obligation under his bid as submitted. All addenda so issued shall become part of the contract documents, whether or not the successful bidder received a copy of such addendum, it being understood that all bidders are responsible to verify that they have received any such addenda prior to submitting their bid.
7. **EEO STATEMENT:** Vendors must ensure that employees and applicants for employment are not discriminated against for reasons of race, color, age, religion, sex, national origin, or handicapped status. Minority and female-owned businesses are encouraged to participate. Brevard County is an equal opportunity employer.
8. **PRICING:** Firm prices shall be proposed and include FOB DESTINATION, all packing, handling, shipping charges, fuel surcharges and delivery, unless otherwise indicated, to any point within the County of Brevard to a secure area or inside delivery. All prices, costs, and conditions shall remain firm and valid for 90 days from the date of opening. The obligations of Brevard County under this award are subject to the availability of funds lawfully appropriated for its purpose by the State of Florida and/or the Board of County Commissioners.
9. **ADDITIONAL TERMS & CONDITIONS:** The County of Brevard reserves the right to reject bids containing any additional terms or conditions not specifically requested in the original conditions and specifications.
10. **TAXES:** The County of Brevard is exempt from Federal Excise Taxes and all sales taxes.
11. **DISCOUNTS:** All discounts, EXCEPT THOSE FOR PROMPT PAYMENT, shall be considered in determining the lowest net cost for bid evaluation purposes.
12. **MEETS SPECIFICATIONS:** All equipment and accessories furnished under these specifications shall be new, the latest model in current production, and shall be of good quality, workmanship and material. The bidder represents that all equipment offered under these specifications shall meet or exceed the minimum requirements specified. Delivery specifications shall be strictly adhered to. The bidder shall be responsible for performing the work necessary to meet County standards in a safe, neat, good and workmanlike manner.
13. **BRAND NAME OR EQUAL:** If items called for by this invitation have been identified in the specifications by a "Brand Name OR EQUAL" description, such identification is intended to be descriptive, but not restrictive, and is to indicate the quality and characteristics of products that will be acceptable. Bids offering "equal" products will be considered for award if such products are clearly identified in the bid and are determined by the County to meet fully the salient characteristics requirements listed in the specifications. Unless the bidder clearly indicates in his bid that he is offering an "equal" product, the bid shall be considered as offering the same brand name product referenced in the specifications. If the bidder proposes to furnish an "equal" product, the brand name if any, or the product to be furnished shall be inserted in the space provided or such product shall be otherwise clearly identified. The evaluation of bids and the determination as to equality of the product offered shall be the responsibility of the County and will be based on information furnished by the bidder. Purchasing Services is not responsible for locating or securing any information, which is not identified in the bid and reasonably available to Purchasing Services. To ensure that sufficient information is available the bidder shall furnish as a part of the bid, or prior to bid opening, as indicated, all descriptive material necessary for Purchasing Services to determine whether the

product offered meets the salient characteristics required by the specifications and establish exactly what the bidder proposes to furnish and what the County would be binding itself to purchase by making an award.

14. **SILENCE OF SPECIFICATIONS:** The apparent silence of the specifications and any supplemental specifications as to any details or the omission from same of any detailed description concerning any point, shall be regarded as meaning that only the best commercial practices are to prevail and only materials of first quality be provided. All interpretations of this specification shall be made upon the basis of this statement.
15. **ASSIGNMENT:** Any purchase order issued pursuant to this bid and the moneys, which may become due hereunder is not assignable except with the prior written approval of the Purchasing Manager.
16. **INDEMNIFICATION:** The successful bidder agrees to indemnify and hold harmless the County and their employees from all claims, losses and expenses, including attorneys' fees, arising out of or resulting from the performance, failure in the performance of, or defect in, the products or services to be contracted, provided such claim, damage, loss or expense (1) is attributable to bodily injury, sickness, disease, death, or personal injury, or to property damage, including loss of use resulting therefrom, and (2) is caused in whole or in part by any negligent act or omission of the vendor, any subcontractor or any of their employees, or arises from a job-related injury. The successful bidder acknowledges adequate consideration for this indemnification provision.
17. **PATENTS AND ROYALTIES:** The bidder, without exception shall indemnify and save harmless the County of Brevard and its employees from liability of any nature of kind including cost and expenses for or on account of any copyrighted, patented, or unpatented invention, process, or article manufactured or used in the performance of the contract, including its use by the County of Brevard. If the bidder uses any design, device, or materials covered by letters, patent or copyright, it is mutually agreed and understood without exception that the bid prices shall include all royalties or cost arising from the use of such design, device, or materials in any involved in the work.
18. **TRAINING:** If specified, supplier(s) may be required at the convenience of the County, to provide employees training in the operation and maintenance of any items(s) purchased from this bid.
19. **ACCEPTANCE:** Items may be tested for compliance with specification. Items delivered not conforming to specifications may be rejected and returned at vendor's expense. Those items not delivered as per delivery date in bid and/or purchase order may be purchased on the open market. Any increase in cost may be charged against the vendor. Any violations of these stipulations may also result in the vendor name being removed from the bid list and the vendor disqualified from doing business with the County of Brevard.
20. **SAFETY WARRANTY:** The selling dealer, distributor, supplier, and manufacturer shall be responsible for having compiled with all Federal, State and local standards, regulations, and laws concerning the equipment specified and the use thereof, applicable and effective on the date of manufacture including safety and environmental standards as apply to both private industry and governmental agencies.
21. **WARRANTY:** The bidder agrees that, unless otherwise specified, the supplies and/or services furnished under this bid shall be covered by the most favorable commercial warranty the bidder gives to any customer for comparable quantities of such supplies and/or services and that the rights and remedies provided herein are in addition to and do not limit any rights afforded to the County of Brevard by any other provision of this bid.
22. **AWARDS:** As the best interest of the County may require, the right is reserved to make award(s) by individual items, group of items, all or none, or a combination thereof; on a geographical basis and/or on a countywide basis with one or more suppliers; to reject any and all bids or waive any minor irregularly or technicality in bids received. Bidders are cautioned to make no assumptions unless their bid has been evaluated as being responsive and qualified. All awards made as a result of this bid shall conform to applicable ordinances of the County of Brevard. The Board may return, for full credit, any unused items received which fail to meet the Board's performance standards. Brevard County reserves the right to cancel an awarded bid upon due cause, i.e. vendor misrepresentation, vendor negligence, non-performance, etc. via written notice.
23. **Unless otherwise noted in the bid document, vendors shall submit *one bid only.***
24. **DEFINITIONS:**

COUNTY - The term COUNTY herein refers to the County of Brevard, Florida, and its duly authorized representatives.

BIDDER - The term BIDDER used herein refers to the dealer/ manufacturer/business organization submitting a bid to the County in response to this invitation.

VENDOR - The term VENDOR used herein refers to any dealer/manufacturer/business organization that will be awarded a contract pursuant to the terms, conditions and quotations of the bid.

USING AGENCY - The term USING AGENCY used herein refers to any department, division, agency, commission, board, committee, authority or other unit in the County Government using supplies or procuring contractual services as provided for in the Purchasing Ordinance of the County of Brevard.

HEAVY DUTY - The item(s) to which the term HEAVY DUTY is applied shall exceed the usual quality and/or capacity supplied with standard production equipment and shall be able to withstand unusual strain, exposure, temperature, wear and use.

QUALIFIED BIDDER OR PROPOSER - The best bidder or proposer who has the capability in all respects to fully perform the bid or RFP requirements, and has the financial stability, honesty, integrity, skill, business judgment, experience, facilities, and reliability necessary to assure good faith performance of the contract, as determined by reference to the Contractor's Qualification Statement, evaluations by County staff of the bidder or proposer or its subcontractors' past performance for the Board, an any other information required by Board policies.

RESPONSIVE BIDDER OR PROPOSER - A bidder or proposer who has submitted a bid or proposal, which conforms in all respects to the requirements of the bid package or request for proposal, including, but not limited to, submission of the

bid or proposal on required forms with all required information, signatures, and notarizations at the place and time specified.

DUE CAUSE – An applicable reason affecting and concerning the ability and fitness of the contractor(s) to perform to the specifications and requirements of the contract.

25. **CONFLICT OF INTEREST**: The award hereunder is subject to provisions of State Statutes and County Ordinance. All Bidders must disclose with their bid the name of any officer, director, or agent who is also an employee of Brevard County. Further, all proposers must disclose the name of any County employee who owns, directly or indirectly, any interest in the proposer's firm or any of its branches.
26. **PURCHASING AGREEMENTS WITH OTHER GOVERNMENTAL ENTITIES:** Brevard County permits the awarded vendor(s) to extend the pricing, terms and conditions of this solicitation to other governmental entities at the vendor's discretion. Each governmental entity that utilizes this solicitation or resulting contract will be responsible for execution of its own requirements with the awarded vendor(s).
27. **DRUG FREE WORKPLACE:** Whenever two or more bids/ proposals which are equal with respect to price, quality, and service are received by Brevard County for the procurement of commodities or contractual services, a bid/proposal received from a business that has implemented a drug free workplace program (per Florida Statutes Section 287.087) shall be given preference in the award process.
28. **LOBBYING STATEMENT:** All firms are hereby placed on notice the County Commission and staff shall not be contacted about this Bid. Firms and their agents are hereby placed on notice that they are not to contact members of the County Commission or staff (with the exception of designated liaison). Public meetings and public deliberations of the Selection Committee are the only acceptable forum for the discussion of merits of products/services requested by the Request of Bid; and written correspondence in regard to Bids may be submitted to the County Manager. Each Bid will have one non-voting staff member designated who will serve as the liaison. Failure to adhere to these requirements could result in Board action to disqualify your firm from consideration of award.
29. **PUBLIC ENTITY CRIMES:** All bidders are hereby placed on notice that a person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid on a contract to provide any goods or services to a public entity, may not submit a bid on a contract with a public entity for the construction repair of a public building or public work, may not submit bids on leases of real property to a public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with a public entity, and may not transact business with any public entity in excess of the threshold amount provided in s. 287.017 for CATEGORY TWO (currently $35,000) for a period of thirty six (36) months from the date of being placed on the convicted vendor list.
30. **DISCRIMINATION:** An entity or affiliate who has been placed on the discriminatory vendor list may not submit a bid on a contract to provide goods or services to a public entity, may not submit a bid on a contract with a public entity for the construction or repair of a public building or public work, may not submit bids on leases or real property to a public entity, may not award or perform work as a contractor, supplier, and may not transact business with any public entity.
31. **LICENSE/CERTIFICATIONS AND PERMITS:** The successful vendor will be required to secure, at its expense and show proof of the proper business tax receipt and/or any other license/certification required of the applicable service/work being performed. Prior to award, the apparent low bidder will be required to provide proof of license and/or certification within two (2) business days of the posted awarded recommendation and submit copies of license/certifications to the Purchasing Office. The Brevard County Contractor Licensing and Regulations Section is responsible for the county licensing of trades: General Building, drywall, plumbing, electric, HVAC, roofing, etc. If you have questions concerning the licensing requirements for a Brevard County contractor's license, please Contact the Brevard County Licensing Regulation and Enforcement Office at (321) 633-2058, option 0, for any questions.

    The awarded contractor shall fully comply with all federal and state laws, county and municipal ordinances and regulations in any manner affecting the performance of the work. The successful vendor is responsible for obtaining all permits necessary to construct the project. Brevard County does not exempt itself from permitting requirements. The Owner shall pay all Brevard County permit, inspection and impact fees required for the project or services required under this contract; all other fees for permits required by agencies/municipalities other than Brevard County shall be the responsibility of the awarded Contractor. A copy of issued permit shall be provided to the User Department of the County for their records.
32. **ERRORS:** In the event of extension error(s), the unit price will prevail. In the event of addition error(s), the extended totals will prevail. In either case, the bidder's total offer will be adjusted accordingly.
33. **CANCELLATION AND RE-INSURANCE:** If any insurance should be canceled or changed by the insurance expiring during the period of this bid award, the vendor shall be responsible for securing other acceptable insurance to provide the coverage specified in the bid to maintain continuous coverage during the life of the award.
34. **INCURRED COST:** Brevard County is not liable for any cost incurred by any vendor prior to an award. Costs for developing a response to this request for bid are entirely the obligation of the bidder and shall not be chargeable in any manner to Brevard County.
35. **MATERIALS/SUPPLIES:** No materials or supplies for the work shall be purchased by the vendor or by any sub-contractor subject to any chattel mortgage or under a conditional sale or other agreement by which an interest is retained by the seller.
36. **SUBCONTRACTORS:** The vendor shall be fully responsible for all acts and omissions of his sub-contractors and of persons and organizations directly or indirectly employed by them and of persons and organizations for whose acts and omissions of persons directly employed by him.

37. **VERBAL INSTRUCTIONS:** No negotiations, decisions, or actions shall be initiated or executed by the vendor as a result of any discussions with any County employee. Only those communications, which are in writing from an authorized County representative, may be considered. Only written communications from vendors, which are assigned by a person designated as authorized to bind the company, will be recognized by the County as duly authorized expressions on behalf of the company.
38. **FAX:** Bids, which are received by fax, are not acceptable and will be rejected
39. **LITIGATION VENUE:** All litigation shall take place either in the State Courts of Florida, wherein venue shall lie in Brevard County, Florida, or in the Federal Courts wherein venue shall lie in the Central District in and for the State of Florida. The vendor expressly waives venue in any other location.
40. **ADDITION, DELETION OR MODIFICATION OF SERVICES:** The County reserves the right at its sole discretion to increase, decrease, or delete any portion of this agreement/contract at any time without cause, and if such right is exercised by the County, the total fee shall be reduced by a prorate basis. If work has already been accomplished on the portion of the contract to be increased, decreased, or deleted, the contractor shall be paid for the correct portion on the basis of the estimated percentage agreed upon by the County, the contractor, and the contract manager upon completion of such portion.
41. **OPERATION DURING DISPUTE:** In the event the County has not canceled the contract in accordance with the terms of the contract, and there remains a dispute between the bidder and the County, the bidder agrees to continue to operate and perform under the terms of the contract while such dispute is pending, and further agrees that, in the event a suit is filed for injunction or other relief, it will continue to operate the system until the final adjudication of such suit by the court.
42. **CONTRACT TERMINATION:** The contract resulting from this bid shall commence upon issuance and acceptance of the fully executed contract. The County user agency shall issue orders against the contract on an as needed basis. The contract may be canceled by the vendor, for good cause, upon ninety (90) days prior written notice. The County retains the right to terminate the contract, in part or in its entirety, with or without good cause, upon thirty (30) days prior written notice or as stated herein. In the event of termination by either party as provided herein, the awarded vendor shall be paid for services performed through the date of termination.
43. **SPECIAL ACCOMMODATIONS:** In accordance with the Americans with Disabilities Act and Section 286.26, F.S., persons with disabilities needing special accommodations to participate should contact the County Manager's Office no later than 48 hours prior to any meeting at (321) 633-2001 for assistance.
44. **BIDDER RESPONSIBILITIES:** Bidders, by submitting a bid, certify that it understands all planning, coordinating, and implementation of the described services shall be done through personal contact between the bidder and the contract manager, and that telephone contact and mail correspondence may, in some cases, not be appropriate. County approved representatives of the bidder shall be available to meet with the contract manager, as may be required, to accomplish the County's objectives as effectively and efficiently as possible, during all phases of this agreement/contract/ bid.
45. **SUPERVISION OF CONTRACT PERFORMANCE:** The bidder's performance of the contract will be notified by the contract manager. The bidder shall be notified of lack of performance in writing by the contract manager. If at any time during the term of the contract, performance satisfactory to the contract manager shall not have been made, the bidder, upon written notification by the contract manager, shall within three (3) days increase the force, tools and equipment as needed to properly perform the contract. The failure of the contract manager to file such notification shall not relieve the bidder of the obligation to perform the work at the time and in the manner specified by the contract. If the bidder does not increase the force or neglects to do the work properly, the contract manager can withhold a percentage of payment or withhold the entire dollar amount due as per the contract.
46. **MISUNDERSTANDING:** To prevent misunderstanding and any litigation, the contract manager shall decide any and all questions, which may arise concerning the quality and acceptability of the work, and services performed, the sufficiency of performance, the interpretation of the provisions of the contract, and the acceptable fulfillment of the contract on the part of the bidder. The contract manager will determine whether or not the amount, quantity, character and quality of the work performed are satisfactory, which determination shall be final, conclusive and binding upon both the bidder and the County. The contract manager shall make such explanation as may be necessary to complete, explain, or make definite the provisions of the contract, and his findings and conclusions shall be final and binding upon both parties.
47. **GREEN PROCUREMENT POLICY:** The Board of County Commissioners approved a "green procurement" policy in March 2004 to establish procurement requirements that promote the purchase and use of Environmentally Preferred Products as defined by the United States Environmental Protection Agency. Environmentally Preferred Products (EPP) are those products and services that have a reduced effect on the human health and the environment when compared to other products and services that serve the same purpose. EPP produces encourage (1) waste reduction; (2) reduced exposure to hazardous materials; (3) natural resource conservation; and (4) energy efficiency.
48. **MONITORING OF WORK:** The bidder shall provide the contract manager with every reasonable opportunity to ascertain whether or not the work, as performed, is in accordance with the requirements of the contract. The bidder shall designate, in writing, a person to serve as liaison between the bidder and the County.
49. **PROMPT PAYMENT:** For payment promptness, Brevard County shall remit payment in accordance with the Florida Prompt Payment Act, Florida Statutes section 218.70, et seq. Brevard County does not expect to be billed in excess of the ordered quantity and will not pay for any quantity above the ordered quantity. Any order placed as a result of this quotation will be subject to Billing Instructions and Conditions on the face of the Brevard County Purchase Order form. Bidders may offer cash discounts for prompt payment but they will not be considered in determination of award. If a bidder offers a discount, it is understood that the discount time will be from the date of satisfactory delivery, at the place of acceptance, and receipt of correct invoice, at the office specified, whichever occurs last.

Requests for final payment for any work or services for which a permit is required shall include a copy of all required permits and copies of all required inspection reports. Failure to provide proof of acquisition of all required permits and successful completion of all required inspections shall represent an incomplete invoice and will delay payment.

50. **RIGHT TO AUDIT RECORDS:** In performance of this Agreement, the Contractor shall keep books, records, and accounts of all activities related to the Agreement, in compliance with generally accepted accounting procedures. All documents, papers, books, records and accounts made or received by the contractor in conjunction with the Agreement and the performance of this Agreement shall be open to inspection during regular business hours by an authorized representative of the office and shall be retained by the contractor for a period of three (3) years after termination of this Agreement, unless such records are exempt from section 24(a) of Article I of the State Constitution and section 119.07(1) Florida Statutes.
51. **UNAUTHORIZED ALIEN WORKS:** Brevard County will not accept bids from vendors who knowingly employ unauthorized alien workers, constituting a violation of the employment provisions contained in 8 U.S.C. Section 1324a (e) (Section) 274A (e) of the Immigration and Nationality Act "INA". The County shall consider a vendor's intentional employment of unauthorized aliens as grounds for immediate termination of any awarded bid.
52. **FLORIDA PUBLIC RECORDS LAW:** Both parties understand that the County is subject to the Florida Public Records Law, Chapter 119, Florida Statutes and all other applicable Florida Statutes. If the materials provided by the Contractor do not fall under a specific exemption, under Florida or federal law, materials provided by the Contractor to the County would have to be provided to anyone making a public records request. It will be the bidder's duty to identify the information, which it deems is exempt under Florida/federal law, and identify the statute by number, which exempts that information.
    Should any person or entity make a public request of the County which requires or would require the County to allow inspection or provide copies of records which the Contractor maintains are exempt from Public Records Law or are confidential, it shall be the Contractors obligation to provide the County within 24 hours (not including weekends and legal holidays), of notification by the County to the Contractor of the request, of the specific exemption or confidentiality provision so the County will able to comply with the requirements of Fla. Stat. 119.07(1)(e) and (f). Should the County face any kind of legal action to require or enforce inspection or production of any records provided by the Contractor to the County which the Contractor maintains are exempt or confidential from such inspection/production as a public record, then the Contractor shall hire and compensate attorney(s) who shall represent the interest of the County as well as the Contractor in defending such action. The Contractor shall also pay any costs to defend such action and shall pay any costs and attorneys fees, which may be awarded pursuant to Fla. Stat. 119.12.
    All material submitted becomes the property of the County and may be returned only at the County's option. The County has the right to use any or all ideas presented in any reply to this ITB. Selection or rejection of any proposal does not affect this right.
53. **LOCAL PREFERENCE:** The Board of County Commissioners of Brevard County, Florida amended the Resolution for a local business preference policy. Businesses located within Brevard County will be given preference through the current procedures established by the resolution as amended. Businesses with an established and permanent physical location within Brevard County having a responsive and responsible bid within 5% of the lowest responsive and responsible non-local bid shall be given an opportunity to match the low bid. It is understood that the preference applied with the bid is for the Brevard County Board of County Commissioners only, and is valid only for the bid specified. The bidder also understands that failure to maintain the requirements of the Local Vendor Eligibility through completion of the awarded bid or contract may be grounds for immediate termination and may be used for consideration in future awards. Local Preference Resolution is available for review on Purchasing Services website:
    http://www.brevardcounty.us/CentralServices/Purchasing.
54. **PREFERENCE GIVEN TO COMMODITIES MANUFACTURED, GROWN OR PRODUCED IN FLORIDA:** In accordance with Florida Statute 287.082, whenever two or more competitive sealed bids are received, one or more of which relates to commodities manufactured, grown, or produced within this state, and whenever all things stated in such received bids are equal with respect to price, quality, and service, the commodities manufactured, grown, or produced within this state shall be given preference.
55. **COUNTY SEAL:** Use of the County Seal without the express approval of the Board of County Commissioners is a violation of section 165.043 Florida Statutes punishable as a misdemeanor.
56. **TIE BIDS:** Award of all tie quotes/bids shall be made by the Purchasing Manager in accordance with State Statutes, which allows a firm certified as a Drug Free Workplace to have precedence. When evaluation of vendor responses to solicitations results in identical offers, with regards to bids or quotations, or identical ranking with regards to proposals, from two or more vendors, the County shall determine the order of award using the following criteria in order of preference listed below (from highest priority to lowest priority):
    a. For tie bids, quotations or proposals, priority shall be given to the vendor certifying that he/she is a Drug-Free Workplace as defined within §287.087, Florida Statutes;
    b. Should a tie still exist, in the case of proposals only, priority shall be given until the tie is broken, to the vendor with the highest total of raw scores for each evaluation criteria, progressing from the highest weighted criteria to the lowest rated criteria. If multiple evaluation criteria have identical weights, the combined total weights of the identically weighted criteria shall be used;
    c. Should a tie still exist for bids, quotations or proposals, priority shall be given to the vendor having a verified business establishment within the boundaries of Brevard County, Florida;
    d. In the event that a tie still exists after progressing through a-c, the decision shall be made by lot or coin toss. The drawing of lots or coin toss shall be conducted in the presence of the effected bidders if they elect to be present.

57. **VENDOR COMPLAINTS AND DISPUTES:** Brevard County encourages prompt and fair handling of all complaints and disputes with the business community. In order to resolve disputed matters in an equitable manner, the following procedures are adopted:

I. Posting of Award Notices

A. FORMAL SEALED BIDS/QUOTES: No later than three (3) business days after a bid opening the Purchasing Manager or his/her designee shall post a tabulation of competitive sealed bids/quotes on a bulletin board located in or near the Purchasing Services Office. The apparent low bid/quote will be the intended award recommendation. If after posting the tabulation, the apparent low bid/quote is found to be non-responsive to the specifications, the formal award evaluation will be posted. The time for filing a protest will begin the date of the later posting.

B. FORMAL SEALED PROPOSALS: No later than three (3) business days after the selection committee recommendations are finalized, the Purchasing Manager or his/her designee shall post the selection committee's rankings and recommended award for bids.

II. Proceedings

A. Any bidder, quoter, or proposer who is allegedly aggrieved in connection with the solicitation or pending award of a contract must file a formal written protest with the Purchasing Manager within five (5) business days of the posted award recommendation.

B. The formal written protest shall reference the bid/quote/proposal number, and shall state with particularity the facts and laws upon which the protest is based, including full details of adverse affects and the relief sought.

C. Within seven (7) calendar days of receipt of the formal written protest, the Purchasing Manager will arrange a meeting of the Protest Committee and the affected parties. The Protest Committee shall consist of two (2) Department Directors or designees, both of whom must be from an organizational group which the user department or group is not assigned; one (1) Assistant County Manager, who must be from an organizational group which the user department or group is not assigned under. The Purchasing Manager shall act as a non-voting Hearing Coordinator and the County Attorney or designee may be requested to attend as a non-voting member. The Purchasing Manager or designee record the meeting and provide any information as the committee may request. The purpose of the meeting of the Protest Committee is to provide an opportunity to: (1) review the basis of the protest, (2) evaluate the facts and merits of the bid protest, and (3) if possible, to reach a resolution of the protest that is acceptable to the affected parties. For the purpose of the Protest Committee hearing, resolution shall mean that the Protestor finds the decision of the Protest Committee acceptable.

D. In the event the matter is not resolved with the Protestor's acceptance of the Protest Committee's decision, the Purchasing Manager will schedule the recommended award including the details of the protest and the Protest Committee's recommendation before the Board of County Commissioners via Board Agenda. The County Manager, prior to approval and placement on the Board agenda, may elect to resolve the matter before presentation to the Board. In the event that the County Manager cannot bring the matter to resolution, a copy of the Agenda Report shall be furnished immediately to all affected parties. The affected parties may appear before the Board of County Commissioners as a final means of administrative remedy.

III. Stay of Procurements During Protests

Failure to observe any or all of the above procedures shall constitute a waiver the right to protest a contract award. In the event of a timely protest under the procedure, the County shall not proceed further with solicitation or with the award until a recommendation is made by the Committee, or a written determination is made by the County Manager that the award must be made without delay in order to protect the public interest. Invoice disputes between an awarded vendor and user agency will follow the guidelines set forth in AO-33, *Prompt Payment of Invoices*.

CATTLE GRAZING - VIERA WETLANDS
BID #B-5-16-38
BIDDER CHECKLIST

The items indicated are required for submission with your bid. Failure to submit any items indicated as required may result in rejection of the bid. Offers to provide required items after the date and time designated for the receipt of bid will <u>not</u> be considered.

- ☐ Signed/Notarized Bid Invitation
- ☐ Narrative Summary/Description (if applicable)
- ☐ Signed and Completed Insurance Indemnification Form
- ☐ Bank Reference or other References and/or information to substantiate financial ability
- ☐ Completed and Signed Price Sheet, Specifications and Insurance Indemnification Acknowledgement

In order for this bid to be valid, the above forms and information shall be completed in their entirety, signed by an authorized representative of the responding vendor, and returned as part of the bid response.

CATTLE GRAZING- VIERA WETLANDS
BID #B-5-16-38
SPECIAL CONDITIONS

1. PURPOSE
Pursuant to Florida Statute § 125.35 and Brevard County Code of Ordinances Section 2-244, the Brevard County Purchasing Services Department on behalf of the Natural Resources Management Department invites interested parties to bid on the lease of property, approximately 128± acres located southeast of the Viera Wetlands - Ritch Grissom Memorial Wetlands – at 3658 Charlie Corbeil Way, Viera FL, 32940; Township 26 South, Range 36 East, Section 18. The Board of County Commissioners will lease the property to the highest and best bidder for the particular utilization of cattle grazing.

CONTRACT PERIOD: The terms of this agreement shall be effective for five (5) years from the date of award. The agreement may be extended by mutual agreement, for an additional two (2) five-year periods with the option to negotiate pricing, terms and conditions. **Awarded vendor shall notify Natural Resources Management Department Environmental Land Manager** in writing ninety (90) days prior to the expiration of the agreement as to its intent to renew the agreement.

2. INFORMATION OR CLARIFICATION
For information concerning procedures for responding to this bid, contact Leslie Rothering, Purchasing Services at 321-617-7390, or fax 321-617-7391; email: Leslie.Rothering@brevardfl.gov. Such contact shall be for clarification purposes only. Material changes, if any, to the specifications will be transmitted by written addendum through Purchasing Services.

Bidders shall promptly notify Purchasing Services, prior to submission of their bid, of any ambiguity, inconsistency or error, which they may discover upon examination of the bid documents. No interpretation of the meaning of specifications or other documents will be made to any bidder orally, nor may bidder rely on any such pre-bid statements in completing the bid. Every request for such interpretation must be in writing addressed to Purchasing Services at 2725 Judge Fran Jamieson Way, Bldg. C, Suite 303, Viera, Florida, 32940, or faxed to the attention of Leslie Rothering at 321-617-7391. To be given consideration, such requests must be received in writing no later than five (5) business days prior to the date for opening of the bids.

3. RECEIVING OF BIDS

Bids must be received by Brevard County Purchasing Services, 2725 Judge Fran Jamieson Way, Bldg. C, Suite C303, Viera, FL 32940 **no later than (date) at 3:30p.m.** Bids must be submitted on County format to be considered. **The official time clock will be the date and time stamp clock located in the Purchasing Office**.

Bids shall be submitted in one (1) original and one (1) copy with the "Original" clearly marked. Paper documents must be provided, but should be accompanied by an equivalent electronic PDF file.

Bidders must also print out a hardcopy of the completed Price Sheet, sign where indicated, and submit with the bid**. DO NOT MODIFY OR REISSUE THE PRICE SHEET; USE THE PRICE SHEET FORM PROVIDED.**

Note* Please ensure that if you use a third party carrier (DHL Express, FedEx, UPS, USPS, etc.) that they are properly instructed to deliver your bid only to Purchasing Services on the third *(3rd) floor* at the above address. **Vendors are advised that U.S. Postal Service 1st Class and Express mail is delivered to a P.O. Box and is not delivered to the Purchasing Services**

Office. Delivery via the USPS is at the Bidder's risk. To be considered, **a bid must be accepted in Purchasing Services no later than the ITB closing date and time**. If the bid is delivered anywhere else, it may not reach Purchasing Services in time.

4. PRE-BID/WALK THROUGH

   A pre-bid meeting/walk through shall be held on **(date).** in Purchasing Services conference room located at Brevard County Government Center, 2725 Judge Fran Jamieson Way, Bldg. C, Room #303, Viera, FL 32940. Interested parties are highly encouraged to attend this meeting.

   ☐ **Mandatory** ☒ **Non-Mandatory**

5. AWARD SUBJECT TO BOARD APPROVAL: Bids for proposed lease for the purpose of cattle grazing will include the intended use and the annual lease rate offered. Board approval for the acceptance of the highest and best bid will require a supermajority vote. Property descriptions and maps are attached. The successful bidder shall be required to execute a lease agreement in substantially the same form as the terms and conditions specified in the lease attached to this bid package.

6. LOCATION AND ACCESS: The PROPERTY consists of approximately 128 acres located south of the South Central Regional Water Reclamation Facility (SCRWTF) situated in Section 18, Township 26 South, Range 36 East, including

   a) Parcel ID# 26-36-18-00-4 (approximately 110.5 acres)
   b) A region of Parcel ID# 26-36-18-00-3 (approximately 17.5 acres)

   Bids will be accepted on for lease of either parcel a (excluding b), or both parcels a and b.

   See Figure 1, Aerial Map

   PROPERTY does NOT have direct access. The County shall allow access through an unimproved maintenance trail intended for use by off-road vehicles. LESSEE may improve this trail at their own expense with the County's prior written approval. LESSEE may alternately, with prior written approval by the County, install a gate at one pre-approved location (see Figure 1, Aerial Map) and clear existing brush, and/or effect additional improvements, in order to gain access through a second trail. Any other site access will require permission of adjacent property owners. Such permission shall be in writing, should the LESSEE secure it, with a copy provided to the County prior to utilization.

7. GRAZING AND HAYFIELD MANAGEMENT REQUIREMENTS:

   a) USE OF PROPERTY
      PROPERTY shall be used for cattle grazing. Recreational use of the PROPERTY, including hunting and the use of recreational motor vehicles is prohibited. LESSEE shall make no illegal, improper, immoral, or unlawful use of the property, nor will LESSEE allow the use of the property for any purpose other than that set forth herein. Failure to comply with this provision shall be considered a material default of the agreement.
   b) STOCKING RATE
      An animal unit (AU) is one (1) bull or one (1) cow with or without one (1) unweaned calf. The maximum stocking rate for the PROPERTY is one (1) AU per four (4) acres in areas used for active grazing. Any portion of the lease used solely for haying operations will be deducted from the overall stocking acreage. The LESSEE may stock any number of animal units below the

maximum stocking rate stated. The stocking rate may be increased upon favorable evaluation and written approval by the County.

c) FENCING AND IMPROVEMENTS

Prior to utilizing any section of the PROPERTY, all fences and gates must meet the following criteria.

i) The perimeter of all areas utilized for grazing and/or haying operations must be fenced. The addition or removal of any interior fences within such areas is at the discretion of the LESSEE. The LESSEE will construct new fence where required.

ii) Fences on the east and south perimeters will be constructed of (4) four strands of barbed wire, attached to pressure treated wood or metal fence posts, with post spacing not to exceed (20) twenty feet. Fencing must be a minimum of 48" (forty-eight inches) in height or equal in height to adjacent fencing, whichever is greater.

iii) Fences on the west and north perimeters are intended to exclude feral hogs from adjacent County-owned properties, and must be constructed of woven wire fencing, minimum 10 gage top and bottom wires, minimum 12.5 gage filler wires, maximum 6" stay spacing, attached to pressure treated wood or metal fence posts, with post spacing not to exceed (20) twenty feet. Fencing must be a minimum of 48" (forty-eight inches) in height. Any gates existing or constructed along the north or west perimeter must be designed to likewise exclude feral hogs.

iv) The LESSEE will repair and maintain all fences, gates and locks in good condition during the term of this Lease. Locks will be provided by the County. In the event an existing fence on the PROPERTY is damaged or inadequate, the LESSEE will take immediate action to replace or repair it.

v) The LESSEE must obtain the County's prior written approval before constructing any additional interior fences upon the PROPERTY.

vi) The LESSEE will maintain in good repair, any existing improvements upon the property (e.g. working pens, troughs, sheds, and other structures) or any improvements that may be placed upon the PROPERTY during the term of this Lease. Unless otherwise provided herein, the LESSEE may not make improvements to the PROPERTY without the prior written approval of the County.

vii) At the end of the lease term or any renewal, any fencing, gate(s) or other improvements installed by the LESSEE will be deemed the property of the County and will remain with the PROPERTY unless otherwise acknowledged by the County in writing.

viii) Unimproved trails: LESSEE shall be aware that heavy tonnage vehicles such as waste management trucks or semi-trucks occasionally utilized Corbeil Way. The LESSEE will be responsible for any improvements

d) IDENTIFICATION

All cattle must bear identification (e.g., ear tags, tattoos, brands, etc.), readily traceable to the LESSEE before their release on the PROPERTY.

e) GENERAL OPERATIONS AND MANAGEMENT

The LESSEE will take appropriate measures to prevent overgrazing, pasture degradation, and other environmental impacts to the PROPERTY. Such measures will include but are not limited to the following:

i) LESSEE will conduct all activities in accordance with all applicable rules and regulations. LESSEE further agrees, when practicable, to conduct all activities in accordance with the most recent *Water Quality Best Management Practices (BMPs) for Cow/Calf Operations* established by the Florida Department of Agriculture and Consumer Services, Office of Agriculture Water Policy (FDACS-OAWP). The FDACS-QAWP Water Quality/Quantity

Best Management Practices Manual is available at

http://www.freshfromflorida.com/Divisions-Offices/Agricultural-Water-Policy/Enroll-in-BMPs/BMP-Rules-Manuals-and-Other-Documents

Prior to conducting activities on the PROPERTY, LESSEE will demonstrate its intent to implement practicable BMPs by signing a Notice of Intent to Implement Water Quality BMPs for Cow/Calf Operations and submitting it to FDACS-OAWP, with copies to the County:

ii) The County desires the control or eradication of invasive exotic plants within the PROPERTY, including, but not limited to, Cogon grass (*Imperata cylindrica*) and Brazilian Peppertree (*Schinus terebinthifolius*). The LESSEE will be responsible for monitoring for the presence of exotics on the PROPERTY, and may elect to conduct maintenance activities acceptable to the County (e.g. prescribed burns, herbicide application, or mechanical removal) to minimize and limit the spread of exotics onto the PROPERTY: the cost of such maintenance may be deducted from the lease with prior written approval from the County. The County also desires such control or eradication in an adjacent 18 acre area northwest of the PROPERTY, in which the LESSEE may optionally elect to conduct one-time maintenance activities: if performed, the cost of such maintenance will be deducted from the lease, or reimbursed by the County in full or in part, with prior written approval from the County. If LESSEE purchases hay, seed, or other planting materials off-site, the LESSEE agrees to make every practicable effort to ensure that such materials are free of exotics.

iii) The LESSEE will assume responsibility for controlling feral hogs on the PROPERTY. The County may, at its discretion, offer the assistance of volunteer trappers to assist in this effort if acceptable to the LESSEE; but the County will not be responsible for the control. All captured swine must be slaughtered before being removed from the site. County shall conduct a criminal background check on any individuals the LESSEE desires to assist with control efforts. LESSEE shall reimburse the County for cost of all such background checks.

f) QUARANTINE

The LESSEE must quarantine all cattle for seven (7) days prior to releasing them on the PROPERTY. The LESSEE will ensure that all cattle are free of exotic seed prior to releasing them on the PROPERTY.

g) HAYING

Haying is allowed on the PROPERTY. To ensure that the quality of the hay field is maintained or enhanced, the LESSEE agrees to harvest hay from the pasture(s) at least once a year, but no more than four (4) times annually. The LESSEE will conduct harvesting activities in a manner that will not damage or strip the pasture(s) of desirable grasses. No additives, such as lime or fertilizer, can be used to enhance hay production.

h) WORKS OF THE COUNTY

The County reserves the right to enter upon the PROPERTY, at such times and places as the County may deem necessary, for the purposes of inspection the PROPERTY, constructing roads and other projects, constructing canals or ditches, and for any matter pertaining to water management or land management activities. The County will be identified in marked vehicles or have ID badge on person.

i) ACCESS, PERSONNEL AND VEHICLES

With the exception of operations by County staff and County-authorized volunteers, only

personnel and vehicles utilized or authorized by the LESSEE for use in its cattle grazing and haying operation are allowed on the PROPERTY. LESSEE shall gain access to the site ONLY as outlined above, and shall not gain access through the South Central Regional Water Reclamation Facility(SCRWRF).

j) PROTECTION

The LESSEE will regularly inspect the PROPERTY for the purpose of detecting wildfires, trespasses, vandalism, etc. on the PROPERTY. Such inspections may include inspecting for downed or damaged fences, open gates and cattle that have strayed from the PROPERTY. LESSEE must immediately notify the County upon the discovery of any wildfire, trespass, or vandalism. LESSEE is responsible for repairing damaged fences, and taking appropriate measures to immediately return stray cattle to the PROPERTY.

k) PRESCRIBED BURNING

Prescribed burning may be conducted by the LESSEE. The LESSEE must disk firebreaks around the interior perimeter of the PROPERTY, at least annually and more frequently if necessary, to protect the Preserve and PROPERTY from damage or destruction by wildfire and ensure that prescribed burns are conducted safely. Firebreaks will be maintained at a minimum width of fifteen (15) feet.

l) PROTECTION OF LISTED SPECIES

During the period of this AGREEMENT the presence on the PROPERTY of Species listed as Endangered, Threatened, or of Special Concern by the United States Fish and Wildlife Service ((USFWS) and/or the Florida Fish and Wildlife Conservation Commission (FFWCC) may require certain actions to ensure protection of these listed species. The LESSEE agrees to coordinate and cooperate with the County during consultations with the USFWS and/or FFWCC to determine the actions necessary to ensure protection of these listed species. The LESSEE agrees to abide by all protective requirements stipulated by the USFWS and/or FFWCC

m) HISTORIC PRESERVATION

The LESSEE shall not remove or disturb, or cause or permit to be removed or disturbed, any historical, archaeological, architectural or other cultural artifacts, relics, remains or objects of antiquity. In the event such items are discovered on the premises, the LESSEE shall immediately notify the County and protect the site and the material from further disturbance until the County gives clearance to proceed.

n) PROTECTION OF NATURAL RESOURCES

The LESSEE agrees, with respect to general maintenance of the land and wildlife that the LESSEE will implement and carry on a program of stewardship to promote and maintain said wildlife and land. The LESSEE shall at all times:

i) Maintain the PROPERTY in good condition and free from washes, gullies, and other erosion which is detrimental to the PROPERTY;
ii) cut no timber, conduct no mining operations, remove no sand, gravel or kindred substances from the PROPERTY;
iii) Place no landscape debris, garbage, refuse, or junk on the PROPERTY; and
iv) Commit no waste of any kind nor in any manner substantially change the contour or condition of the PROPERTY.

o) CHEMICAL USEAGE

Lessee shall maintain all licenses, permits or authorizations necessary or required in connection with Lessee's use of the PROPERTY, including those pertaining to the use, storage, distribution and disposal of pesticides, herbicides, fertilizers and other chemicals used in accordance with the Cattle Grazing and Hayfield Management Plan and maintenance of the

PROPERTY. Lessee will not store or mix any pesticides, herbicides, and other potentially hazardous chemicals on the PROPERTY. Lessee shall handle, distribute, apply, and dispose of all pesticides, herbicides, fertilizers and other chemicals in accordance with all federal, state and local regulations, and in strict accordance with the manufacturer's instructions. Lessee shall be fully responsible for satisfying any reporting requirements imposed by regulatory authorities relative to the use of such chemicals.

8. RENT: LESSEE agrees to pay Brevard County RENT for the use and occupancy of the property in accordance with the bid, payable in quarterly installment in advance. Rent for any portion of a year shall be prorated. Checks shall be made payable to the Board of County Commissioners, Brevard County, Florida, and mailed to Brevard County Natural Resources Management Department, 2725 Judge Fran Jamieson Way, Building A, Room #214, Viera, FL 32940.

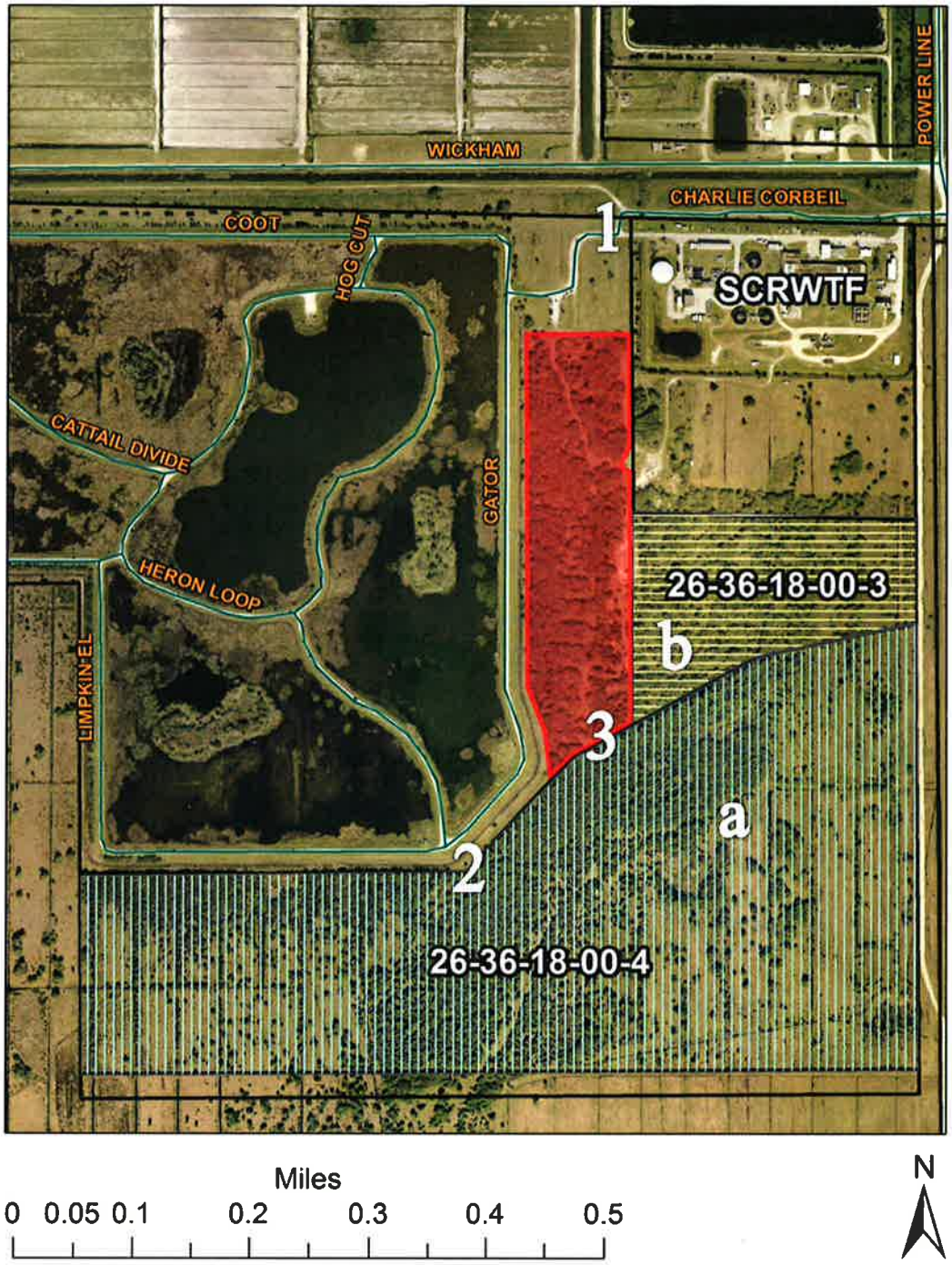
9. UTILITIES: Bidder shall pay for all utility charges connected with Bidder's use of the property. Bidder shall arrange for the provision of utilities required for the Bidder's use, shall pay for all charges required for connection or extension, if any, and Bidder shall be responsible for maintenance of all utilities to the extent that Bidder's agreement with the utility may require customer responsibility for maintenance. Written approval by the County is required prior to installation or use of utilities.

10. INSURANCE: Bidder further agrees to provide and maintain at all times during the term of the agreement without cost or expense to Brevard County, policy(s) of Comprehensive Commercial General Liability in an amount not less than One Million and no/100 dollars ($1,000,000.00)USD per occurrence, to cover any and all claims connected with any accidents or occurrence that may arise or be claimed to have arisen against Bidder.

11. REFERENCE: Provide a bank reference or other references or information that can substantiate that you have the financial ability to meet the needs of your proposed operations. Please include phone numbers.

12. REIMBURSEMENT OF INVESTMENT: Due to the up-front investments (example: landclearing, fence installation and repair) to be incorporated into the bid over the life of the agreement; LESSEE will be required to document expenditures made (invoices and/or receipts) and in the event that Brevard County prematurely terminates the agreement for convenience, excluding termination for default, before the five (5) year term the investment, cost(s) shall be returned minus the standard depreciated rate.

Figure 1, Aerial Map



Shown are Property "a" (ID# 26-36-18-00-4) which is approximately 110.5 acres
and Property "b" (a portion of ID 26-36-18-00-3) which is approximately 17.5 acres.
An adjacent 18 acre area discussed in SPECIAL CONDITIONS section, Paragraph 7.e.ii is highlighted in red.
Access to Properties a and b is available through an existing gate at location 2.
Lessee may install a gate a location 3.
Any access across County property must pass through a public gate at location 1

CATTLE GRAZING – VIERA WETLANDS
BID #B-5-16-38
PRICE SHEET

Please select one or both properties, and provide bid price for lease:

Property	Lease Property Check One Option	Bid Price/Acre	Annual Bid Total (Price/Acre x Total acres x12)
a) Parcel ID# 26-36-18-00-4 (approximately 110.5 acres)	**[ ] Parcel a**	$_____	$_____ *(Note: 110.5 acres total)*
b) A region of Parcel ID# 26-36-18-00-3 (approximately 17.5 acres)	**[ ] Parcels a & b**	$_____	$_____ *(Note: 128.0 acres total)*

ADDENDUM ACKNOWLEDGMENT

Add. No._____ Dated_____ // Add. No._____ Dated_____

Add. No._____ Dated_____ // Add. No._____ Dated_____

I hereby acknowledge that I have read, understand, and agree to all terms, conditions, insurance, scope of work, specifications and pricing for Bid #B-5-16-38/Cattle Grazing – Viera Wetlands.

VENDOR NAME_____

ADDRESS_____

AUTHORIZED SIGNATURE_____

PRINTED SIGNATURE_____DATE_____

TELEPHONE #_____FAX #_____

EMAIL:_____

BREVARD COUNTY BOARD OF COUNTY COMMISSIONERS
INDEMNIFICATION AND INSURANCE REQUIREMENTS
CATTLE GRAZING – VIERA WETLANDS
BID #B-5-16-38

Indemnification and Insurance: The Tenant agrees that it will indemnify and hold harmless the County from any and all liability, claims, damages, expenses (including attorneys' fees), proceedings and causes of action of every kind and nature, arising out of or connected with its use, occupation, management or control of the facilities or any improvements thereon or any furniture, furnishings, equipment and fixtures utilized in connection therewith. The Tenant agrees that it will, at its own expense, defend any and all actions, suits or proceedings which may be brought against the County in connection with Tenant's use of said facilities and that Tenant will satisfy, pay, and discharge any and all judgments that may be entered against the County in any such action or proceeding.

The Tenant further agrees to provide and maintain at all times during the term of this Agreement, without cost of expense to the County, policies of insurance generally known as general liability insurance policies insuring the Tenant against any and all claims, demands, and causes of action whatsoever for injuries received and damage to property in connection with the use, occupation, management or control of the facilities and any improvements, thereon. Said policies of insurance shall insure the Tenant in the amount of not less than $1,000,000.00 to cover any and all claims arising in connection with any particular accident or occurrence, and fire damage insurance in the amount of $50,000.00. The County shall be entitled to thirty (30) days prior notice of any changes or cancellation in said policies. In the event of cancellation of said insurance policies, Tenant shall within ten (10) days procure replacement insurance in an amount and form acceptable to the County or this agreement shall be null and void. The Tenant shall notify the County immediately in writing of any potentially hazardous condition existing on or about the facilities.

All personal property housed or placed at the property shall be at the risk of the Tenant and the Landlord shall not be liable for any loss or damage to the Tenant's personal property located thereon for any cause whatsoever. Tenant agrees and understands that the Landlord does not and shall not carry liability, theft or fire insurance on the property to cover the Tenant's interest.

A certificate of such insurance policies shall be filed with the Brevard County Natural Resources Management Department within ten (10) days of the date of execution of this Agreement.

The parties acknowledge that valuable consideration has been given for the provisions of this indemnity clause.

ACCEPTED BY:

Vendor Name_____

Address_____

Authorized Signature _____ Date _____

Print Name _____

Telephone Number _____ Fax # _____

LEASE AGREEMENT

DRAFT

THIS LEASE AGREEMENT ("Agreement") is entered into effective this _____day of _____, 2016 between BREVARD COUNTY, a political subdivision of the State of Florida ("COUNTY") and _____ LESSEE ("LESSEE").

For good and valuable consideration the receipt and sufficiency of which is hereby acknowledged, the parties hereto agree as follows:

Subject to the following terms and conditions, the COUNTY leases to LESSEE the real property ("Property") described in the attached Figure 1.

1. TERM. The term of this Agreement is five (5) years, commencing on the date of execution by COUNTY, unless otherwise terminated as provided herein. Provided that LESSEE has not defaulted or otherwise breached the terms of this Agreement, LESSEE shall have the right to request to renew this lease for two (2) additional five-year (5) successive terms under the same conditions set forth herein. LESSEE shall notify the Natural Resources Management Department (NRMD) Environmental Land Manager (ELM) in writing at least ninety (90) days prior to the expiration of this Agreement that they desire renewal. The NRMD ELM shall approve or deny the renewal request in writing prior to the Agreement's expiration. This Agreement may be terminated by either party upon ninety (90) days written notice to the other party. Upon termination of this Agreement, LESSEE shall have ninety (90) days in which to remove any personal property. Any property not removed within said ninety (90) day period shall automatically become property of the County without further action. In the event the COUNTY sells the subject property to a third party, this Agreement shall survive the sale and LESSEE shall maintain its rights and obligations under this Agreement for any remaining period as approved by the COUNTY.

2. LOCATION AND ACCESS: The PROPERTY consists of approximately 128 acres located south of the South Central Regional Water Reclamation Facility (SCRWTF) situated in Section 18, Township 26 South, Range 36 East, including

a) Parcel ID# 26-36-18-00-4 (approximately 110.5 acres)

b) A region of Parcel ID# 26-36-18-00-3 (approximately 17.5 acres)

PROPERTY does NOT have direct access. The County shall allow access through an unimproved maintenance trail intended for use by off-road vehicles. LESSEE may improve this trail at their own expense with the County's prior written approval. LESSEE may alternately, with prior written approval by the County, install a gate at one pre-approved location and clear existing brush, and/or effect additional improvements, in order to gain access through a second trail. Any other site access would require permission of adjacent property owners. Such permission shall be in writing, should the LESSEE secure it, with a copy provided to the County prior to utilization.

3. USE OF PROPERTY: PROPERTY shall be used for cattle grazing. Recreational use of the PROPERTY, including hunting and the use of recreational motor vehicles is prohibited. LESSEE shall make no illegal, improper, immoral, or unlawful use of the property, nor will LESSEE allow the use of the property for any purpose other than that set forth herein. Failure to comply with this provision shall be considered a material default of the agreement.

4. STOCKING RATE: An animal unit (AU) is one (1) bull or one (1) cow with or without one (1) unweaned calf. The maximum stocking rate for the PROPERTY is one (1) AU per four (4) acres in areas used for active grazing. Any portion of the lease used solely for haying operations will be deducted from the overall stocking acreage. The LESSEE may stock any number of animal units below the maximum stocking rate stated. The stocking rate may be increased upon favorable evaluation and written approval by the County.

5. FENCING AND IMPROVEMENTS: Prior to utilizing any section of the PROPERTY, all fences and gates must meet the following criteria.

i) The perimeter of all areas utilized for grazing and/or haying operations must be fenced. The addition or removal of any interior fences within such areas is at the discretion of the LESSEE. The LESSEE will construct new fence where required.

ii) Fences on the east and south perimeters will be constructed of (4) four strands of barbed wire, attached to pressure treated wood or metal fence posts, with post spacing not to exceed (20) twenty feet. Fencing must be a minimum of 48" (forty-eight inches) in height or equal in height to adjacent fencing, whichever is greater. .

iii) Fences on the west and north perimeters are intended to exclude feral hogs from adjacent County-owned properties, and must be constructed of woven wire fencing,

minimum 10 gage top and bottom wires, minimum 12.5 gage filler wires, maximum 6" stay spacing, attached to pressure treated wood or metal fence posts, with post spacing not to exceed (20) twenty feet. Fencing must be a minimum of 48" (forty-eight inches) in height. Any gates existing or constructed along the north or west perimeter must be designed to likewise exclude feral hogs.

iv) The LESSEE will repair and maintain all fences, gates and locks in good condition during the term of this Lease. Locks will be provided by the County. In the event an existing fence on the PROPERTY is damaged or inadequate, the LESSEE will take immediate action to replace or repair it.

v) The LESSEE must obtain the County's prior written approval before constructing any additional interior fences upon the PROPERTY.

vi) The LESSEE will maintain in good repair, any existing improvements upon the property (e.g. working pens, troughs, sheds, and other structures) or any improvements that may be placed upon the PROPERTY during the term of this Lease. Unless otherwise provided herein, the LESSEE may not make improvements to the PROPERTY without the prior written approval of the County.

vii) At the end of the lease term or any renewal, any fencing, gate(s) or other improvements installed by the LESSEE will be deemed the property of the County and will remain with the PROPERTY unless otherwise acknowledged by the County in writing

6. IDENTIFICATION All cattle must bear identification (e.g., ear tags, tattoos, brands, etc.), readily traceable to the LESSEE before their release on the PROPERTY.

7. GENERAL OPERATIONS AND MANAGEMENT The LESSEE will take appropriate measures to prevent overgrazing, pasture degradation, and other environmental impacts to the PROPERTY. Such measures will include but are not limited to the following:

i) LESSEE will conduct all activities in accordance with all applicable rules and regulations. LESSEE further agrees, when practicable, to conduct all activities in accordance with the most recent Water Quality Best Management Practices (BMPs) for Cow/Calf Operations established by the Florida Department of Agriculture and Consumer Services, Office of Agriculture Water Policy (FDACS-OAWP). The FDACS-QAWP Water Quality/Quantity Best Management Practices Manual is available at

http://www.freshfromflorida.com/Divisions-Offices/Agricultural-Water-Policy/Enroll-in-BMPs/BMP-Rules-Manuals-and-Other-Documents

Prior to conducting activities on the PROPERTY, LESSEE will demonstrate its intent to implement practicable BMPs by signing a Notice of Intent to Implement Water Quality BMPs for Cow/Calf Operations and submitting it to FDACS-OAWP, with copies to the County:

ii) The County desires the control or eradication of invasive exotic plants within the PROPERTY, including, but not limited to, Cogongrass (Imperata cylindrica) and Brazilian Peppertree (Schinus terebinthifolius). The LESSEE will be responsible for monitoring for the presence of exotics on the PROPERTY, and may elect to conduct maintenance activities acceptable to the County (e.g. prescribed burns, herbicide application, or mechanical removal) to minimize and limit the spread of exotics onto the PROPERTY. The cost of such maintenance may be deducted from the lease with prior written approval from the County. If LESSEE purchases hay, seed, or other planting materials off-site, the LESSEE agrees to make every practicable effort to ensure that such materials are free of exotics.

iii) The LESSEE will assume responsibility for controlling feral hogs on the PROPERTY. The County may, at its discretion, offer the assistance of volunteer trappers to assist in this effort if acceptable to the LESSEE; but the County will not be responsible for the control. All captured swine must be slaughtered before being removed from the site. County shall conduct a criminal background check on any individuals the LESSEE desires to assist with control efforts. LESSEE shall reimburse the County for cost of all such background checks.

8. QUARANTINE The LESSEE must quarantine all cattle for seven (7) days prior to releasing them on the PROPERTY. The LESSEE will ensure that all cattle are free of exotic seed prior to releasing them on the PROPERTY.

9. HAYING Haying is allowed on the PROPERTY. To ensure that the quality of the hay field is maintained or enhanced, the LESSEE agrees to harvest hay from the pasture(s) at least once a year, but no more than four (4) times annually. The LESSEE will conduct harvesting activities in a manner that will not damage or strip the pasture(s) of

desirable grasses. No additives, such as lime or fertilizer, can be used to enhance hay production.

10. WORKS OF THE COUNTY The County reserves the right to enter upon the PROPERTY, at such times and places as the County may deem necessary, for the purposes of inspection the PROPERTY, constructing roads and other projects, constructing canals or ditches, and for any matter pertaining to water management or land management activities. The County will be identified in marked vehicles or have ID badge on person.

11. ACCESS, PERSONNEL AND VEHICLES With the exception of operations by County staff and County-authorized volunteers, only personnel and vehicles utilized or authorized by the LESSEE for use in its cattle grazing and haying operation are allowed on the PROPERTY. The County shall provide access to the PROPERTY through the SCRWTF.

12. PROTECTION The LESSEE will regularly inspect the PROPERTY for the purpose of detecting wildfires, trespasses, vandalism, etc. on the PROPERTY. Such inspections may include inspecting for downed or damaged fences, open gates and cattle that have strayed from the PROPERTY. LESSEE must immediately notify the County upon the discovery of any wildfire, trespass, or vandalism. LESSEE is responsible for repairing damaged fences, and taking appropriate measures to immediately return stray cattle to the PROPERTY.

13. PRESCRIBED BURNING Prescribed burning may be conducted by the LESSEE with prior written approval from the County. The LESSEE must disk firebreaks around the interior perimeter of the PROPERTY, at least annually and more frequently if necessary, to protect the Preserve and PROPERTY from damage or destruction by wildfire and ensure that prescribed burns are conducted safely. Firebreaks will be maintained at a minimum width of fifteen (15) feet.

14. PROTECTION OF LISTED SPECIES During the period of this AGREEMENT the presence on the PROPERTY of Species listed as Endangered, Threatened, or of Special Concern by the United States Fish and Wildlife Service ((USFWS) and/or the Florida Fish and Wildlife Conservation Commission (FFWCC) may require certain actions to ensure protection of these listed species. The LESSEE agrees to coordinate and cooperate with the County during consultations with the USFWS and/or FFWCC to determine the actions

necessary to ensure protection of these listed species. The LESSEE agrees to abide by all protective requirements stipulated by the USFWS and/or FFWCC

15. HISTORIC PRESERVATION The LESSEE shall not remove or disturb, or cause or permit to be removed or disturbed, any historical, archaeological, architectural or other cultural artifacts, relics, remains or objects of antiquity. In the event such items are discovered on the premises, the LESSEE shall immediately notify the County and protect the site and the material from further disturbance until the County gives clearance to proceed.

16. PROTECTION OF NATURAL RESOURCES The LESSEE agrees, with respect to general maintenance of the land and wildlife that the LESSEE will implement and carry on a program of stewardship to promote and maintain said wildlife and land. The LESSEE shall at all times:

i) Maintain the PROPERTY in good condition and free from washes, gullies, and other erosion which is detrimental to the PROPERTY;

ii) cut no timber, conduct no mining operations, remove no sand, gravel or kindred substances from the PROPERTY;

iii) Place no landscape debris, garbage, refuse, or junk on the PROPERTY; and

iv) Commit no waste of any kind nor in any manner substantially change the contour or condition of the PROPERTY.

17. CHEMICAL USEAGE Lessee shall maintain all licenses, permits or authorizations necessary or required in connection with Lessee's use of the PROPERTY, including those pertaining to the use, storage, distribution and disposal of pesticides, herbicides, fertilizers and other chemicals used in accordance with the Cattle Grazing and Hayfield Management Plan and maintenance of the PROPERTY. Lessee will not store or mix any pesticides, herbicides, and other potentially hazardous chemicals on the PROPERTY. Lessee shall handle, distribute, apply, and dispose of all pesticides, herbicides, fertilizers and other chemicals in accordance with all federal, state and local regulations, and in strict accordance with the manufacturer's instructions. Lessee shall be fully responsible for satisfying any reporting requirements imposed by regulatory authorities relative to the use of such chemicals.

18. RENT: LESSEE agrees to pay Brevard County RENT for the use and occupancy of the property _____, payable in quarterly installment in advance. Rent

for any portion of a year shall be prorated. Checks shall be made payable to the Board of County Commissioners, Brevard County, Florida, and mailed to Brevard County Natural Resources Management Department, 2725 Judge Fran Jamieson Way, Building A, Room #219, Viera, FL 32940.

19. UTILITIES: LESSEE shall pay for all utility charges connected with LESSEE'S use of the property. LESSEE shall arrange for the provision of utilities required for the LESSEE'S use, shall pay for all charges required for connection or extension, if any, and LESSEE shall be responsible for maintenance of all utilities to the extent that LESSEE'S agreement with the utility may require customer responsibility for maintenance. Written approval by the County is required prior to installation or use of utilities.

20. COMPLIANCE WITH APPLICABLE LAW. LESSEE shall be allowed to utilize and manage the property in compliance with applicable local, state and federal laws.

21. ASSIGNMENT. This Agreement is not assignable.

22. INDEMNIFICATION. Except for losses, damages and claims arising out of the acts or omissions of COUNTY or COUNTY'S agents, contractors and employees, LESSEE shall indemnify and hold harmless COUNTY from and against any and all claims arising from LESSEE'S use of the Property, or from the conduct of LESSEE'S business or from any activity, work or things done by Lessee, it's agents, contractors, or assigns, in or about the Property and shall further indemnify and hold harmless COUNTY from and against any and all claims arising from any breach or default in the performance of any obligations on LESSEE'S part to be performed under the terms of this Agreement, or arising from any negligence of the LESSEE, or any such claim or any such action or proceeding brought thereon; and in case any action or proceeding be brought against COUNTY by reason of any such claim, LESSEE, upon notice from COUNTY, shall defend the same at LESSEE'S expense, by counsel acceptable to COUNTY. Likewise, to the extent allowed by law, COUNTY shall indemnify and hold harmless LESSEE from and against any and all claims arising from any activity, work or things done, permitted or suffered by COUNTY in or about the Property to the extent that such claims, damages, losses, or expenses are caused solely by the negligent or wrongful acts of the COUNTY or its employees. Nothing contained herein shall constitute a waiver by either party of its sovereign immunity or the provisions of Section 768.28, Florida Statutes. Nothing herein shall be construed as consent to be sued by third parties. The parties acknowledge that valuable consideration has been given for the provisions of this indemnity clause.

23. MAINTENANCE OF PROPERTY. COUNTY shall be responsible for routine maintenance and cleaning of ditches, as necessary. LESSEE shall not alter any existing ditches or change the flow of water across the Property for any reason. LESSEE shall be responsible for all other maintenance of the Property. LESSEE agrees to keep the Property free and clear of any obstruction, rubbish and litter. LESSEE agrees to maintain the Property in the manner and condition as previously maintained and return same to the COUNTY upon termination or expiration in such condition, reasonable wear and tear excepted. Nothing herein shall be construed as consent on the part of LESSEE to any change in the flow of surface water across any other property owned by LESSEE. LESSEE shall not use the property for any purpose other than related agricultural activities.

24. WARRANTIES. LESSEE accepts the Property for use in its cattle operations, as of the effective date of this Agreement in its existing condition as is, where is, and with all faults, without representation of warranty of any kind, expressed or implied, including, but not limited to, with respect to such matters as title, zoning use, economic feasibility, and soil, environmental and other physical conditions. LESSEE's use of the Property shall be subject to all recorded matters, laws, ordinances, and governmental regulations and orders. LESSEE hereby acknowledges that it has been afforded full opportunity to and has fully investigated such matters to its satisfaction prior to entering into this Agreement, or will investigate such matters fully, and is entering in this Agreement solely upon such investigations. Except as provided within this Agreement, LESSEE acknowledges that the COUNTY has made no representations or warranties to LESSEE as to the conditions of the Property or the suitability of the Property for LESSEE's intended use.

25. INSURANCE. LESSEE further agrees to provide and maintain at all times during the Term of this Agreement without cost or expense of the COUNTY, policies of insurance generally known as Comprehensive Commercial General Liability Policies, insuring LESSEE against any and all claims, demands and causes of action whatsoever for injuries received and damage to the Property in connection with LESSEE's use, occupation, management and control of the Property and improvements thereon. Such policies of insurance shall insure LESSEE in an amount not less than One Million and no/100 Dollars ($1,000,000.00) per occurrence, to cover any and all claims connected with any accident or occurrence that may arise or be claimed to have arisen against LESSEE. LESSEE shall also obtain property damage insurance insuring LESSEE in an amount not less than One Million and no/100 Dollars ($1,000,000.00) to cover the claims of any person or persons from a single

or specific act that results in alleged damage to Property. This insurance shall provide that the COUNTY shall be entitled to thirty (30) days notice of any changes or cancellation in said policy. LESSEE shall notify the COUNTY immediately in writing of any potentially hazardous condition existing on or about the Property. LESSEE shall provide the described insurance policies with insurers acceptable to the COUNTY. These insurance requirements may not relieve or limit the liability of LESSEE The COUNTY does not in any way represent that these types or amounts of insurance are sufficient or adequate to protect LESSEE's interest or liabilities, but are merely minimums. A copy of LESSEE's insurance policies shall be provided to the Brevard County Natural Resources Management Department Environmental Land Manager, 2725 Judge Fran Jamieson Way, Building A, Viera, Florida 32940, within ten (10) days of the date of execution of this Agreement. LESSEE agrees and understands that the COUNTY does not and shall not carry liability, theft or fire insurance on the Property to cover LESSEE's interest.

26. TERMINATION FOR DEFAULT. LESSEE understands and agrees that LESSEE's use of the Property is upon the expressed condition that should LESSEE fail or neglect to perform or observe any or all the covenants contained within this Agreement, or fail to make any constructive use of the Property for the purpose designated herein, which failure or neglect continues for a period of thirty (30) days after receipt of written notice, then LESSEE's right to use the Property as contained herein shall, at the option of the COUNTY, become null and void. Time is of the essence in the performance of all covenants and conditions.

27. LITIGATION COSTS; VENUE. In the event of any legal action to enforce the terms of this Agreement, each party shall bear its own attorney's fees and costs. Any action brought in law or equity to enforce the terms of this Agreement shall be held before a court of competent jurisdiction in and for Brevard County, Florida and any trial conducted shall be non-jury.

28. NOTICE. Any notice required to be given shall be provided to the COUNTY at the Office of the Natural Resources Management Department, 2725 Judge Fran Jamieson Way, Building A, Room 219, Viera, Florida 32940.

29. ENFORCEMENT. No section or provision of this Agreement shall be deemed to have been waived unless such waiver shall be in writing signed by the COUNTY. The failure of the COUNTY to insist upon the strict performance of the terms of this Agreement, or the failure of the COUNTY to exercise any right, option or remedy set forth in this Agreement shall not be construed as a waiver of any other right, option or remedy the

COUNTY may have under this Agreement or as a waiver of a subsequent breach of the terms of this Agreement.

30. GOVERNING LAW. This Agreement shall be governed, interpreted and construed according to the laws of the State of Florida.

31. MODIFICATIONS. This Agreement, together with any exhibits, constitutes the entire agreement between COUNTY and LESSEE and supersedes all prior written or oral understandings. This Agreement and any exhibits may only be amended, supplemented or canceled by a written instrument duly executed by the parties hereto.

32. RIGHT TO AUDIT RECORDS. In performance of this Agreement, LESSEE shall keep books, records, and accounts of all activities related to this Agreement, in compliance with generally accepted accounting procedures. All documents, papers, books, records and accounts made or received by LESSEE in conjunction with this Agreement and the performance of this Agreement shall be open to inspection during regular business hours by an authorized representative of LESSEE and shall be retained by LESSEE for a period of three (3) years after termination of this Agreement, unless such records are exempt from section 24(a) of Article I of the State Constitution and Section 119.07(1) Florida Statutes. All records or documents created by or provided LESSEE in connection with this Agreement, are public records and LESSEE agrees to comply with any request for such public records or documents made in accordance with Section 119.07 Florida Statutes.

33. CONSTRUCTION OF AGREEMENT. The parties hereby acknowledge that they fully reviewed this Agreement, its attachments and had the opportunity to consult with legal counsel of their choice, and that this agreement shall not be construed against any party as if they were the drafter of this Agreement.

34. REIMBURSEMENT OF INVESTMENT: Costs of up-front investments (example: landclearing, fence installation and repair) may be incorporated into the bid over the life of the agreement with prior written approval from the County. LESSEE will be required to document expenditures made (invoices and/or receipts) and in the event that Brevard County prematurely terminates the agreement for convenience, excluding termination for default, before the five (5) year term, the investment cost(s) shall be returned minus the standard depreciated rate.

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date first above written.

ATTEST

Scott Ellis, Clerk

BOARD OF COUNTY COMMISSIONERS
OF BREVARD COUNTY, FLORIDA

Jim Barfield, Chairman

As approved by the Board July 12, 2016

Reviewed for Legal Form and Content _____
Christine Lepore, Assistant County Attorney

WITNESS

LESSEE

_____

By: _____

CATTLE GRAZING – VIERA WETLANDS
BID #B-5-16-38
STATEMENT OF NO BID

NOTE: If you do not intend to bid on this requirement, please return this form to:

Brevard County Purchasing Services
2725 Judge Fran Jamieson Way, Bldg C Suite 303
Viera, FL 32940

We the undersigned have declined to bid on your Bid No. B-5-16-38/Cattle Grazing – Viera Wetlands for the following reasons:

_____Specifications too "tight," i.e., geared toward one brand or company only (explain below).

_____Insufficient time to respond to the Invitation to Bid.

_____We do not offer this product or equivalent.

_____Our livestock schedule would not permit us to perform.

_____Specifications unclear (explain below).

_____Remove our company from bid list.

_____Other (specify below).

Remarks:_____

_____

_____

We understand that if the "No Bid" letter is not executed and returned, our name may be deleted from the vendor list for the Brevard County Purchasing Service Office.

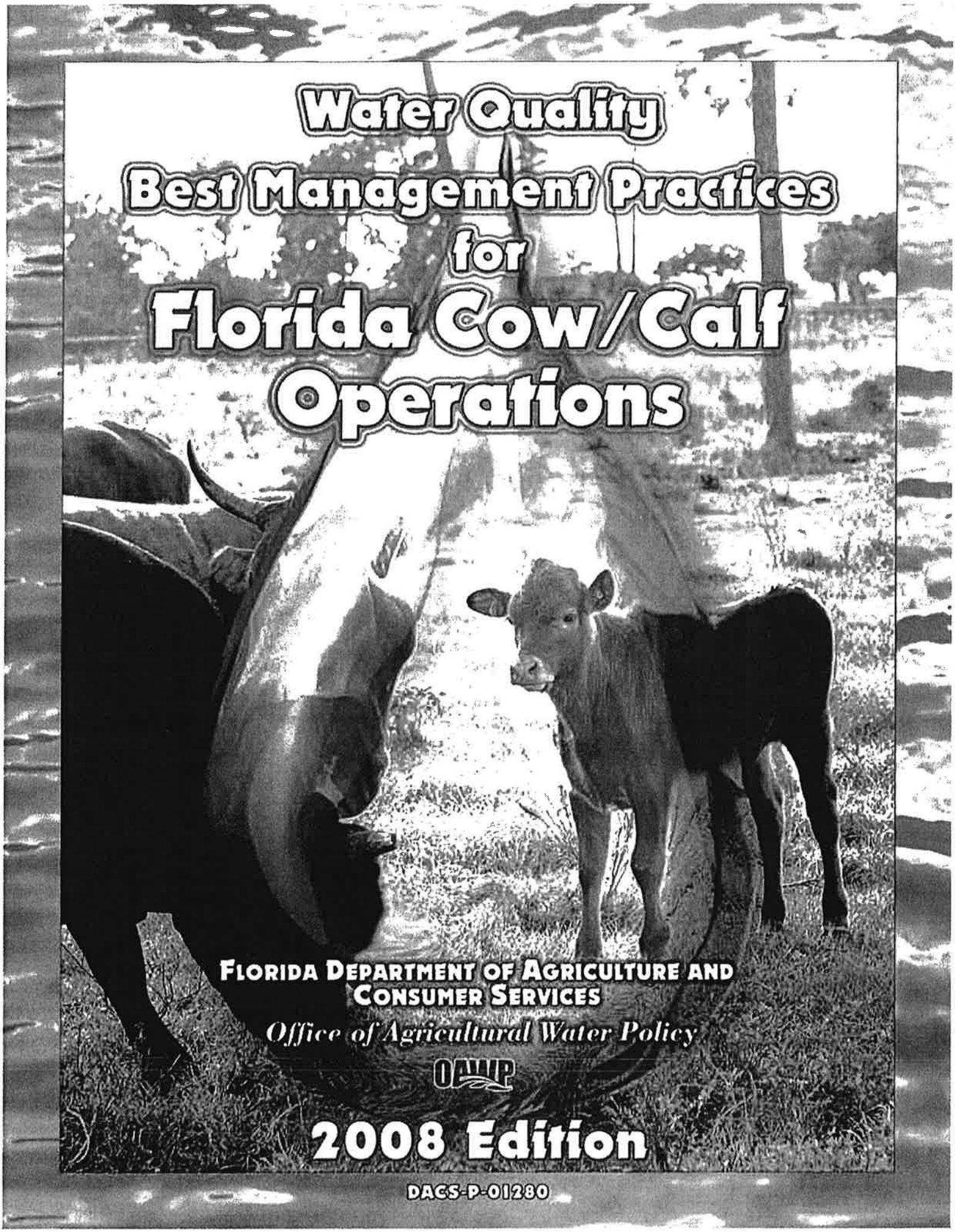
PLEASE PRINT

COMPANY NAME_____

COMPANY ADDRESS_____

COMPANY OFFICER_____

TELEPHONE NUMBER_____



Water Quality Best Management Practices for Florida Cow/Calf Operations

FLORIDA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES

Office of Agricultural Water Policy

OAWP

2008 Edition

DACS-P-01280

TABLE OF CONTENTS

Office of the Commissioner
(850) 488-3022

The Capitol
400 South Monroe Street
Tallahassee, Florida 32399-0800

Florida Department of Agriculture and Consumer Services
Commissioner Adam H. Putnam

COMMENTS BY COMMISSIONER ADAM H. PUTNAM

Dear Agricultural Producers:

This manual, *Water Quality Best Management Practices for Florida Cow/Calf Operations*, reflects the hard work of representatives of the industry; federal, state, and local government; and other stakeholders. In general, agricultural lands maintain valuable water recharge areas and preserve open spaces. The BMPs in this manual address water quality and quantity impacts from production activities and help maintain the environmental advantages of keeping the land in agriculture.

While best management practices have been in place for many years in our state, their role in environmental protection was formally established in 1999 with the passage of the Florida Watershed Restoration Act. This legislation provides the framework for implementing Florida's Total Maximum Daily Load program, which sets water quality targets for impaired waters. It also identifies best management practices implementation as the means for agriculture to help meet those targets.

As Florida's population continues to increase, there are more impacts to and competition for Florida's limited water resources. All Floridians must take part in conserving and protecting these resources. This manual represents the industry's commitment to do just that.

As a native Floridian whose family has long been involved in agriculture, I want to thank all who participated with the Department in the development of this important manual. With the active support and participation of so many dedicated people, I am optimistic about the future of Florida's agricultural industry. I trust that you will join me in supporting this valuable water resource protection effort.

Sincerely,

Adam H. Putnam
Commissioner of Agriculture

ACKNOWLEDGEMENTS

A Steering Committee was established in 2007 to update and revise the 1999 cow/calf BMP manual. A technical working group was formed to support the efforts of the Steering Committee, and was charged with developing and reviewing specific BMPs contained in the manual. An effort of this magnitude could not have been accomplished without the tireless dedication of all participants. The following is a list of individuals who participated in the development of this manual. Each of these individuals and their organizations made important contributions to the process, and their work is sincerely appreciated.

Steering Committee

Mike Adams – Adams Ranch

Bill Bartnick – Florida Department of Agriculture and Consumer Services

Pete Deal – USDA/Natural Resources Conservation Service

Wade Grigsby – Private Consultant

Rick Hacht – H & H Liquid Sludge Disposal, Inc.

Jim Handley – Florida Cattlemen's Association

Matt Harrison – Private Rancher

Pat Hogue – University of Florida/IFAS

Clegg Hooks – Florida Department of Agriculture and Consumer Services

Flint Johns – Lykes Bros., Inc.

Billy Kempfer – Kempfer Ranch

Jim Lefils – Lefils Cattle Company

Mike Milicevic – Lykes Bros., Inc.

James Payne – Deseret Ranches of Florida

Wes Williamson – Williamson Cattle Co.

Technical Working Group

Brian Boman – University of Florida/IFAS

Benita Whalen – South Florida Water Management District

Lance Laird – Northwest Florida Water Management District

Mark Luchte – Southwest Florida Water Management District

Vince Singleton – St. Johns River Water Management District

Mike Thomas – Florida Department of Environmental Protection

Glenn Horvath – Suwannee River Water Management District

Additional Contributors

Linda Crane – Florida Department of Agriculture and Consumer Services

Greg Hendricks – USDA/Natural Resources Conservation Service

Terry Pride – Florida Department of Agriculture and Consumer Services

INTRODUCTION

Opening Notes

Best Management Practices (BMPs) are practices or combinations of practices that, based on research, field-testing, and expert review, are determined to be the most effective and practicable means for improving water quality. BMPs are typically implemented as a ***treatment train***. This normally includes a combination of nonstructural and structural practices that are effective in reducing or preventing pollutant discharges. BMPs must be: based on sound science, technically feasible, and economically viable for landowners.

The practices outlined in this manual are intended for use statewide on beef cow/calf operations, and other cattle operations. This manual does not apply to concentrated animal feeding operations, which generally require a permit. The manual can be downloaded at www.floridaagwaterpolicy.com. If ranchers are involved in farming ventures other than cow/calf operations (row crops, sod, and silviculture, they should use the related BMP manuals, which are available at the same website.

Things to keep in mind as you use this manual are:

- Italicized words that appear in *red* are defined in the glossary.
- Specific record keeping requirements are noted using a "pencil mark" icon.
- Remember to fill out the BMP Manual Registration Form inside the front cover and return it to the Florida Department of Agriculture and Consumer Services in order to receive future updates to this manual.

Overview of the Industry

There are more than 11 million acres of total pasture and rangeland in Florida, of which 5 million acres are improved pasture. Florida's grazing lands provide significant benefits to society and the environment. Grazing lands release oxygen to the atmosphere, help to significantly cool surrounding surface temperatures, naturally filter pollutants from runoff water, reduce soil erosion, replenish our water supply, and provide aesthetic and recreational values. One thing to remember is that animals do not produce nutrients, but assimilate and distribute them.

Because of the large amount of pasture acreage, improperly managed pasture runoff may adversely affect the quality of our lakes and streams. The industry remains committed to fostering water resource protection through the implementation of BMPs. This manual, which has been endorsed by the Florida Cattlemen's Association, has been developed to promote BMPs for beef cow/calf operations in Florida. Although these practices are designed primarily to protect water quality, the implementation of certain BMPs will also have water conservation benefits. In addition, the manual addresses other activities that normally occur in conjunction with beef cattle production. Examples include intermittent row cropping and silviculture.

BMP History and Purpose

The 1972 Federal Clean Water Act (FCWA) required states to assess the impacts of nonpoint sources of pollution on surface and ground waters, and establish programs to minimize these impacts. In 1978, Florida established a Nonpoint Source Management Program, which includes the use of structural and nonstructural BMPs to minimize nonpoint source pollution, through both regulatory and non-regulatory means.

Section 303(d) of the FCWA requires states to identify impaired waters and establish total maximum daily loads (TMDLs) for pollutants entering these waters. TMDLs establish the maximum amount of pollutants that can be discharged to a waterbody and still meet designated uses such as swimming, fishing, or as a potable water source. The 1999 Florida Watershed Restoration Act (FWRA) provided the framework for Florida's TMDL program. Under the FWRA, once the Florida Department of Environmental Protection (FDEP) establishes a TMDL, the agency may develop and adopt a Basin Management Action Plan (BMAP), which specifies the activities that watershed stakeholders will undertake to reduce point and nonpoint source pollutant loadings. In watersheds with adopted BMAPs and in some other areas, agricultural producers are statutorily required either to implement FDACS-adopted BMPs or conduct water quality monitoring prescribed by FDEP or the water management district.

The FWRA gives the Florida Department of Agriculture and Consumer Services (FDACS) the authority to develop interim measures, BMPs, cost-share incentives, and technical assistance programs to assist agriculture in reducing pollutant loads in TMDL watersheds and other areas. The law also stipulates that the FDEP must verify that these BMPs are effective in reducing pollutant loading to waters.

Many of Florida's ranchers who produce food, fiber, and livestock on approximately 11 million acres will be required to help meet agricultural pollutant load allocations through BMP implementation.

Pursuant to sections 403.067(7)(c), and 570.085, F.S., implementation, in accordance with FDACS rule, of FDEP-verified and FDACS-adopted BMPs gives ranchers the following advantages:

- A presumption of compliance with state water quality standards
- A release from the provisions of s.376.307(5), F.S., for those pollutants addressed by the BMPs
- Assistance with BMP implementation

However, nothing in this manual shall be construed as restricting the authority of the FDEP or the water management districts (WMD) under Chapters 403 and 373, F.S.

Statutory Exemptions for Agricultural Activities

Under subsection 373.406(2), F.S., any person engaged in the occupation of agriculture may alter the topography of any tract of land for purposes consistent with the practice of agriculture. These activities may not be for the sole or predominant purpose of impounding or obstructing surface waters. Agricultural activities that meet these criteria may qualify for a statutory exemption from an Environmental Resource Permit (ERP).

Pursuant to 373.406(9), F.S., environmental restoration activities on agricultural lands that have minimal or insignificant impacts to water resources may also be exempt from an ERP, upon written request by the producer and written notification from FDEP or the water management district that the proposed activity qualifies for the exemption.

Even if the two exemptions above apply, they do not relieve agricultural producers located within a watershed with an adopted BMAP from either implementing BMPs or conducting monitoring.

Also, persons engaged in the occupation of agriculture have protections under the Florida Right to Farm Act (section 823.14, F.S.). The Act states, with certain exceptions, that no farm which has been in operation for one year or more and was not a nuisance at the time of its established date of operation shall be a public or private nuisance, if the farm operation conforms to generally accepted agricultural and management practices.

BMP ENROLLMENT AND IMPLEMENTATION

This manual contains Level I BMPs that are largely applicable to all ranchers, and Level II and III BMPs that will apply under specific circumstances. The manual includes a self-assessment tool to help ranchers determine which Level II and III BMPs are applicable to their operation. The self-assessment tool also guides ranchers in determining whether they need a formal Conservation Plan, which would be based on conservation practices contained in Section IV of the USDA-NRCS Field Office Technical Guide (FOTG), and would incorporate all the applicable BMPs in this manual.

Level I BMPs

All ranchers must implement the applicable **Level I BMPs** to establish a foundation for environmental protection. Depending on the site-specific conditions or geographical location of the ranch, not all of the Level I BMPs may be applicable to every site.

Advanced-Level BMPs

Ranchers may have to implement additional BMPs, based on their "score" after completing the *Advanced-Level BMP Needs Assessment*. The assessment identifies water quality risk features that require special attention or protection, and also identifies specific groups of BMPs that address these issues. These **Level II and III BMPs** focus on high-intensity areas, livestock use exclusion, address the need for grade stabilization structures for sediment control, and list situations that require comprehensive prescribed grazing management practices.

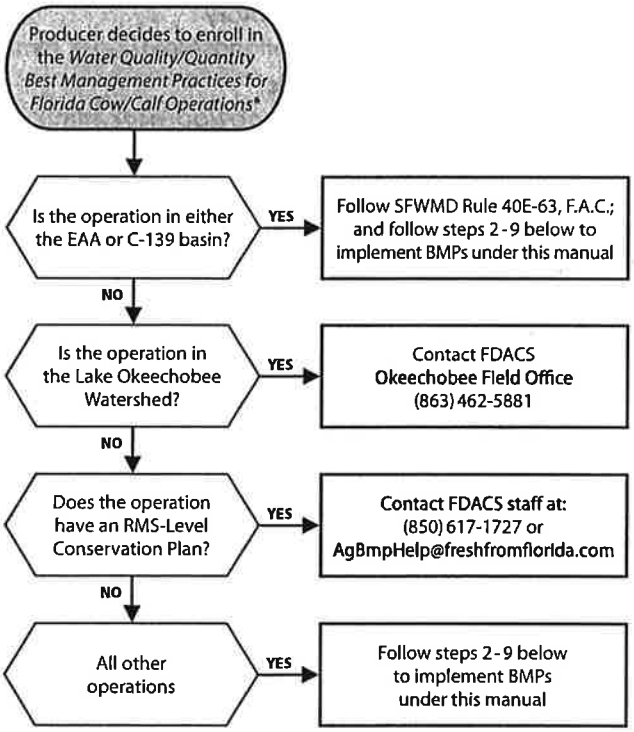
Conservation Plans

Conservation planning is a natural resource problem-solving and management process, with the goal of sustaining natural resources for future generations. A Conservation Plan may be developed for a single operation or for an area that crosses land ownership boundaries. A well-written Conservation Plan addresses landowner goals and objectives, and natural resource concerns. The plan includes strategies to maintain or improve yields, while also protecting soil, water, air, plant, animal, and human resources. Usually, Conservation Plans address all of the major activities on the ranch, but can be developed to target specific challenges. Conservation Plans are particularly well-suited to cow/calf operations and farming operations that produce multiple commodities.

Conservation Plans are developed in accordance with the USDA-NRCS FOTG. Because not all the specific BMPs in this manual may be contained in the FOTG, Conservation Plans must also include the applicable Level I, II, and III BMPs. Assistance in developing a plan can be obtained through the local SWCD, the USDA-NRCS, the Cooperative Extension Service, and private consultants who function as technical service providers. However, the decisions included in the Conservation Plan are the responsibility of the owner or manager of the ranch.

User's Guide to BMP Enrollment and Implementation

1. **Choose the Pathway Applicable to You:** In the flowchart below, identify the circumstances that best apply to you.



* Note: *If operation is in an area where a BMAP has been adopted, the producer must implement BMPs for all applicable commodities or monitor water quality. Contact FDACS Field Office for more information.*

2. **Consult the manual:** If you are proceeding with enrollment under this manual, begin by reading the following sections: *Introduction; Keys to Pollution Prevention;* and *General Information for Environmental Protection on Cow/Calf Operations*

3. **Conduct an inventory:** The selection of BMPs begins with a basic inventory of the farm's

natural features, which will help you determine how the operation of your farm may affect environmentally sensitive areas. When developing the inventory, sketch your farm/facility, noting buildings, pastures, cowpens, electrical and plumbing lines, and water sources. Identify areas of particular concern that need to be addressed. These include streams, wetlands, springs, sinkholes, and poorly drained ponded areas, to name a few. You can use this list of concerns in selecting which BMPs are applicable to your farm.

To help you conduct your inventory effectively, the following tools are available:

- √ Aerial photographs (http://earth.google.com/index.html, or other providers)
- √ USDA-NRCS soil survey maps (http://websoilsurvey.nrcs.usda.gov/app/)
- √ USGS topographic maps (http://www.topozone.com/)
- √ National Wetlands Inventory (http://www.fws.gov/wetlands/data/index.html)
- √ Historic rainfall records (http://www.ncdc.noaa.gov/oa/ncdc.html)
- √ Local tax maps from property appraiser (http://www.propertyappraiser.com/)

4. **Take the Needs Assessment**: Complete the *Advanced-Level BMP Needs Assessment* that begins on page 23, to determine whether any Level II and III BMPs are applicable to your operation, or whether you need or would like to develop a Conservation Plan.

5. **Select the applicable BMPs**: Read BMP sections 1.0 through 13.0 and select all of the applicable Level I, II, and III BMPs, based on your farm inventory and on the *Advanced-Level BMP Needs Assessment*. Record the BMPs on the checklist in Appendix 11 of this manual, as described in step 6 below.

6. **File a Notice of Intent to Implement (NOI) BMPs**: Complete and submit to FDACS an NOI, contained in Appendix 11 of this manual. The NOI includes a checklist on which you must identify all the BMPs in the manual that are applicable to your operation and are technologically and economically feasible for you to implement. The checklist includes a column for you to schedule BMP implementation. If you have a Conservation Plan, there is space provided at the end of the checklist for you to list any additional BMPs not covered in the checklist. You must submit a copy of the Conservation Plan with the NOI and checklist. Once received by FDACS, the Notice of Intent formally enrolls your operation under the BMP program. Implementation of the BMPs according to the NOI schedule provides a presumption of compliance with state water quality standards for the pollutants the BMPs address. Implementation includes ongoing record keeping and maintenance of the BMPs

7. **Implement the BMPs**: Implement all applicable Level I BMPs as soon as practicable, but no later than 18 months after submittal of the Notice of Intent to Implement. If you need additional time to implement the following Level I BMPs, you must justify the time needed in the space provided at the end of the checklist: **2.2** *Upland Pond Construction Criteria*; **2.3** *Other Watering Sources*; **5.3** *Installation of Water Control Structures*; **6.3** *Riparian Buffers*. Implement all other BMPs according to the schedule (month/year) you have indicated on the BMP checklist.

8. **Request on-farm technical assistance, as needed**: FDACS, UF-IFAS BMP Implementation Teams, Soil and Water Conservation Districts (SWCD), USDA-NRCS and/or UF-IFAS Extension staff are available to assist ranchers with the mechanics of BMP identification and selection. Contact information for these entities is in Appendix 3 of this manual.

9. **Keep records on BMP implementation**: FDACS rule requires record keeping to document BMP implementation. Fertilizer applications and rainfall amounts are two types of record keeping. Other record-keeping requirements in the manual are highlighted using this figure: ▟. All BMP records should be accurate, clear, and well-organized. You may develop your own record-keeping form or use the one provided in Appendix 8. You must retain the records for at least 5 years. However, it is desirable to retain records for as long as possible, to address any potential future legal issues. All documentation is subject to inspection.

It is advisable to consolidate your inventory and all your BMP decision-making, including the BMP Checklist, into a simple implementation plan. This plan will serve as a record of scheduled and completed BMPs, including operation and maintenance activities. A well thought-out, written plan enables managers and owners to schedule their activities and accomplish their objectives.

BMP Implementation Follow-Up

FDACS is developing a BMP "implementation assurance" program to help ensure that BMPs are being properly implemented, operated, and maintained. On a staggered schedule by commodity, FDACS will mail surveys to all BMP program participants, and will conduct site visits on selected operations. The benefits of this effort include:

- Demonstrating the level of producer participation in implementing BMPs.
- Identifying needs for additional education and implementation assistance for producers.
- Reinforcing to producers the importance of BMP implementation.
- Evaluating the effectiveness of FDACS BMP programs.
- Updating FDACS NOI records.

KEYS TO POLLUTION PREVENTION

Over the years, the "common-sense" recommendations summarized below have been embraced by many cattle operations in order to help prevent pollution problems. However, these descriptions are provided as an overview, and the formal BMPs appear later in this manual.

Maintain adequate vegetative cover

Vegetative cover helps to filter pollutants from runoff, reduces runoff velocity, and controls soil erosion. Management practices that help maintain vegetative cover usually involve distributing cattle to prevent overgrazing and allow vegetation to recover following a grazing period.

- Use prescribed grazing systems to minimize the impact of grazing on water quality.
- Adjust the stocking rate in sensitive *watersheds*.

Carefully plan your watering and feeding sites

Most nonpoint source pollution problems occur in the vicinity of watering, supplemental feeding, or loafing areas where animals tend to congregate most often. This concentration of livestock can denude vegetation and affect soil conditions so that erosion is more likely and water percolation is diminished.

- Place *supplemental feeding* and mineral stations a reasonable distance away (approximately 100 feet) from streams, drainage canals, lakes, *wetlands*, wells, and sinkholes.
- Develop alternative water sources to attract animals away from streams, drainage canals, and lakes as much as possible.
- Plan your shading facilities to keep cattle away from streams, drainage canals, and lakes as much as possible. Leaving or planting small, scattered clusters of trees in upland areas of pastures can provide shade structures.
- When feasible, move feeding stations, alternative water supplies, or shade structures periodically to prevent areas of concentrated waste accumulation and denuded vegetation.

Carefully plan your temporary holding areas

Concentrated animal areas such as *cowpens* and other temporary holding areas have the potential to produce large pollutant loads.

- Locate new cowpens more than 200 feet away from a canal, stream, or lake, or include a berm to prevent runoff into the *watercourse*.
- For existing concentrated animal areas that are located near a watercourse and can't be relocated, use filter strips, grassed waterways, berms/diversions, or waste management systems to minimize the transport of pollutants.

Use structural techniques to abate pollution

Sometimes it may be impossible to locate supplemental feeding or shade facilities outside of sensitive water quality areas. In such cases, other techniques can be used to help keep sediment, nutrients, and organic matter out of the water.

- When feasible, re-establish natural flow patterns, plug drainage canals, and restore water through internal marshes, cypress ponds, or other natural wetlands that can assimilate nutrients. The plugging of canals and/or some diversion of natural surface flows may require permits under Chapter 373, F.S. Contact your water management district prior to making structural modifications and/or changes. In addition, if you are a USDA program participant, contact them before conducting any clearing, land leveling, excavation, ditches, or similar activity, to ensure that you retain your eligibility for USDA program benefits.
- Use practices such as grassed waterways, filter strips, diversions, sediment traps, swales, and retention and detention ponds.

Minimize offsite discharge

Pollutants are carried offsite by water. By reducing the amount of water leaving your property, you can reduce the offsite water quality impacts.

- Carefully control seepage irrigation to minimize tailwater.
- Use *water control structures*, such as a flashboard riser on culverts, to retard water flow.
- Heavy vegetative cover in ditches should be mechanically removed instead of using herbicides, due to high nutrient releases when the vegetation decomposes.
- When cleaning ditches:

- Pile vegetation and sediment away from the ditch so nutrients don't wash back into the water.
- Use turbidity screens in the water at discharge points so turbid water does not leave your property.

- Plug unnecessary drainage conveyances.
- Use grassed waterways and vegetated areas to clean water before discharging offsite.
- Use man-made ponds or other watering facilities in upland areas to reduce cattle use of natural wetland systems.

Manage nutrients carefully

You can minimize pollutants leaving your property by carefully controlling imported materials that you use and apply on your ranch. Pollutants can come from fertilizers, sludge application, pesticides, chemicals, and fuels. If these materials are properly stored, applied, and disposed of, there is less chance they will be carried offsite in runoff.

- As appropriate, use soil and plant tissue tests to determine fertilization rates.
- Follow University of Florida, Institute of Food and Agricultural Sciences (UF-IFAS) fertilizer recommendations.
- Apply biosolids at agronomic rates, consistent with your FDEP Agricultural Use Plan.
- Do not apply fertilizer, organic fertilizer, or biosolids directly to wetlands or watercourses, or prior to forecasted heavy rainfall.
- Grass clippings from "sod mowing" should be stored away from wetlands and other watercourses.

Waste reduction strategies

You can also minimize pollutants leaving your property by carefully controlling pesticides, chemicals, and fuels. If these materials are properly stored, applied, and disposed of, there is less chance they will be carried offsite in runoff.

- Use pesticides in accordance with the label.
- Use cleaning agents and other chemicals carefully.
- Keep petroleum storage tanks in good working order.
- In the event of a spill, have a spill response plan.

Minimize the potential for erosion

Cows aren't the only ones contributing to soil erosion. Human activities, such as land clearing, culvert installation, road building, ditch and canal maintenance, pasture renovation activities, and production of certain short-term crops (watermelons, sod) can lead to erosion that can increase pollutant loading.

- When land is cleared, quickly plant a vegetative cover.
- Leave vegetated buffer strips during land clearing along drain areas, wetlands, and watercourses.
- During construction, follow erosion and sedimentation control practices.
- Minimize the number of vehicle crossings through streams and canals. If stream crossing cannot be avoided, locate the crossing in the area of least impact, considering habitat, soil types, slopes, streambed characteristics, and bank stability.
- Use stabilized culverts or hard surface crossings. Hard surface crossings can be concrete or geo-textile fabric with rock on top.
- Don't mow canal banks too closely; leave enough leaf area to maintain a healthy vegetative cover.

Develop a ranch Conservation Plan

Results of the Advanced-Level BMP Needs Assessment may indicate that you need to develop a ranch Conservation Plan; however you may wish to do so in any case. Such a plan, developed with help through USDA-NRCS or other technical service providers, can help guide management decisions for improved water quality.

Employee training

Employees whose job duties relate to BMPs should be properly trained prior to implementing the BMPs. Training sessions should be documented in the Employee Training Log in Appendix 9 of this manual.

- Provide annual training on BMPs and record keeping to appropriate employees.
- Keep records to document training activities.
- Review the Conservation Plan with employees, so its goals and priorities are clear.

General Information for Environmental Protection on Cow/Calf Operations

SPECIFIC WATER QUALITY IMPACTS ASSOCIATED WITH RANCHING

Waste from animals grazing on native pastures generally does not increase the nutrient levels in an area, as long as sufficient space is provided for each animal. However, intense grazing on improved pastures with the addition of supplemental feed can increase the risk of dissolved nutrients entering surface waters. This can elevate nutrient levels and disrupt the natural balance, adversely affecting water quality and aquatic flora and fauna. This section discusses some of the typical water quality impacts associated with ranching.

Pollutants and Pollutant Sources

Nutrients

Excess nitrogen and phosphorus are the most common sources of water quality impairments in Florida. These nutrients usually enter waterbodies through stormwater runoff. However, they can be introduced directly into the water from animal waste if livestock are allowed to loaf in wetlands or waterbodies. High levels of nutrients in surface waters result in abnormal plant growth, or ***eutrophication***. The nitrogen form most abundant in natural waters is nitrate. Due to its high mobility, nitrate can also leach into groundwater. Ammonia is an inorganic source of nitrogen and originates primarily from urine. Phosphorus is one of the key elements necessary for growth of plants and animals. In terms of freshwater lake ecology, it tends to be the (growth) limiting nutrient. Unlike nitrogen, phosphorus is generally retained in the soil by a complex system of biological uptake, absorption, and mineralization. Phosphorus enters waterbodies as particulate matter via sediment transport, or can be dissolved in water.

Sedimentation

Sedimentation occurs when eroded soils are washed into surface waters, creating a buildup of solids on the bottom and suspended solids in the water column. Sedimentation most commonly associated with cattle grazing comes from the erosion of denuded areas and streambanks. Suspended solids from sediments reduce the amount of sunlight available to aquatic plants, cover fish spawning areas and food supplies, clog and harm the gills of fish, and can adversely affect shellfish. These effects combine to reduce fish, shellfish and plant populations, and decrease the overall productivity of lakes, streams, estuaries, and coastal waters. Recreation may also be limited because of decreased fish populations and reduced desirability of downstream swimming areas. Deposited sediment also reduces the flow capacity of roadside ditches, streams, rivers, and navigation channels, which can result in more frequent maintenance dredging or flooding. Chemicals, such as some pesticides, phosphorus, and ammonium, may be transported in sediment. Over time, the aquatic environment can cause these chemicals to be released from the sediment into the water column.

Fecal Coliforms

Fecal coliforms are bacteria that can cause disease, and are another source of water quality impairment. While high numbers do not result in eutrophic conditions, they can pose a health hazard to animals and humans. Furthermore, the decomposition of fecal and other organic matter in water can lead to increased biological oxygen demand and lower dissolved oxygen levels. Health impacts to humans and livestock include dysentery, gastrointestinal infections, ear infections, and skin infections, especially in open wounds. Fecal coliforms are an indication of recent contamination, since they have a relatively short survival period in water. The risk of fecal coliform contamination by animals that are allowed direct access to a waterbody is higher, although runoff from high-intensity areas may compound the problem. Spreading uncomposted manure, residuals, or septage as fertilizer may also lead to increased fecal coliform numbers in nearby waterbodies. The likelihood of pollution is increased if these materials are applied in excess of agronomic rates or when wet weather conditions prevail.

Water Quality Degradation Indicators

Algae

Algae are essential to aquatic systems. As a vital part of the food chain, algae provide the nutrition necessary to support all aquatic animal life. Certain types of algae also provide habitat for aquatic organisms. Blue-green algae (which are actually a photosynthetic bacteria known as cyanobacteria) are usually found in freshwater systems, most commonly in calm, warm waters with high levels of nutrients. While cyanobacteria are naturally present in low numbers, increased algal production can cause many problems in a waterbody.

Cyanobacteria can become so abundant that they will cause a scum layer to form on the surface, shading the sunlight-dependent life below and disturbing the food chain. Cyanobacteria produce a small amount of toxin, which is generally harmless to animals and humans when algal populations are under control; however, livestock and pet deaths have been attributed to consumption of water with an abundance of cyanobacteria. The toxin is known to cause liver and nervous system effects in humans as well. Cyanobacteria toxin cannot be eradicated by boiling or ultraviolet irradiation, so untreated surface water (any water not obtained through a public water system) with increased cyanobacteria poses a risk. Potential risks from recreational contact include skin, respiratory, and mucous membrane irritation. Other algal blooms can significantly alter the natural balance of the flora and fauna by causing a waterbody to become anaerobic. This results in a failing or impaired ecosystem. Certain types of noxious weeds or a monoculture of one or two species of plants can indicate an imbalance of nutrients in a waterbody, which can also lead to further problems in the ecosystem.

Dissolved Oxygen

Water systems both produce and consume oxygen. Oxygen is obtained from the atmosphere and from plants through photosynthesis. The presence of algal blooms, noxious weeds, and too many floating aquatic plants can reduce the amount of oxygen available in a waterbody by blocking sunlight necessary for photosynthesis to occur. Respiration by aquatic animals, decomposition of organic material, and various natural chemical reactions consume oxygen. The amount of oxygen consumed by microorganisms in breaking down manure and other wastes is known as the biochemical oxygen demand or BOD. If BOD exceeds the amount of dissolved oxygen in a waterbody, widespread fish kills can occur. If dissolved oxygen levels are already lower due to algal blooms or other flora, the likelihood of a fish kill increases.

Turbidity

Turbid water as a result of excessive sedimentation is another water quality degradation indicator. Great care must be used to prevent livestock-induced erosion of stream banks and the loss of sediments to waterbodies. Soil and sediment can fill in water bodies, clog waterways and affect water clarity. Suspended sediment can have numerous effects on fish; decreased penetration of sunlight can affect the feeding and breeding behaviors of fish, and the sediments themselves can clog gills and cause irritation to the mucous membranes covering the eyes and scales. As the sediment settles, fish eggs are susceptible to suffocation due to burial. Nutrients and toxins can also attach to sediments, which can contribute to downstream eutrophication and pollution.

Strategy to Minimize Water Quality Impacts

Using BMPs to achieve water quality protection while maintaining, or even improving, agricultural productivity is not a new process. However, doing this most effectively requires a business model that includes the following steps:

- Evaluate the existing situation
- Plan what to do, incorporating the applicable BMPs in this manual*
- Implement the plan
- Check to make sure everything is working correctly, and if not
- Go back to the first bullet

As a critical part of this process, ranch operators should conduct an inventory of the farm's natural resource features, as noted in the *BMP Selection and Implementation* chapter. The outcome of this exercise will be a plan – remember to keep it available and update it regularly. The plan will also help you communicate with your employees and your county agent, USDA-NRCS staff, or others.

* Many of the BMPs in this manual will address more than one environmental issue. Therefore, by implementing the BMPs, you usually solve more than one problem.

The sections below describe managing plant nutrients to achieve optimum forage yields while minimizing the movement of nutrients to surface and ground water. Nutrient management considers the amount, source, form, placement, and timing of nutrient applications. All sources of plant nutrients, such as organic and inorganic fertilizers and nutrient reserves within the soil, must be considered when developing a nutrient management program for a field or a ranch.

Source Reduction

Perhaps the first thing to remember when developing plans for nutrient management on grazing land is that animals do not produce nutrients. Animals consume, excrete, move, and retain nutrients. However, they are not the source of the nutrients. All of the nutrients excreted by grazing animals on Florida's ranches come from natural or human sources.

Natural nutrient sources generally include soil mineralization, atmospheric deposition, and nitrogen cycle processes. If the field is not fertilized and no supplemental feeds are given, the cattle will be totally dependent upon naturally occurring sources of nutrients. Fertilizer, supplemental feed, and irrigation water are the major sources of human-imported nutrients. The kind and amount of nutrients imported into a particular field will depend upon feed and pasture management. Nutrients imported into fields can be controlled to a great degree through management decisions.

Although grazing animals do not produce nutrients, they do affect nutrient distribution. Research indicates that grazing animals excrete nutrients in proportion to the amount of time they spend in an area. Research also shows that grazing cattle will spend their day doing three tasks: eating, sleeping, and loafing. When forage is available, cattle spend about eight hours each day on each of these tasks. However, if forage is limited, they may spend as much as ten hours per day grazing. Because cattle in Florida typically loaf and sleep in areas other than those in which they graze, they will transfer nutrients from the grazed area to the loafing and sleeping areas. If the sleeping or loafing area is in or near an environmentally sensitive area, the transfer of nutrients can cause or contribute to water quality problems.

There are four simple steps that can be taken to improve nutrient management and minimize the potential for water quality problems:

- The best method to prevent nutrient contamination of ground or surface water is to reduce the amount of nutrients imported onto a ranch. Therefore, the reduction of feed brought onto the ranch can play a big part in managing nutrients. If supplemental feed is needed, it is best to use feed in areas away from wetlands and other watercourses. This will reduce the potential for manure or unused feed to be washed into surface waters.
- Reduce fertilizer applications in areas where grazing animals congregate. The soil in these areas often contains adequate nutrients for plant growth, so fertilizer applications are unnecessary.
- Avoid applying fertilizer within 50 feet of wetlands and streams. This will reduce the potential for nutrients to be transported offsite during heavy rainfall.
- In order to reduce the potential for nutrients to be transported offsite, do not apply fertilizer to pasture swales and v-ditches that have standing water.
- Ensure that the pH is in the proper range for nutrient uptake by the plants because the acid nature of much of Florida's soils prevents optimum forage growth and limits the effectiveness of the fertilizer.

Nutrient Budget

A nutrient budget should be developed that considers all nutrient sources (soil residual, crop residues, organic and inorganic fertilizer, and irrigation water) and compares them to the forage crop nutrient requirements. Use the Nutrient Budget Worksheet in Appendix 5 to determine whether additional plant nutrients are needed. In general, ranchers can use a combination of soil and tissue testing, and UF-IFAS recommendations, to guide fertilization decisions. The UF-IFAS fertilizer recommendations for forage crops can be found in Fact Sheet SL-129, *Standardized Fertilization Recommendations for Agronomic Crops*, which can be found online at http://edis.ifas.ufl.edu/SS163

Ranchers should consult SL-129 before applying supplemental nutrients. On established bahiagrass pastures, nitrogen should be applied based on the intensity of grazing. Other perennial grasses may need nitrogen in late winter and at other times

throughout the year. Application rates should be based on UF-IFAS recommendations, with an emphasis on phosphorus (P) using three criteria: soil pH levels; available P content as determined by soil test results; and plant tissue testing results.

The nutrient analysis of non-farm organic fertilizer (e.g. municipal sewage sludge) can be obtained from the sludge hauler or waste treatment plant. The nutrient analysis of other organic materials, such as poultry litter and dairy wastes, may be obtained from labs.

Timing of Nutrient Application

To avoid nutrient losses through runoff, apply fertilizers during times when soils are not saturated. When irrigating, refer to the water budget provided by USDA-NRCS for your county to determine the times for the lowest potential for nutrient loss from rainfall. Timing of nutrient applications should coincide as closely as possible with periods of plant growth and nutrient uptake. Remember to maintain proper soil pH, to optimize utilization of applied nutrients and prevent toxic effects from other accumulated elements, such as copper. The pH recommendations are listed by crop in SL-129, and generally range from 5.5 to 6.5.

Preventing Nutrient Movement Offsite

Ranchers should practice erosion control to minimize soil loss and runoff that can carry dissolved and attached (particulate) nutrients to surface waters. Filter strips and other conservation buffers along streams are very effective in reducing the levels of suspended solids and some nutrients. Also, avoid spreading fertilizers in or near ditches and canals. Strategically locate fertilizer loading sites away from watercourses, where spills can contaminate the water.

Manure Management

Manure management for cow/calf operations is a concern due to the possible release of coliform bacteria, phosphorous, or nitrogen to ground and surface waters through seepage and runoff. Ground water may become contaminated by leaching of nitrate or dissolved phosphorus. Phosphorus and nitrogen (N) can be transported in runoff to surface waters in dissolved form, or they may be attached to sediment particles. Both N and P can contribute to the eutrophication of waterbodies.

Common-sense manure management involves simple techniques such as managing manure in concentrated areas, dragging pastures, and excluding cattle from waterbodies near critical discharge points adjacent to waters of the state. These BMPs are addressed later in this manual.

The sections below describe forage resources, pasture, and grazing management to aid in the overall management of forage production for cow/calf operations in Florida. A productive forage stand is imperative to the success of a cow/calf operation and the protection of water quality. Well-established and managed forage stands effectively reduce soil erosion, absorb nutrients, and provide essential nutrition for livestock.

Forage Resources

In Florida, selection of forage species depends primarily on three major factors: temperature, soil moisture, and soil fertility. The differences in climate, soils, and length of growing season affect not only the types of forage that can be grown, but also affect the overall management system as well. Florida's relatively mild climate, coupled with an average 50 inches of annual rainfall, allows most South Florida ranchers year-round grazing opportunities. However, in most years, some supplemental feed or forage is required statewide during the winter months or dry spring months.

Florida forages are selected primarily based on temperature, due to the wide-ranging climate. South Florida has a climate similar to subtropical regions, while North Florida has subtropical summers but temperate winters. Warm season perennial grasses are the basis for permanent pastures in Florida. Possible perennial grass choices include bahiagrasses and improved hybrid bermudagrasses for North Florida; bahiagrasses, improved hybrid bermudagrasses, and limpograsses for Central Florida; and bahiagrasses, stargrasses, improved hybrid bermudagrasses, limpograss, and rhodesgrass in South Florida.

The table below lists general guidelines for rotational stocking of selected forages:

	Average Height (inches)	
Forage	Begin Grazing	End Grazing
Bahiagrass	6	1-2
Bermudagrass	6	2-4
Bluestem	10-20	8-12
Clovers	6	3
Indiangrass	14	6-10
Limpograss	24	10
Maidencane	24	10
Pearl Millet	14	6
Rhodesgrass	18	8
Ryegrass, annual	6	3-4
Stargrass	12-18	6-8
Small Grains (oats, wheat, rye)	6	4
Switchgrass	18-22	8-12

Ranchers may also want to consider annual species as possible forage alternatives, depending on their objectives. Annual species provide grazing for temporary pastures. Certain annual grasses are used throughout the state in both cool and warm seasons. Rye, oats, wheat, and ryegrass can all be used for winter grazing, while pearl millet and sorghum X sudangrass hybrids can provide summer grazing. Additionally, annual species may be used as a transition crop when renovating pasture.

Florida also has considerable variability in soils. In North Florida, there are clay-loam soils that are quite productive and have good moisture-holding capacity. In peninsular Florida, there are the upland sandy ridges and adjacent flatwoods. In general, flatwoods soils have greater moisture-holding capacity and are more productive than the deep, well-drained sands characteristic of the ridge. Ranchers should identify the intended planting sites' soil characteristics and select forage species compatible with those characteristics.

For more information, see *Florida Forage Handbook* at http://edis.ifas.ufl.edu/AG170 or the *Florida Crop/Pest Management Profile: Beef Cattle* at: http://edis.ifas.ufl.edu/PI043.

Pasture Management

Establishment of new forage is an expensive process that requires detailed planning. The planning process should consider resource concerns such as soil erosion, as well as the increase in management costs to maintain soil fertility and prevent impacts to water quality. A rancher can establish pasture on new ground, following a row crop, or by renovation and replanting of old pasture to new species. Switching from one forage type to a new one can require a renovation program using annual cultivated crops for one to two years before planting new forage. For more information on pasture establishment, see *Florida Cow/Calf Management: Forages* at: http://edis.ifas.ufl.edu/AN118.

Once a pasture has been established, ranchers should manage soil fertility, weed control, insect control, and grazing schedules. Proper management will assist ranchers in maintaining a strong stand of forages regardless of the forage variety or grazing system. Pastures with poor forage stands are more susceptible to erosion, livestock damage, or weed invasion. A thick, healthy pasture is aesthetically pleasing, allows livestock to efficiently graze the forage, and enhances water quality.

Grazing Land Management

Cattle have different nutritional requirements, depending upon the class of animal and general age of the herd. Nutritional considerations include the age and sex of the animal, desired weaning weight, production potential, and the stage of pregnancy. High-quality forage should be available at peak lactation and before breeding season. Production goals must be balanced alongside forage growth to achieve optimum nutrient value from the pasture. Nutritional value is also dependent on maintaining a variety of forages to increase the potential for year round grazing. The intensity and frequency of grazing affects the competition between plant species and affects the diversity of forage plants, forage quality, and the longevity of a forage stand. Desirable forage species can be replaced by weeds or shrubby plants because of poor grazing management, particularly in fenced exclusion areas. To counter these effects, a prescribed grazing system should be implemented to maintain the desired forages and enhance productivity.

An effective grazing-management system ensures that forage use does not exceed the production limitations of the forage. Prescribed grazing systems are used to accomplish this goal and may be used to control the forage, the animals, or both. Successful implementation of any grazing system requires periodic monitoring and adjustments of grazing periods to ensure that goals are met. Grazing systems range from ***continuous grazing*** to ***rotational grazing***.

Continuous grazing is the unrestricted access to a pasture by livestock throughout a year or grazing season. Continuous grazing has advantages such as lower input costs and fewer management decisions. However, over time, improper continuous grazing can be a detriment to all forage resources (tame/improved or native) and can lead to natural resource concerns such as soil erosion, degraded water quality, loss of forage stands, and/or increased weed competition.

Rotational grazing systems are fundamental in managing forage production. Rotational grazing is the grazing of two or more subdivisions of pasture in sequence, followed by a rest period for recovery and re-growth. Rotational grazing has advantages such as improved pasture longevity, more timely utilization of forage, conservation of surplus forage, and increased stocking rates. One particularly useful type of rotational grazing is ***flash-grazing***. A well-designed and properly managed flash-grazing system can be an effective tool for controlling woody and noxious plants, decreasing fuel buildups and facilitating nutrient uptake in exclusion areas along watercourse banks or around wetlands.

The sections below address more common issues associated with pesticides. It is important to note that pesticide application events should target designated pest species, follow the label recommendations, and use only the amount necessary to protect forage and livestock. Where feasible, pesticide application may be eliminated completely if adequate biological controls are available.

Integrated Pest Management

Integrated pest management (IPM) is a method of combining proper plant selection, correct cultural practices, the monitoring of pest and environmental conditions, the use of biological controls, and the judicious use of pesticides to manage pest problems. The goal of IPM is to eliminate or largely reduce the amount of pesticide use through beneficial parasites, predators, and pest-resistant plant varieties. Under Florida law (Chapter 482, F.S.), IPM is defined as the following: *...the selection, integration, and implementation of multiple pest control techniques based on predictable economic, ecological, and sociological consequences, making maximum use of naturally occurring pest controls, such as weather, disease agents, and parasitoids, using various biological, physical, chemical, and habitat modification methods of control, and using artificial controls only as required to keep particular pests from surpassing intolerable population levels predetermined from an accurate assessment of the pest damage potential and the ecological, sociological, and economic cost of other control measures.*

The basic steps of an IPM program are as follows:

- Identify key pests.
- Determine each pest's life cycle, and know which life stage to target (for an insect pest, whether it is an egg, larva/nymph, pupa, or adult).
- Use cultural, mechanical, or physical methods to prevent problems from occurring; reduce pest habitat; or promote biological control.
- Decide which pest management practice is appropriate, and carry out corrective actions. Direct the control where the pest lives or feeds. Use properly timed preventive chemical applications only when they are likely to control the target pest effectively, while minimizing the economic and environmental costs.
- Determine whether the corrective actions actually reduced or prevented pest populations, were economical, and minimized risks. Record and use this information when making similar decisions in the future.

Pesticide Selection

Pesticides in cow/calf operations should be used only when necessary. Along with problems resulting from normal pesticide use, wastes can be produced from spills at mixing areas, in the field, or from the washing of application equipment.

Pesticide recommendations change frequently. Registrations may be canceled or added at any time. Recommended rates or products that were valid at the start of the growing season may change. Check with your local extension agent for the most recent recommendations, or access the UF-IFAS computer-based Electronic Data Information Source (EDIS) at: http://edis.ifas.ufl.edu/. Base pesticide selection on characteristics such as solubility, toxicity, degradation, and adsorption, considering site-specific characteristics such as soil, geology, depth to water table, proximity to surface water, topography, and climate, so that the potential for pollution of surface and ground water is minimized. Consider whether the proposed pesticide application will have an effect on any beneficial organism(s) that may be present. If so, consider using pesticides that have the least effect on beneficial organisms, as this may allow longer periods between treatments or eliminate the need for re-treatment.

Pesticide Calibration

Waste reduction starts with applying the precise amount of pesticide to targeted pests. To do this, pesticide application equipment must be properly calibrated. Applying too low a rate may be ineffective and promote resistance. Applying too high a rate may harm the forage or the animals, in addition to costing more money for materials. Application rates must be in accordance with the label in order to prevent contamination to the environment. Controlling application rates and calibrating pesticide equipment reduces the potential for pollutant loading to ground and surface waters.

Calibrating should be done with clean water and take place away from wells, sinkholes, or waterbodies. Remember also to calibrate sprayers every time a nozzle is replaced, and to compensate periodically for wear in pumps, nozzles, and metering systems. Proper calibration of equipment will aid in making applications more efficient and save money

on chemical and labor costs.

Application rates are related to the formulation of the pesticide and to the type of equipment used. Pesticides can be applied with hydraulic, tractor-mounted, pull-type, pick-up mounted, or self-propelled sprayers, or spot applied by back-pack or hand-spraying. It is important to follow the manufacturer's recommendations to determine the correct application rate.

Pesticide Mixing and Application

If applying restricted-use pesticides, the applicator must be fully trained and licensed in accordance with Chapter 5E-9.024, Florida Administrative Code, or must hire someone who is appropriately certified. Applicators must read and follow all label directions and the directions on the Material Safety Data Sheets.

Avoid mixing pesticides and loading or rinsing sprayers immediately adjacent to wells or waterbodies, since spills in these areas can easily contaminate water supplies. If the ranch does not have a permanent or temporary mixing and loading facility, use nurse tanks and mix at random sites to prevent a buildup of contamination. If this is not possible, run a long hose (100-200 feet) away and preferably downhill from the supply well to the mix-and-load area and protect the soil from accidental spills. Install anti-siphon devices or ensure that there is an air gap between the hose and the tank when sprayers are filled.

Other pesticide application strategies include:

- Using erosion control practices that minimize soil loss and runoff, thereby reducing the movement of ***adsorbed*** pesticides to surface waters.
- Minimizing field applications of pesticides just prior to periods of anticipated heavy or sustained rainfall to prevent surface water contamination or accelerated leaching to ground water and ineffective control of target organisms.
- Using IPM practices, including cultural, mechanical, biological, and chemical methods.
- Evaluating the effects of the seasonal water budget on potential pesticide loss to surface or ground water and selecting an application method that reduces the potential for runoff or leaching.

Other Important Pesticide Information

There are many other important issues that involve pesticide use. For additional information, refer to *Best Management Practices for Agrichemicals and Farm Equipment Maintenance* which can be accessed online at: http://www.floridaagwater-policy.com/BestManagementPractices.html

Pharmaceuticals

The use and misuse of pharmaceuticals, such as antibiotics and hormones, can have a negative impact on water quality. A recent study found sulfathiazole in a high percentage of samples downstream of cattle and swine sites; however, these were concentrated animal operations and not pasture-based operations. This is an emerging issue of national importance as sampling has revealed detectable amounts of antibiotics, hormones, sterols and other substances in surface waters from various sources. Because of this, it is very important to use these products responsibly. Follow all state and federal regulations and properly dispose of spent needles, expired or unused pharmaceuticals, and pharmaceutical containers.

Proper disposal of spent needles, referred to as "sharps," is regulated by EPA. These regulations require that needles are disposed of in a biomedical container designed for collection of sharps. Spent needles should be collected in these containers to avoid accidental needle sticks of farm workers or animals. Local veterinary offices should be able to provide these containers. Many county solid waste departments will take the sharps containers and properly dispose of them for a small fee, and some counties provide this service for free. Contact the local solid waste office for more information. Operators should check with their county extension office in the event that local ordinances may apply.

The proper disposal of unused pharmaceuticals is necessary for environmental, livestock, and human health. Expired medications can often be returned to the supplier/manufacturer or some veterinary offices. Check with your local municipality to see if they will accept pharmaceuticals during household hazardous waste disposal events.

Ranch waste management includes the proper storage and disposal of products and by-products from cow/calf operations. These products generally include pesticide, petroleum, and other synthetic materials. Source control, including careful monitoring of all imported materials, helps to minimize pollutants in the waste stream. Waste management is very important because it reduces wastes, lowers the risk of an accidental discharge of pollutants, and saves money. This section is an introduction to managing a typical ranch waste stream.

Pesticide Waste

Reduce pesticide waste by minimizing the generation of wastewater from cleaning application equipment after use. Rinsing the sprayer is necessary only when changing from one pesticide to another, when moving to a new application site and the pesticide last used in the sprayer is not registered for the new site, or when cleaning the sprayer for storage. This practice will reduce the amount of ***rinsate***.

Rinsate can be collected and used in accordance with the label during the next application. Rinsate should be sprayed on fields where the pesticide was originally applied, as long as the maximum application rate for that pesticide is not exceeded. Another option is to store the rinsate and use it to dilute the same pesticide for the next application. Do not dump rinsate on the ground or discharge it to surface waters or septic systems.

Pesticide spills should be cleaned up immediately following an incident. Barriers and absorbent materials are generally used to contain spills. Soil affected by a spill should be collected and stored in a special container, and reused at or below label rates during subsequent applications. Spill clean-up equipment and trained emergency responders should be readily available to handle spill incidents. The quick containment and clean-up of pesticide spills will minimize impacts to the environment and reduce liability should the land be sold.

Synthetic Products Waste

Most of the waste reduction principles described above can be applied when using other synthetic materials, which can include solvents, degreasers, lubricants, paints, and antifreeze. Unnecessary use of synthetic chemicals can result in pollution of the surrounding environment. These products should never be directly poured onto concrete surfaces or soil. Select solvents and degreasers that are non-hazardous to the environment. Compressed air is often a viable alternative to using solvents for cleaning farm equipment.

Most solvents can be reused many times without losing their cleaning properties. If the operation has a shop, consider using a water-based (solvent) reuse system. Used petroleum-based products must be stored in properly marked containers to be recycled or disposed of properly. Properly recycle all waste oil and antifreeze, and let all empty paint cans air dry before disposal.

Keep an inventory of all solvents used and have the Material Safety Data Sheets available nearby should an emergency arise. Remember to **reduce**, **reuse**, and **recycle** all products, as appropriate. This is your best defense against accidentally generating a hazardous waste stream on your ranch.

Gasoline and Diesel Fuel Waste

Ranch waste management must also include the proper management of all petroleum products located onsite, to ensure that ground or surface water is not contaminated. These products typically include unleaded fuel, diesel, motor oil, and heating oil. Very small amounts of these compounds in drinking water may not produce noticeable tastes or smells, but can have serious human health effects. This is why it is important to properly store, contain, and dispense these products.

Proper design and management of fuel-dispensing areas is essential to prevent soil and water contamination. Fuel-dispensing tanks and pumps should be located as far as possible from surface water and drinking water wells. Petroleum storage tanks installed above ground are regulated by FDEP (Rule 62-762, F.A.C.), and must be on an impervious pad with secondary containment to contain accidental spills or leaks. These facilities should be roofed to keep out rainfall and reduce stormwater runoff. All structures over fuel tanks should be designed to meet local building and fire codes. Build the containment structure so that it is tall rather than wide, in order to reduce rainfall accumulation. Never discharge water from the containment area without first checking for and treating an oil sheen.

Underground petroleum storage tanks are also regulated by FDEP (Rule 62-761, F.A.C.), and must have leak-detection and monitoring devices, cor-

rosion protection, and spill or over-fill prevention devices. These devices will limit the contamination of soil and ground water. Above or underground fuel storage tanks may be subject to a Spill Prevention Control and Countermeasure Plan or an alternative plan that specifies the measures that will be taken to mitigate spills.

Used motor oil and oil filters can be disposed of legally by recycling them. Local auto shops may take recycled oil and oil filters. Drain, puncture, and crush used oil filters and store them in a separate container. For large amounts of used oil, contact a permitted used-oil recycling facility.

Ranchers generally deal with a number of other land uses besides cattle production. In terms of environmental protection, it is important to understand how these land and management practices may affect water quality.

Fire Lines

Construction of fire lines is an essential practice for fire prevention, fire suppression and prescribed burning. However, improperly designed and constructed fire lines can result in excessive erosion and water quality degradation. Extra precautions are necessary when constructing fire lines near wetlands.

Fire lines should be plowed only where necessary. When possible, use existing barriers such as roads, watercourses, and other features, or alternatives to plowed lines, such as harrowing, grass strips, or wet lines. Wet lines are fire lines that are maintained and kept wet to prevent fire from spreading. Fire lines should not be plowed through sensitive areas such as wetlands, unless no other options exist and it can be done without adversely impacting the wetland. Always maintain a minimum plow depth during construction of the fire line. Raise the plow when crossing watercourses to prevent plowing through them. Design and construct fire lines so they do not function as drainage systems. This is particularly important for fire lines that might connect to isolated wetlands. A turnout is a useful feature to stabilize fire lines when erosion and sedimentation are likely. Whenever possible, orient fire lines along natural contours to prevent erosion and gully formation.

Construction of Access Roads

Access roads are a potential source of long-term erosion and sedimentation because of the bare soil associated with the road surface and the need for periodic maintenance. Carefully plan the location and desired drainage features prior to road construction, using soil survey maps, topographic maps, and aerial photographs. Place emphasis on minimizing stream and wetland crossings, and avoid construction during wet conditions. Also, focus on balancing cuts and fills to maximize use of local material and enhance roadbed stability.

To reduce road costs and disturbed surface area, minimize the road width consistent with the anticipated use. For fill road construction, keep shoulders at a gentle slope to minimize erosion and accelerate re-vegetation. Stabilize road banks and critical road segments by using mulch, seed, or other methods to keep the road from washing away and to keep sediment out of streams. Avoid directing ditch flow or road runoff into streams, lakes, or other watercourses to prevent soil erosion and turbidity problems.

Some roads will cross ditches, streams, and other watercourses. These roads will require special consideration and proper planning to prevent culverts from washing out, over-drainage of the site, flooding, or other undesirable effects. The local USDA-NRCS office can assist in the proper design and construction to eliminate or minimize undesirable effects.

Culvert crossings, rock crossings, or ***turnouts*** can be used to enhance long-term stability, reduce maintenance and associated costs, and protect water quality. For example, turnouts, vegetation, or ditch plugs can reduce the volume and velocity of flow. Where practical, all road drainage practices that divert ditch flow or road surface runoff should direct the flow onto vegetated areas where it can be dispersed adequately. Water turnouts can be installed periodically to divert flow away from the road, and onto an adjacent vegetated area for treatment. These areas should be adequate in size and have sufficient ground cover to assimilate runoff. Also, install culverts on roads where there is a need to direct ditch flow from one side to the other, underneath the road surface. Base the size of the culvert on the road ditch size and size of the watershed above the culvert. ***(Note: Activities in wetlands or streams may require a permit, so check with the county, water management district, and USDA-NRCS before proceeding).*** Alternatively, a low-water crossing using filter fabric, rock, or concrete to stabilize the road base may be an alternative to installing cross-drain culverts.

Proper maintenance of access roads is very important. All drainage structures should be checked and maintained periodically, especially following excessive rain events. If signs of sediment or turbid discharges are present, take immediate corrective actions as necessary. Ditches and culverts should be kept free of major obstructions, and ditches should be allowed to re-vegetate as much as possible. Also, stabilize critical segments of roads with seeding or mulching to minimize erosion and sediment movement.

Elevated access roads should not be located within 25 feet of wetlands. Avoid directing ditch flow or road runoff into streams, lakes or other watercourses due to possible erosion and turbidity problems.

Silviculture

Many Florida ranchers have diversified their operations by growing trees as a complementary agricultural land use. Ranchers engaged in forest management should follow the most recent version of the *Silviculture Best Management Practices* manual, which can be obtained online at: http://www.floridaagwaterpolicy.com.

Intermittent Row Cropping

Intermittent row crops, such as watermelons, are periodically grown to renovate pastures or supplement income. To reduce the potential for water quality impacts, select pastures with adequate existing drainage features and minimize alterations of the drainage system. Remember to account for the row crop activities in your nutrient management practices. All permits or exemption determination letters must be acquired prior to constructing new ditches or altering existing ditches and/or drainage features, so consult with the proper authorities before proceeding. Ranchers engaged in growing seasonal row crops should follow the most recent version of the *Water Quality/Quantity Best Management Practices for Florida Vegetable and Agronomic Crops*, which can be obtained online at: http://www.floridaagwaterpolicy.com.

Seasonal Sod Production

Much of the agricultural land in Florida is managed for cattle grazing. Sod production on bahiagrass pasture is generally recognized as a low-intensity agricultural use. When properly managed, this use provides vegetative cover and soil and water benefits. Some ranchers include the harvest of bahiagrass as part of their pasture renovation program. Ranchers engaged in seasonal sod production should follow the most recent version of the *Water Quality/Quantity Best Management Practices for Florida Sod*, which can be obtained online at: http://www.floridaagwaterpolicy.com.

Advanced-Level BMP Needs Assessment

You must complete the Advanced-Level BMP Needs Assessment on the next page to determine which Advanced-Level BMPs are applicable to your operation.

Note: Some of these BMPs may require financial assistance.

ADVANCED-LEVEL BMP NEEDS ASSESSMENT

This tool is to be used in addition to identifying the applicable Level I BMPs for your operation. After answering the questions below, ranchers may be required to address problem areas that require more protection. Your response will determine whether it is necessary to implement additional BMPs (Level II and/or Level III BMPs), and may indicate the need to develop a Conservation Plan for your operation. Based on your score and other onsite risk factors, you may not need to implement the Level II BMPs immediately. The BMP Checklist in Appendix 11 allows ranchers to indicate when they will implement practices.

Scheduling Options for Advanced-Level BMPs: If the Level I BMPs address the resource issues identified by the Needs Assessment, the related Advanced-Level BMPs may not need to be implemented. Therefore, for those Advanced-Level BMPs that you have determined may not be needed because the level one BMPs may adequately address the problem, you may schedule implementation to occur one year after the implementation date for the associated Level I BMPs. If, at the time the Advanced-Level BMPs are scheduled, the Level I BMPs have adequately addressed the resource issue(s) and you decide not to implement the Advanced-Level BMPs, you must notify FDACS which Advanced-Level BMPs are no longer applicable. However, where it is clear that the severity of the problem warrants it, implement the Advanced-Level BMPs as soon as practicable.

Scoring

- Circle the number next to each statement that applies to your operation. Add the numbers within each lettered subsection and place that number in the space labeled "Score." Add the scores together and place that number in the space labeled "Total Score." Divide the total score by the number of sections to get your average score for the section and place that number in the space labeled "Average Score."
- For the Level II BMP assessment questions, if your average score in a section is 2 or greater, implement the corresponding Level II BMPs.
- If your average score is greater than 4 in two or more sections, seek technical assistance to develop a *Resource Management System-Level* **Conservation Plan*** for the entire ranch.
- If your average score for the section on Grade-Stabilization Structures (Level III) is 3 or greater, seek technical assistance to develop a **Conservation Plan*** specific to grade stabilization, regardless of your scores in the Level II Needs Assessment.

* *Note: A Conservation Plan must contain all BMPs in this manual that are applicable to your operation. Depending upon which BMPs are required, it may be in your best economic interest to develop a Resource Management System-Level Conservation Plan for your ranch in order to be eligible for government cost-share, even if your scores do not dictate that you must have a Conservation Plan.*

Level II Needs Assessment

Comprehensive Prescribed Grazing

A. Describe your operation's stocking rates:

- **0** Stocking rates are at or below the forage availability levels or Conservation Plan recommendations.
- **1** Stocking rates are above forage availability or Conservation Plan levels only during the growing season and forage is adequate.
- **4** Stocking rates are above forage availability or Conservation Plan recommended levels for the entire year and forage is short.

Score: _____

B. Describe your operation's grazing system:

- **0** Rotational or prescribed grazing is practiced on 100% of pastures.
- **1** Rotational or prescribed grazing is practiced on 50% of pastures.
- **1** Continuous grazing is practiced and forage is maintained at appropriate heights.
- **2** Continuous grazing is practiced and forage is below minimum heights only during the dry season.
- **4** Continuous grazing is practiced and forage is constantly short.
- **5** Continuous grazing is practiced and several areas in the pasture are denuded of vegetation.

Score: _____

Total Score: _____
(Score A + Score B)

Average Score: _____
(Total Divided by 2)

If your Average Score is 2 or greater, implement the Level II BMPs located in Section 3.2 on page 34.

Check Dams and Sediment Traps

A. Under average hydrologic conditions, have you observed a sand bar at the confluence of your drainage ditches/canals, or at a downstream lake or stream?

- 0 Never
- 1 There is a small sandbar(s) that I can see at really low water.
- 2 There is a small sandbar(s) that I can usually see.
- 4 There is a large sandbar(s) that causes some flow diversion.
- 5 There is a sandbar(s) that I have to clean out regularly.

Score:_____

B. Have you observed ***turbid*** water from high-intensity areas following a storm event?

- 0 Never
- 1 Only following very large storms (more than 2 inches of rain)
- 3 Usually some turbidity following minor storms (more than 1 inch of rain)
- 4 Usually some turbidity (plume of sediment) every time it rains
- 5 Water is always turbid, even when it does not rain.

Score: _____

Total Score: _____
(Score A + Score B)

Average Score: _____
(Total Divided by 2)

If your Average Score is 2 or greater, implement the Level II BMPs located in Sections 4.3 or 4.4 on page 36.

Livestock Use Exclusion

A. Is there soil erosion or denuded areas, due to livestock access, along watercourses that are within 500 feet of waters of the state?

- 0 There is no soil erosion resulting from denuded areas along the banks of these areas.
- 1 Less than 10% of the banks have erosion resulting from denuded areas.
- 3 10% to 20% of the banks have erosion or denuded areas.
- 4 More than 20% of the banks have erosion resulting from denuded areas.
- 5 Almost all banks have erosion resulting from denuded areas.

Score: _____

B. Describe the condition of the perennial stream or watercourse banks that livestock have access to:

- 0 Livestock do not have access to them.
- 1 Banks have a constant vegetative cover year round.
- 2 There are a few areas on banks denuded of vegetation for less than 30 days with no ***rill erosion***.
- 3 There are a few areas on banks that are constantly denuded of vegetation with some rill erosion.
- 5 The majority of banks are constantly denuded of vegetation and substantial rill erosion is present.

Score: _____

Total Score: _____
(Score A + Score B)

Average Score: _____
(Total Divided by 2)

If your Average Score is 2 or greater, implement the Level II BMPs located in Section 7.3 on page 44.

High-intensity Area Design Retrofits

A. Describe the location of cowpens and their proximity to perennial streams or watercourses:

- 0 Cowpens are greater than 200 feet from perennial streams or watercourses and appropriate measures are taken to control runoff.
- 1 Cowpens are located within 200 feet of perennial streams or watercourses and appropriate measures are taken to control runoff.
- 5 Cowpens are located within 200 feet of perennial streams or watercourses and minimal or no measures are taken to control runoff.

Score: _____

B. If you periodically keep cattle in concentrated, denuded areas within 500 feet of perennial streams or watercourses, do you:

- 0 Prevent all runoff from the area from reaching perennial streams or watercourses
- 1 Route all runoff through filter strips or equivalent treatment areas before it reaches perennial streams or watercourses

2 Route 75% of runoff through filter strips or equivalent treatment areas before it reaches perennial streams or watercourses

3 Route 50% of runoff through filter strips or equivalent treatment areas before it reaches perennial streams or watercourses

4 Route 25% of runoff through filter strips or equivalent treatment areas before it reaches perennial streams or watercourses

5 Allow uncontrolled runoff from the concentrated area directly to perennial streams or watercourses

Score: _____

Total Score: _____
(Score A + Score B)

Average Score: ____
(Total Divided by 2)

If your Average Score is 2 or greater, implement the Level II BMPs located in Section 8.2 on page 45.

Reminder: If your average score is greater than 4 in two or more sections (Level II BMPs), seek technical assistance to develop a Resource Management System-Level Conservation Plan for the entire ranch.

Level III Needs Assessment

Grade Stabilization Structures

A. Is there soil erosion around culverts or other water control structures in canals or ditches?

0 There is no erosion around any water control structures.

1 Less than 10% of culverts have visible erosion around them.

2 20% to 30% of culverts have visible erosion around them.

4 30% to 50% of culverts have visible erosion around them.

5 More than 50% of culverts have visible erosion around them.

Score: _____

B. Under normal wet-season weather conditions, have you ever had a road or culvert "blow out" due to high water levels?

0 Never

1 Once every 5 years

2 Once every 3 years

4 About once every year

5 A few culverts each year

Score: _____

C. Have you observed turbid water leaving your property following a storm event?

0 Never

1 Only following very large storms (more than 2 inches of rain)

3 Usually some turbidity following minor storms (less than 1 inch of rain)

4 Usually some turbidity (plume of sediment) every time it rains

5 Water is always turbid, even when it does not rain

Score: _____

D. Under average weather conditions, have you observed a sand bar at the confluence of your drainage ditches/canals, or at a downstream lake or stream?

0 Never

1 There is a small sandbar(s) that I can see at really low water

3 There is a small sandbar(s) that I can usually see

4 There is a large sandbar(s) that causes some flow diversion

5 There is a sandbar(s) that I have to clean out regularly

Score: _____

Total Score: _____
(Scores A+B+C+D)

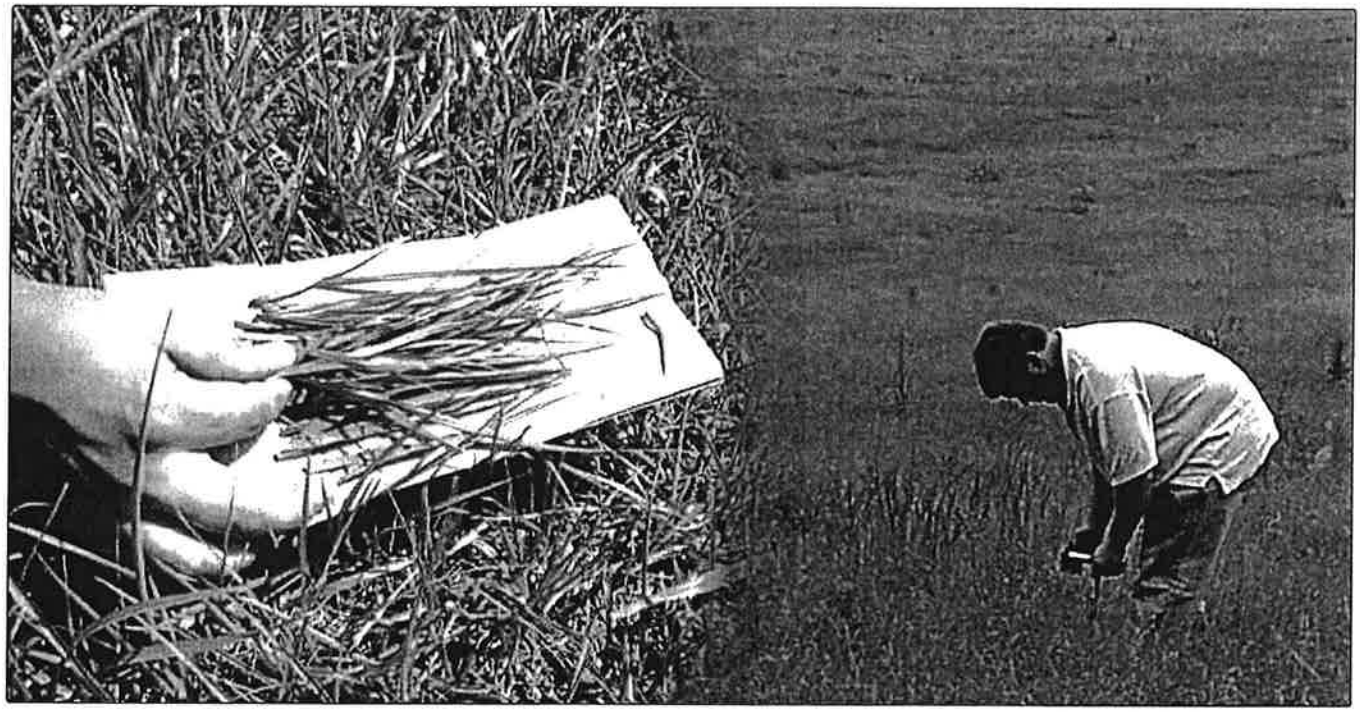
Average Score: ____
(Total Divided by 4)

Reminder: If your Average Score for the Level III Needs Assessment *(Grade Stabilization Structures)* is 3 or greater, seek technical assistance to develop a Conservation Plan for this practice (Grade Stabilization Structure, NRCS Code 410), regardless of your scores in the other sections. The plan must contain the BMPs listed in section 4.5 of this manual.

Best Management Practices

Note: All BMPs that follow are Level I, Level II and Level III BMPs.

Reminder: You must complete the Advanced-Level BMP Needs Assessment on page 24 to determine which Advanced-Level BMPs are applicable to your operation.



1.0 NUTRIENT MANAGEMENT

Nutrient management for livestock operations requires a systematic management approach that includes several different, yet related, practices. It is arguably the most important category of BMPs in this manual. It includes managing plant nutrients for optimum forage yields and managing feeding practices to deliver proper nutrition for the animal. It also includes proper animal waste management to protect waterbodies. Nutrient management considers the amount, source, form, placement, and timing of fertilizer application materials. All potential sources of plant nutrients, such as organic and synthetic fertilizer inputs, as well as nutrient reserves within the soil, are identified, inventoried, and addressed.

One of the first steps in developing a sound fertilization management program involves a basic knowledge of soils. Many of Florida's soils naturally contain the required amount of phosphorus, assuming the pH levels are within the range to make this nutrient available. As such, soil testing and analysis is considered to be a cornerstone of any nutrient management program. For most ranches, soil testing should be conducted at a minimum of once every three to five years, or whenever phosphorous fertilizer is used. Nitrogen, which is not analyzed as part of a routine soil test, is a critically important macronutrient for vegetative growth. Plant tissue testing, which can detect plant nitrogen levels, can be used in conjunction with soil testing to diagnose the overall effectiveness of a fertilization program. Tissue testing is especially useful to help a grower fine-tune their fertilizer application program.

Proper animal nutrition and feedstock management for environmental protection must consider the type, blend, and amount of feed to obtain maximum nutrition and animal health. Moreover, supplemental feed, its content and proximity to a waterbody, must also be considered, as it can secondarily affect nonpoint source pollution. In addition, animal waste management is a final consideration in developing an overall nutrient management budget. The principle goal of this BMP is to minimize nutrient loss to the environment because the offsite transport of nutrients to surface waters from various sources has caused most of the water quality impairment issues in Florida's watersheds.

Working Definition:

Nutrient management consists of fertilizer management, animal nutrition, feedstock management, and animal waste management.

1.1 Fertilizer Management

✓ 1. Use a soil test from a lab using the Mehlich-1 or another method approved by the UF-IFAS Extension Soils Testing Laboratory to deter-

mine P fertilization rate. Analyze the need for tissue testing based on the soil test results.

√ 2. If planting legumes or fertilizing with manure or wastewater residuals, use the Nutrient Budget Worksheet in Appendix 5 to determine whether supplemental fertilizer is needed.

√ 3. Follow UF-IFAS-recommended rates in SL-129 for the particular forage. The criteria to determine phosphorus application on established bahiagrass pastures are: a tissue analysis < 0.15 percent phosphorus, soil pH ≥ 5.5, and soil analysis is *very low (less than 10 ppm)* or *low (10 to 15 ppm)* for phosphorus. If using organic materials or manure, adjust the rate of supplemental fertilizer materials based on the product's nutrient content analysis.

√ 4. Time fertilizer applications with plant growth to maximize nutrient uptake and to minimize leaching and runoff.

√ 5. Prevent spreading fertilizer material in streams, sinkholes, or wetlands by maintaining at least a 50 foot setback from these features.

■ Maintain records of fertilizer application. Records should include soil test analysis, date of application, fertilizer formulation, application rate, location and acreage, and worksheet results.

1.2 Residuals or Biosolids Application

√ 1. Abide by all applicable regulations in FDEP Rule 62-640, F.A.C., for residuals application, and/or Florida Department of Health (FDOH) Rule 64E-6, F.A.C., for ***septage*** application.

√ 2. Request the calcium carbonate equivalency and nutrient analysis of the product, expressed as a dry weight, for residuals or septage treated by lime stabilization. Use this analysis to determine what amount to apply without adversely affecting soil pH. This is especially important when applying the product to bahia grass, since it is an "acid loving" plant.

√ 3. Obtain a copy of the FDEP Agricultural Use Plan from the hauler/applicator when applying residuals or septage, and abide by all grazing restriction and setback requirements.

1.3 Animal Nutrition and Feedstock

√ 1. If using a high amount of supplemental feed, manage your operation so that nutrients in feed will not lead to high rates of nutrient loads from waste. Keep in mind that livestock generally excrete 60 to 85% of the phosphorus fed to them.

√ 2. Locate any confined feeding areas away from watercourses, wetlands, sinkholes or excessively sloped terrain. Ensure that filter strips or other conservation buffers are maintained between feeding areas and adjacent features.

√ 3. Locate supplemental feeding and mineral stations at least 100 feet away from watercourses, streams, wetlands, wells or sinkholes.

1.4 Animal Waste Management

√ 1. Manage livestock distribution to reduce any concentrated accumulation of wastes that could lead to nutrients contaminating ground water or surface waters.

√ 2. Use onsite concentrated manure sources, if available, as a fertilizer supplement in accordance with soil test results. This will recycle nutrients and reduce the need for inorganic fertilizers.

Operation and Maintenance:

- Maintain and calibrate fertilizer application equipment properly.
- Do not mix or load fertilizers near environmentally sensitive areas.
- Store fertilizers properly and in a safe location.

References:

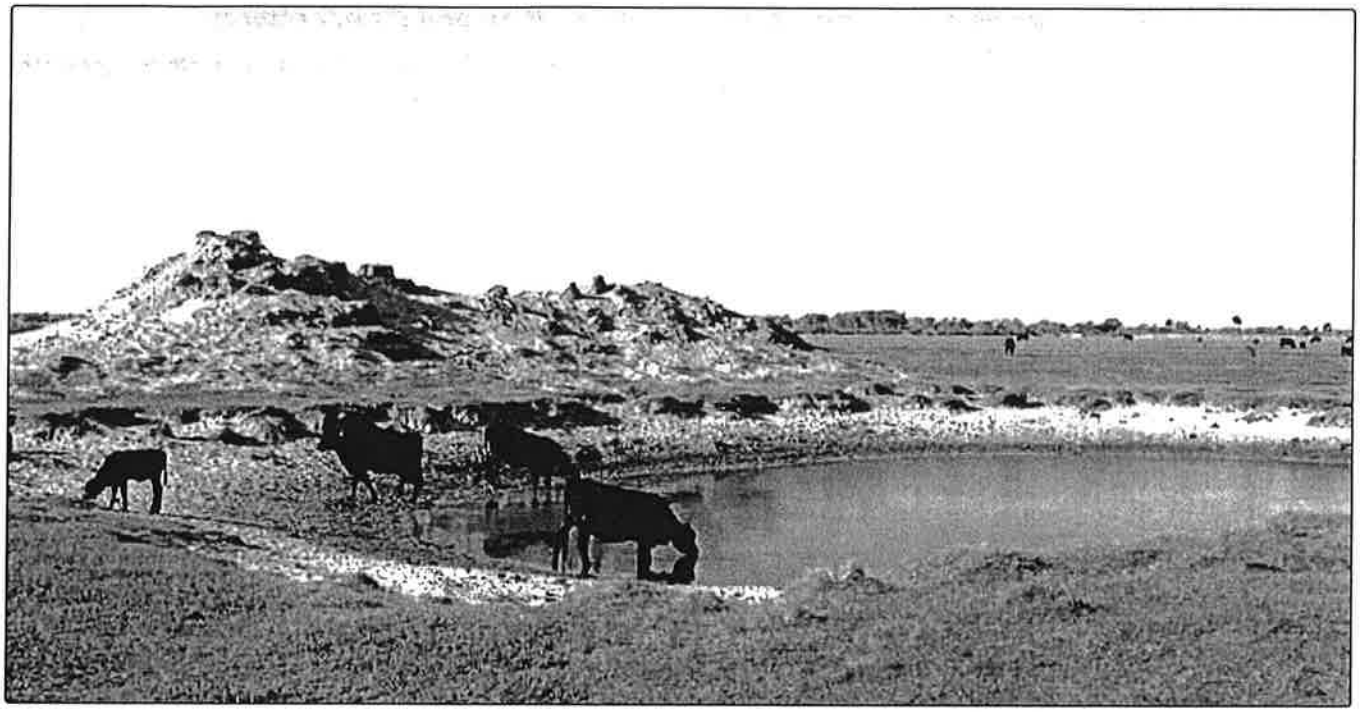
(1) USDA-NRCS Nutrient Management, Code 590, FOTG-Section IV, http://www.nrcs.usda.gov/technical/efotg/

(2) Beef Cattle Production Best Management Practices, LSU Ag Center, http://www.lsuagcenter.com/en/crops_livestock/livestock/beef_cattle/production_management/Beef+Cattle+Production+Best+Management+Practices.htm

(3) Standardized Fertilization Recommendations for Agronomic Crops, UF-IFAS Fact Sheet SL-129, http://edis.ifas.ufl.edu/SS163

(4) USDA-NRCS Waste Utilization, Code 633, FOTG-Section IV, http://www.nrcs.usda.gov/technical/efotg/

(5) USDA-NRCS Feed Management, Code 592, FOTG-Section IV, http://www.nrcs.usda.gov/technical/efotg/



2.0 ALTERNATIVE CATTLE WATER SOURCES

Beef cattle, like humans, need a reliable source of freshwater in order to survive. Water requirements are influenced by several factors, including rate of gain, pregnancy, lactation, activity, type of diet, feed intake, and air temperature. These requirements are generally met by water originating from wells, surface waters, upland ponds, and natural isolated wetlands, as well as moisture found in feed. Limiting water intake can depress animal performance more quickly than any other nutrient-related deficiency. Domesticated animals can live about 60 days without food, but only seven days without water.

On average, a beef cow's estimated daily intake of freshwater is between 11 and 15 gallons per day, depending upon the time of year and whether lactating cows are present. Hot weather can nearly double the daily water intake requirements, compared to winter months. Lactation can also increase the water intake needs significantly, since water intake during the latter stages of pregnancy can be 30% to 50% higher than normal.

Nonpoint source pollution problems on cattle operations can occur in the vicinity of watering sites and supplemental feed and/or loafing areas, where animals tend to congregate most often. Using stagnant sources of surface water alone can also pose health hazards to livestock. Cattle liver fluke and Leptospirosis are waterborne diseases that can infect other members of the herd. Therefore, providing fresh water and strategically locating supplemental feed facilities away from perennial streams and major discharge canals will help keep livestock out of critical watercourses. Artificial shade structures may also be used to encourage the use of upland sites for shading and loafing. These planning considerations are essential components to avert water quality problems related to livestock distribution. This is especially important when stocking rates are increased and pasture rest periods are minimized. Ultimately, careful planning and site-specific decisions involving alternative cattle water sources can have a significant role in protecting water quality and can preclude the need to install costly exclusion fencing adjacent to natural watercourses.

Working Definition:

Alternative cattle water sources are strategically located freshwater sources such as upland excavated ponds, artesian wells, watering troughs, and/or other surface water sources that provide adequate drinking water away from sensitive water resources.

2.1 Water Needs Inventory

√ 1. Inventory existing water sources and average herd size to ascertain the estimated water use (daily intake of water), to ensure that a 7-day supply of water is always available in herd management areas.

√ 2. Review water management district records on regional well water quality data, particularly with regard to total dissolved solids and sulfates, as this may affect animal health.

2.2 Upland Pond Construction Criteria

√ 1. Construct new ponds by embankment or excavation, keeping the pond size between ¼ and 2 acres, and locating it at least 50 feet away from wetlands, or further based on water management district requirements. Keep side slopes no steeper than a one-to-one horizontal to vertical ratio.

√ 2. Construct cattle access areas with a minimum slope of three-to-one horizontal to vertical ratio.

2.3 Other Watering Sources

√ 1. Locate watering troughs and associated shade facilities to keep cattle away from perennial streams or watercourses as much as possible.

√ 2. Construct troughs or tanks with a stable base to reduce health hazards to livestock.

√ 3. For piped withdrawals of non-regulated surface water sources, extend pipe at least 100 feet landward from the waterbody.

Operation and Maintenance:

- Maintain all wells, troughs, and other associated structures in good working order.
- If you suspect the animals are affected by a waterborne illness, carefully monitor animal health and conduct water quality sampling and analysis.
- Clean watering troughs frequently with dilute bleach.

References:

(1) USDA-NRCS Pond, Code 378; Watering Facility, Code 614; Pipeline Code, 516; and Livestock Shade Structure, Code 717, FOTG-Section IV, http://www.nrcs.usda.gov/technical/efotg

(2) Beef Cattle Production Best Management Practices, LSU Ag Center, http://www.lsuagcenter.com/en/crops_livestock/livestock/beef_cattle/production_management/Beef+Cattle+Production+Best+Management+Practices.htm

(3) Livestock and Water, North Dakota State University, AS-954, http://www.ag.ndsu.edu/pubs/ansci/livestoc/as954w.htm

(4) Water for Livestock Using Solar Generated Electricity, UF-IFAS Fact Sheet EES-97, http://www.p2pays.org/ref%5C08/07682.pdf

3.0 PRESCRIBED GRAZING

Before land was deeded to private ownership, historical ranching in Florida consisted of native range grazing practices. The knowledge and wisdom gained by early cowboys driving cattle over a vast expanse is still evident today. Some operations still practice the age-old art of native range grazing, whereby natural grasslands, scrublands, and savannas provide adequate forage for low-density stocking rates. In these operations, livestock are normally grazed at a rate of one ***animal unit*** to more than six acres, depending on the condition of the range site. Given today's financial constraints, grazing systems generally fall under the ***prescribed grazing*** category. All grazing systems have advantages and disadvantages. The requirements of a grazing system and the goals of the ranch manager should be matched to provide environmentally and economically sound options.

The potential for non-point source pollution from rangeland livestock depends primarily on stocking rate, length of grazing period, season of use, manure deposition sites and location. Normally, well-managed pastures and rangeland present little to no water quality problems from cattle excrement alone. In this scenario, most of the available phosphorus from excrement decomposition is re-used in the system via the phosphorus cycle. Problems may occur in cases where animals congregate for feeding, watering, and resting in close proximity to surface waters; however, most of the problems associated with high phosphorus discharge are generally linked to soil erosion and sediment transport stemming from these activities. To counter this, pasture and rangeland water quality can be effectively managed by proper distribution of cattle, along with the strategic placement of supplemental feeding, mineral stations, and alternative water sources away from surface waters. Installing fences and subdividing large pastures to exert more control over the frequency and timing of grazing can also improve grazing distribution. Poor grazing management will lead to nutrient losses and invasion of undesirable plant species. Good planning and management on pastures, using rotational grazing principles, can effectively sustain the herd and prevent pollution problems.

Working Definition:

Prescribed grazing is managing the harvest of vegetation with grazing and/or browsing animals.

3.1 Prescribed Grazing Guidelines

√ 1. Manage forage grazing of pastures or ***paddocks*** based on established stubble heights to maintain plant vigor, prevent soil erosion, and maintain soil moisture levels. Base prescribed grazing schedules on the rate of plant growth, available forage and

utilization, not on calendar dates. Carefully monitor available forage to ensure it is adequate to meet animal demand.

√ 2. Use rotational grazing or other measures to give concentrated areas time for re-growth between grazing periods, and to achieve a more even manure distribution across the pasture.

√ 3. Incorporate a flash grazing system in established wetland exclusion areas to manage the existing vegetation without degrading the resource.

■ Maintain grazing records by pasture, and develop a contingency plan for floods and droughts in order to adjust the required grazing demands.

Note: *Do the Advanced-Level BMP Needs Assessment to determine whether to implement the BMPs below.*

3.2 Level II - Comprehensive Prescribed Grazing

√ 1. Initiate grazing only after the predominant forages have reached acceptable plant height(s), and rotate or remove livestock when grazing results in minimum leaf length(s) per NRCS recommendations in Code 528. Plan the rest periods for predominant forages based on the season of the year.

√ 2. Incorporate cross-fencing to subdivide larger pastures so that rotational grazing is more effective.

■ Keep records on stocking numbers, grazing days, and length of rest periods for each pasture or field.

Operation and Maintenance:

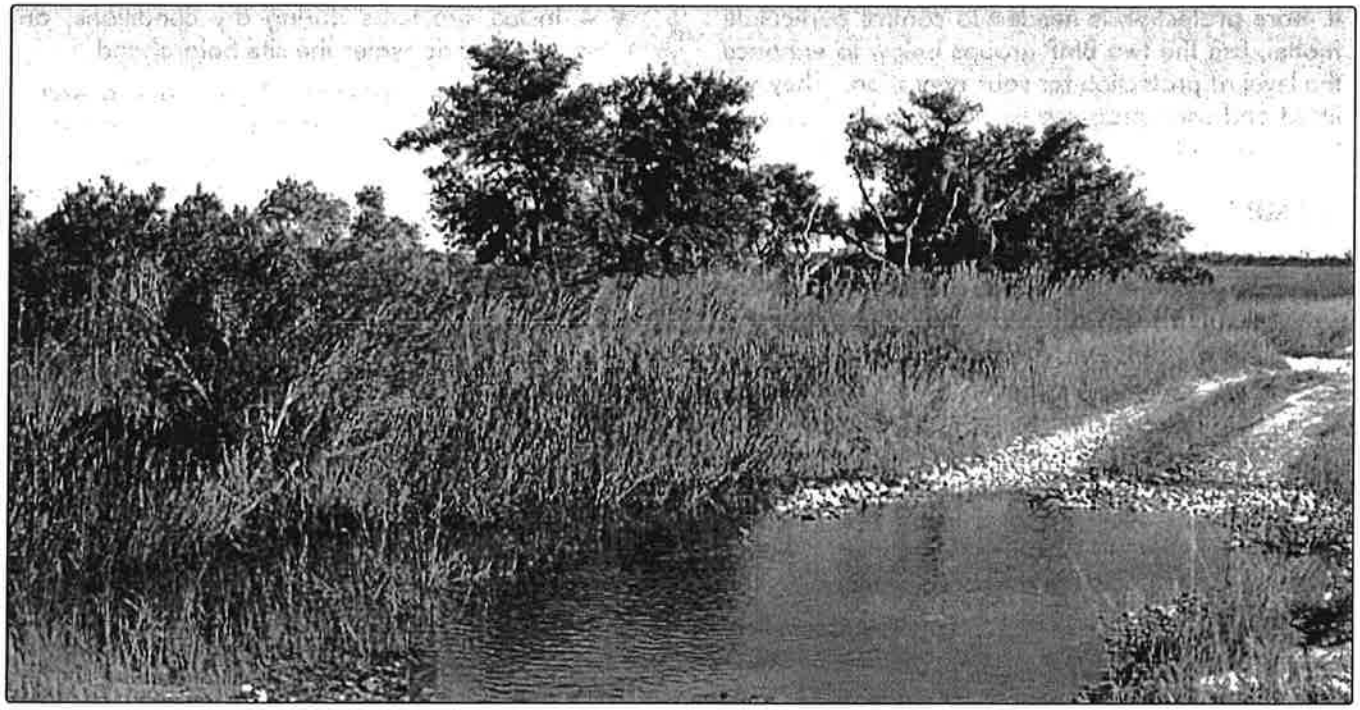
- Maintain all fences, wells, troughs and other associated structures in good working order.
- Review and revise grazing management plans as needed, or at least annually.

References:

(1) USDA-NRCS Prescribed Grazing, Code 528; Pasture and Hayland Planting, Code 512; Range Planting, Code 550; FOTG-Section IV, http://www.nrcs.usda.gov/technical/efotg

(2) Beef Cattle Production Best Management Practices, LSU Ag Center, www.lsuagcenter.com/en/crops_livestock/livestock/beef_cattle/production_management/Beef+Cattle+Production+Best+Management+Practices.htm

(3) National Management Measures for the Control of Nonpoint Pollution from Agriculture, EPA Document No. 841B03004, http://www.epa.gov/nps/agmm/



4.0 SEDIMENT AND EROSION CONTROL MEASURES

Some farm practices may inadvertently affect the quality of water discharged offsite. Removal of natural vegetation and topsoil increases the potential for soil erosion, which can change runoff characteristics and result in loss of soil and increased turbidity and sedimentation in waterbodies. Sediments along with ***sorbed*** nutrients and pesticides may be carried in runoff, and can negatively affect adjacent surface waters.

The first step in preventing erosion and sediment transport is to limit the amount of land that is cleared of vegetation. When clearing vegetation to develop new pastures, re-vegetation should occur as quickly as possible to limit erosion. Whenever possible, land clearing activities should be planned and conducted during the dry season. The second step in preventing erosion and sediment transport involves the use of BMPs, as discussed below. However, keep in mind that installing some of these may require technical assistance.

Whenever ranchers are conducting activities that create a significant risk to water resources, they should use the most appropriate BMPs based on site-specific conditions. The use of more common erosion-control practices (e.g., vegetation, mulch, land leveling) and sediment control devices (e.g., silt fences, check dams, sediment traps) should be employed in progression. Consider using the more passive erosion control measures first, in order to prevent sediment transport. If more protection is needed, sediment control devices can be used next to capture sediment-laden water and allow enough time for larger particles to settle out. By following these practices, ranchers can prevent erosion and sedimentation impacts, which will not only protect the water resources, but also will ensure long-term productivity of agricultural farmland.

Working Definition:

Sediment and erosion control measures are permanent or temporary practices to prevent sediment loss from fields, ***attenuate*** water flow, and/or trap and collect debris and sediments in runoff water.

4.1 General Erosion and Sediment Control Measures

√ 1. Minimize the amount of vegetation that is cleared when doing construction work.

√ 2. Perform land clearing during the dry season.

√ 3. Vegetate new road banks and other disturbed areas within 14 days of construction. As an alternative to seeding, consider using bermudagrass plugs, sprigs, or sod.

√ 4. Use rock crossings when constructing roads across streams and creeks that have low-flow conditions.

√ 5. Manage livestock to prevent significant erosive trails from developing.

If more protection is needed to control particulate matter, use the two BMP groups below to enhance the level of protection for your operation. They are listed and used progressively (least to most protective) to provide an increasing level of protection.

4.2 Silt Fences

√ 1. Use silt fences when protection is needed for 3 months or less. They can intercept and detain small amounts of sediment and can decrease the velocity of water under sheet-flow conditions. Use them during construction activities and install them at property boundary lines when a discrete point of discharge exists. Silt fences must be properly trenched in, backfilled and compacted in accordance with the Florida Stormwater, Erosion, and Sediment Control Inspector's Manual referenced below.

Note: *Do the Advanced-Level BMP Needs Assessment to determine whether to implement the BMPs below.*

4.3 LEVEL II - Check Dams

√ 1. Install check dams in drainage ditches that have defined flow and experience recurring sedimentation problems. Install them downstream from the disturbed area, perpendicular to the direction of flow. These devices can be created using a variety of materials such as rock, rip rap, or sand bags. Space check dams so that the bottom of the uphill dam is the same height as the top of the downstream dam, or implement BMP 4.4 below.

4.4 LEVEL II - Sediment Traps

√ 1. Install sediment traps within canals or near cowpens when conditions warrant. Clean out traps periodically, as sediment will accumulate.

√ 2. Maintain or replace associated flashboard riser water control structure(s) when a drainage outlet exists, and you have experienced significant recurring erosion problems.

4.5 LEVEL III – Grade Stabilization Structures

√ 1. Remove all vegetative debris and other objectionable material so that it will not interfere with the construction or proper functioning of the grade stabilization structure.

√ 2. Vegetate disturbed areas within 14 days of construction. As an alternative to seeding, use plugs or sprigs for quick cover.

√ 3. Fence the area around the structure to exclude livestock, which can cause erosion and sedimentation problems at the structure.

√ 4. Install structures during dry conditions, and properly de-water the site beforehand.

√ 5. Place fill in horizontal layers, not to exceed four inches in thickness, and compact the fill. Spread or dispose excess fill material in a manner not to interfere with the functioning of the structure.

√ 6. Make provisions to prevent damage from overtopping the structure, and to divert excess flows away from the structure. On structures with drainage areas of 3 acres or less, overtopping of the structure is permitted only if damage will be minor.

√ 7. On pipe island-type or side-inlet drainage structures where the effective height is less than 10 feet and the vertical drop is less than 10 feet from natural ground to normal water level, ensure that earth embankments at or around the structures have side slopes no steeper than 2 horizontal to 1 vertical.

√ 8. Contact USDA-NRCS or FDACS for technical assistance and/or structure design guidance.

Operation and Maintenance:

- Remove any sediment deposits on screens when they reach one half the height of the barrier.
- Keep heavy equipment off of newly vegetated areas until they are established.
- Consider reusing sediment basin water for routine irrigation needs, so long as water volumes and quality warrant.

References:

(1) USDA-NRCS Sediment Basin, Code 350; Fence, Code 382; Grade Stabilization Structure, Code 410; Animal Trails and Walkways, Code 575; Water and Sediment Control Basin, Code 638; Structure for Water Control, Code 587; FOTG-Section IV, http://www.nrcs.usda.gov/technical/efotg

(2) Farming for Clean Water in South Carolina: A Handbook of Conservation Practices, http://www.epa.gov/owow/nps/bestnpsdocs.html#agriculture

(3) The Florida Stormwater, Erosion, and Sediment Control Inspector's Manual, FDEP, http://www.dep.state.fl.us/water/nonpoint/docs/erosion/erosion-inspectors-manual.pdf

(4) USDA Planning and Design Manual for the Control of Erosion, Sediment, and Stormwater, http://www.abe.msstate.edu/csd/p-dm/index.php

(5) National Management Measures for the Control of Nonpoint Pollution from Agriculture, EPA Document No. 841B03004, http://www.epa.gov/nps/agmm/

5.0 WATER RESOURCES MANAGEMENT

Florida receives an average of 53 inches of rain per year. However, rainfall amount varies across the state by region, season, and year. Average rainfall tends to decrease as you move toward the central and southeastern parts of the state, and increase as you move toward the northwestern part of the state. In general, rainfall tends to occur more frequently during the summer months in Florida, especially in the central and southern areas of the state.

Water management and nutrient loading to surface waters are linked. For most cattle operations in Florida, key water resources management issues involve:

1. Properly planning for water supply needs for irrigation of forage and/or supplemental cattle watering.
2. Following good construction practices if using swales, ditches and/or canals for drainage in improved pastures.
3. Evaluating the potential to install or manage existing water control structures to hold water onsite, as much as possible.

All three of the above items affect the hydrologic conditions and runoff potential of pastures. Ranches typically have lower nutrient concentrations, but may experience higher volume discharges, due to large land areas. Leaving boards in water control structures will reduce the volume of discharge and sediments, and improve water quality.

Alteration of the land, which may include construction of impervious surfaces such as roads, driveways, parking lots and agricultural structures increases stormwater runoff during rainfall events. Soil compaction in high-traffic areas can reduce soil permeability and increase stormwater runoff. Improper stormwater management leads to onsite and offsite flooding, increased pollutant loading to surface and ground waters, erosion and sedimentation, and the loss of valuable fresh water resources. The need to address these stormwater impacts has led to the implementation of a comprehensive stormwater management program that is implemented cooperatively by FDEP and the water management districts to minimize flooding and stormwater pollution. All new development activities, and some agricultural activities, especially those that alter onsite hydrology, are required to obtain an Environmental Resource Permit (ERP). Some farms may already have an ERP or other WMD surface water management permit that incorporates onsite stormwater management requirements.

While cow/calf operations generally do not lead to stormwater problems, there may be individual farm circumstances that create the need for specific stormwater management practices. Appendix 10 contains guidance and planning considerations to

address these circumstances. The construction of a stormwater management system (e.g., retention or detention pond) may require an ERP or other WMD surface water management permit. Therefore, please check with your WMD before beginning construction of any stormwater management system.

Working Definition:

Water resources management includes good planning and water use practices, and strategic placement of water control structures to manage surface water resources effectively.

5.1 Water Supply

√ 1. Know the quantity and quality of the irrigation water source.

√ 2. Determine the general water requirements for primary forage grasses in improved pastures. Crop water requirements refer to the actual water needs for ***evapotranspiration*** (ET) and plant growth, and generally depend on crop-specific and climatic factors. Adjust irrigation amounts to forage plant needs.

5.2 Ditch Construction And Maintenance

√ 1. Follow appropriate grades and plans during ditch excavation. Deposit ***spoil*** material in a manner so it cannot be reintroduced into the ditch or canal. Keep in mind that ditches have an engineered limit or ***conveyance capacity*** that governs how much water the ditch can store or convey.

√ 2. Use appropriate setback distances when constructing drainage ditches close to wetlands to avoid ***hydraulic drawdown*** impacts.

√ 3. Protect canal or ditch banks from erosion in areas subject to high water velocities, using ***rip-rap***, concrete, headwalls, or other buffering materials. Take the appropriate steps to prevent livestock from damaging ditch banks.

√ 4. Selectively control broadleaf vegetation on ditch banks to maintain a vegetative cover that is compatible with existing pasture vegetation.

√ 5. Maintain all main ditch features regularly by removing unconsolidated sediments to retain the designed, cross-sectional area.

■ Keep records of all ditch maintenance activities, and keep any records that relate to ditch design cross-sectional area.

5.3 Installation of Water Control Structures

√ 1. If economically feasible, install water control structures at ranch outfalls, and/or the outfall of historically drained isolated or contiguous wetlands. Doing this will rehydrate these wetlands and provide onsite water quality treatment opportunities. A fixed weir is one device that may be used to help maintain ***normal pool*** water levels within these wetlands.

√ 2. Maintain boards in all structures to reduce discharge volume, and especially use boards at the end of the dry season to keep the first flush of nutrients onsite.

Before installing new (non-replacement) water control structures, contact FDACS, USDA-NRCS, the applicable water control district and/or your water management district to see if technical assistance or permitting may be required.

5.4 Grassed Waterways

√ 1. Install a grassed waterway to divert runoff from upland pasture areas around any concentrated areas such as cowpens that are near watercourses, streams, wetlands, or sinkholes. Design the grassed waterway in accordance with USDA-NRCS specifications.

Operation and Maintenance:

- Replace dilapidated water control structures with structures matching original specifications and use good sediment control measures.
- Routinely remove any accumulated aquatic weeds at the control structure(s) to maintain proper drainage and prevent secondary environmental impacts. Use a combination of physical control (e.g. floating barriers, screens, etc.), biological control (e.g. herbivorous fish), and chemical control (e.g. selective herbicides labeled for aquatic applications) to suppress and reduce aquatic weed problems.

References:

(1) USDA-NRCS Irrigation Field Ditch, Code 388; Grassed Waterway, Code 412; Structure for Water Control, Code 587; Surface Drainage (Field Ditch), Code 607; and Surface Drainage (Main or Lateral), Code 608; FOTG-Section IV http://www.nrcs.usda.gov/technical/efotg

(2) Design and Construction of Surface Drainage Systems on Agricultural Lands in Humid Areas, American Society of Agricultural and Biological Engineers, Standard EP 302.4,

(3) American Society of Agronomy: Drainage for Agriculture, http://www.agronomy.org

(4) The Florida Stormwater, Erosion, and Sedimentation Control Inspectors' Manual, FDEP, http://www.dep.state.fl.us/water/nonpoint/docs/erosion/erosion-inspectors-manual.pdf

(5) National Management Measures for the Control of Nonpoint Pollution from Agriculture, EPA Document No. 841B03004, http://www.epa.gov/nps/agmm/

6.0 CONSERVATION BUFFERS

For the purposes of this manual, conservation buffers include field borders, filter strips and ***riparian*** buffers. They are generally non-tilled areas and can be selectively used in cow/calf operations to provide an additional level of water quality treatment, especially near sensitive discharge areas. Field borders are strips of permanent vegetation, either natural or planted, at the edge or perimeter of fields. They function primarily to help reduce erosion from wind and water, protect soil and water quality, and provide wildlife habitat. Filter strips are areas of permanent vegetation between farm fields and adjacent to environmentally sensitive areas. Their main purpose is to decrease the velocity of runoff water and remove sediment particles before they reach surface waters. Riparian buffers are areas of trees, shrubs and/or grasses located adjacent to natural streams, which help reduce excessive amounts of sediment, organic material, nutrients, and pesticides in surface water sheetflow. Riparian buffers are most effective on highly sloped lands when positioned next to perennial or intermittent streams with high ground water recharge potential.

Working Definition:

Conservation buffers are permanently vegetated, non-cultivated areas that function to retain water and soil onsite to help reduce pollutants in surface water runoff.

6.1 Field Borders

√ 1. When creating new improved pastures on previously idle land adjacent to urban areas, install or maintain field borders around the perimeter or, at a minimum, in areas where runoff enters or leaves the pasture.

√ 2. Plant borders during the time of year that will assure the most success for survival, and consider using native species and/or overseeding the border with legumes for plant diversity and wildlife benefits.

6.2 Filter Strips

√ 1. Install a filter strip to treat runoff from concentrated livestock areas, such as feed areas or cowpens that are directly adjacent to wetlands and sinkholes.

√ 2. Design the filter strip based on peak discharge from the concentrated waste area, and generally base this calculation on a 2-year, 24-hour rainfall event. Construct the treatment area wide enough to convey the flow at a depth of 0.5 feet or less, with the length sufficient to provide at least 15 minutes of flow-through time.

6.3 Riparian Buffers

√ 1. Install or maintain a riparian buffer or filter strip

on pasture areas that exceed 1% slope and discharge directly to streams. Specifically:

- Maintain an existing riparian buffer as an alternative to fencing when conditions warrant. Refer to the Fence Installation BMP in this manual for more information.
- Locate and size any stream crossings to minimize impacts to riparian buffer vegetation and function. Refer to USDA-NRCS Stream Crossing, Code 578 for design criteria.
- Select shrub and tree species based on their compatibility in growth, water, and shade tolerance.

Contact FDACS, USDA-NRCS or a Technical Service Provider approved by the USDA-NRCS for assistance in properly designing the riparian buffer in accordance with USDA-NRCS Codes 390 and/or 391 in the Key References section below.

Operation and Maintenance:

- Inspect conservation buffers periodically, and restore as needed in order to maintain their intended purpose.
- Do not overuse fertilizers, pesticides, and other chemicals in maintaining buffers.
- Repair rills and small channels that may develop across the buffers, and reseed as necessary.
- Use proper grazing or haying management practices to maintain the integrity of grassed waterways, if applicable.
- If rollerchopping, conduct these activities in accordance with USDA-NRCS guidelines and use prescribed burns as necessary to maintain the native vegetation within the buffer and to discourage the establishment of nuisance exotic vegetation.

References:

(1) USDA-NRCS Field Border, Code 386; Riparian Herbaceous Cover, Code 390; Riparian Forest Buffer, Code 391; Filter Strip, Code 393; and Grassed Waterway, Code 412; FOTG-Section IV, http://www.nrcs.usda.gov/technical/efotg

(2) National Management Measures for the Control of Nonpoint Pollution from Agriculture, EPA Document No. 841B03004, http://www.epa.gov/nps/agmm/

(3) General Specifications for Establishing Riparian Forest Buffers, USDA-NRCS FL Technical Note Forestry FL-17, http://www.usda.nrcs.gov/

(4) Farming for Clean Water in South Carolina: A Handbook of Conservation Practices, http://www.epa.gov/owow/nps/bestnpsdocs.html#agriculture

(5) Predicting Soil Erosion by Water: A Guide to Conservation Planning with the Universal Soil Loss Equation, USDA Agricultural Research Service, Agricultural Handbook No. 703, http://www.ars.usda.gov/Research/docs.htm?docid=5974

7.0 FENCE INSTALLATION

Fences are usually installed across pasture lands and around the perimeter to allow for rotation, deferment, and resting of grazing lands. Exclusion fencing is sometimes required adjacent to ***perennial streams*** to prevent cattle from entering these waters. This helps reduce the occurrence of animals standing in water, streambank erosion problems, and water quality degradation.

Nonpoint source pollution from rangeland livestock depends primarily on stocking rate, length of grazing period, season of use, concentrated manure deposition sites, and proximity of livestock to the nearest watercourse. Receiving waters, particularly areas that may be defined as ***waters of the state*** should be reasonably protected from point source discharges (via structures) resulting from livestock. This is especially true in summer time when livestock have a tendency to congregate in natural waterbodies or artificially dug watering areas to cool off. If the number of animals and frequency of occurrence are high, this may result in adverse stream bank damage, erosion, and/or nutrient and bacterial loadings. Livestock may also gravitate towards deep-water wetland habitats that have standing water during most of the year, such as swamps and marshes. Some of these wetlands may be hydrologically connected to downstream watercourses. Consequently, it is important to calculate your livestock's water needs and assess whether the available water resources are adequate to provide a year-round freshwater supply for the herd without the resources being adversely affected.

Large-scale exclusion fencing may be logistically impractical or cost-prohibitive. Before installing exclusion fencing, ranchers should consider all alternative approaches. In many cases, exclusion of livestock from watercourses and associated riparian areas can be accomplished using riparian buffers and proper grazing management, and/or placing feed, water, and shade structures in upland areas. Ranchers dealing with this issue should first use all reasonable methods in the **Alternative Cattle Water Sources** and **Conservation Buffer** (Riparian Buffer) BMPs as an option to installing exclusion fencing.

Once fences are installed, it is very important to maintain them. Regular inspection of fences should be part of an ongoing management program. Inspection of fences after major storm events and wildfires is recommended to maintain their intended use. The location and construction of all fences and storage of fence materials should comply with local, state, and federal laws. Landowners are encouraged to consult with water management district staff and USDA-NRCS prior to conducting land clearing activities and associated fencing projects in surface waters or wetlands, to ensure that proper authorization is obtained, if needed.

Working Definition:

Fence installation is a method of managing cattle in an area to maintain, or improve the quantity and quality of the natural resources.

7.1 General Fence Installation

√ 1. Perform land clearing before fence installation. Minimize vegetation removal and soil disturbance.

√ 2. Use compatible fencing material based on the site's soil and water properties, and construct fences or barriers so they are structurally adequate for their intended purpose.

√ 3. Adjust stocking rates to ensure uniform grazing, or subdivide larger pastures using fencing.

√ 4. Stabilize stream banks, then either: provide adequate alternative cattle water sources, such as watering troughs or upland excavated ponds; or install and maintain exclusion fencing to control cattle access when cattle graze in predominately improved pastures that contribute runoff to perennial streams.

√ 5. As an alternative to fence installation, provide or maintain a riparian buffer to create a natural barrier landward of the stream when cattle graze in predominately native or semi-improved pastures that contribute runoff to perennial streams.

7.2 Fence Installation In Wetlands

√ 1. When installing fences in wetlands, minimize the use of mechanical equipment, and keep the cleared area no wider than 12 feet on average on either side of the fence. Do not dredge or fill within the wetland.

√ 2. Perform all work during the dry season, when there is no standing water in the wetland.

Note: *Do the Advanced-Level BMP Needs Assessment to determine whether to implement the BMPs below.*

7.3 LEVEL II - Livestock Use Exclusion

√ 1. For cattle grazing in areas regulated by a water management district surface water permit, install and maintain exclusion fencing on each side of and across the ranch drainage canal at a minimum distance of 300 feet (or greater if required by permit) from outfall(s) that connect offsite to waters of the state. This distance only applies to the measurement taken from the outfall to a point upstream 300 feet.

√ 2. For cattle grazing in areas <u>not</u> regulated by a water management district surface water permit, install and maintain exclusion fencing on each side of and across the ranch drainage canal at a minimum distance of 500 feet from outfall(s) that connect offsite to waters of the state. This distance only applies to the measurement taken from the outfall to a point upstream 500 feet.

√ 3. Install and maintain permanent or temporary exclusion fencing along areas directly adjacent to perennial streams when these areas have significant rill or ***gully erosion***.

Operation and Maintenance:

- Maintain all fences, watering troughs, and shade structures in good working order to prevent animals from congregating in waterbodies.
- Repair rill and gully erosion when installing an exclusion fence.

References:

(1) USDA-NRCS Fence, Code 382; and Use Exclusion, Code 472; FOTG-Section IV, http://www.nrcs.usda.gov/technical/efotg

(2) Beef Cattle Production Best Management Practices, LSU Ag Center http://www.lsuagcenter.com/en/crops_livestock/livestock/beef_cattle/production_management/Beef+Cattle+Production+Best+Management+Practices.htm

(3) National Management Measures for the Control of Nonpoint Pollution from Agriculture, EPA Document No. 841B03004, http://www.epa.gov/nps/agmm/

(4) Streamside Livestock Exclusion, Virginia Tech Cooperative Extension, Publication No. 442-766, http://www.ext.vt.edu/pubs/bse/442-766/442-766.html

8.0 HIGH-INTENSITY AREAS

High-intensity areas, where livestock are confined or congregate for extended periods of time, can adversely impact both the environment and the animal's health. Feeding areas, holding or cow pens, watering troughs, and shaded or covered shelter areas may create high-intensity areas. Proper management of these areas will alleviate environmental concerns, support livestock health, and improve the overall aesthetics of the cow/calf operation.

Working Definition:

High-intensity areas are parts of a cow/calf operation used intensively by livestock for short periods of time, resulting in denuded ground cover.

8.1 High-Intensity Area Management

√ 1. Locate new cowpens a minimum 200 feet away from watercourses, streams, wetlands, wells or sinkholes, and construct a berm to prevent runoff.

√ 2. Direct runoff from high-intensity areas away from watercourses, streams, wetlands, wells or sinkholes using grassed waterways or swales. This can be used as part of a treatment train in conjunction with sediment traps.

Note: *Do the Advanced-Level BMP Needs Assessment to determine whether to implement the BMPs below.*

8.2 LEVEL II – Design Retrofits

√ 1. Apply aggregate surfaces such as crushed rock or gravel in and around these areas to prevent erosion.

√ 2. Install filter strips, conservation buffers, or berms/diversions to treat discharges into watercourses, streams, wetlands, wells or sinkholes.

Operation and Maintenance:

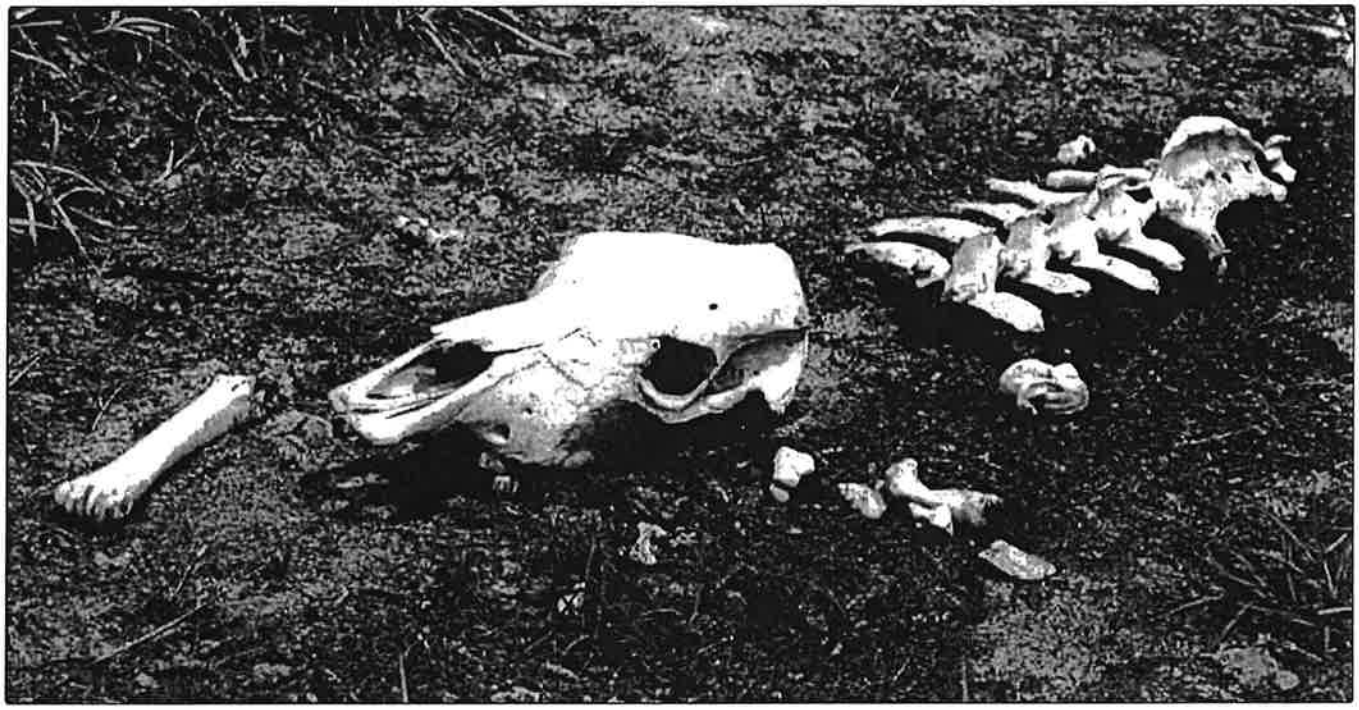
- Inspect fencing and structures regularly and make necessary repairs.
- Periodically clean or remove excess manure from these areas.
- Inspect these areas after severe weather events to ensure runoff has been properly contained or diverted.
- Use agronomic practices to re-vegetate denuded areas.

References:

(1) USDA-NRCS Heavy Use Area Protection, Code 561; FOTG-Section IV http://www.nrcs.usda.gov/technical/efotg

(2) Effect of Stocking Rate on Measures of Cow-Calf Productivity and Nutrient Loads in Surface Water Runoff, UF-IFAS AN-14, http://edis.ifas.ufl.edu/

(3) National Management Measures for the Control of Nonpoint Pollution from Agriculture, EPA Document No. 841B03004, http://www.epa.gov/nps/agmm/



9.0 ANIMAL MORTALITY

Animal carcasses contain microorganisms. Some of these organisms may be pathogenic (disease causing), either to animals of the same species or to different animal species. Proper management of animal carcasses will prevent the movement of pathogenic organisms to surface or ground water and therefore reduce the risk of transmitting diseases to healthy livestock. Proper management of carcasses will also protect surface waters from unwanted organic loads that can lower dissolved oxygen levels and kill fish. In addition, odor and nutrient enrichment problems can be prevented.

Carcass management will vary around the state, but viable alternatives include rendering, burning, burial, or hauling the carcass to an upland site away from other animals and water sources. Keep in mind that FDEP Rule, 62-701, F.A.C., for *Solid Waste Management Facilities* may apply if operators are faced with a catastrophic die-off of livestock, and have to dispose of these animals in accordance with state rule.

Working Definition:

Animal mortality BMPs involve the judicious management and disposal of dead animals to protect water quality and to provide increased protection to livestock and humans.

9.1 Sanitation And Disease Control Measures

√ 1. Transport carcasses in a sanitary manner to prevent spreading infection.

√ 2. Clean and disinfect any mechanical equipment surfaces that were in contact with the carcasses, especially if you suspect a more virulent disease organism to be the cause of death.

√ 3. Report any of the dangerous diseases listed below to the State Veterinarian per the requirements in section 585.18, F.S.

Anthrax	Heartwater
Bont Tick infestation (Amblyomma)	Lumpy skin Disease
Bovine Piroplasmosis (Cattle Tick Fever)	Peste des Petits Ruminants
Bovine Spongiform Encephalopathy	Pseudorabies (Aujeszky's Disease)
Brucellosis (B. abortus, B. suis)	Rabies
Southern Cattle Tick infestation (Boophilus)	Rift Valley Fever
Contagious Bovine or Caprine Pleuropneumonia	Rinderpest
Foot and Mouth Disease	Salmonella Enteritidis
	Scabies
	Screwworm infestation
	Tuberculosis
	Vesicular Stomatitis

9.2 Disposal

√ 1. Move carcasses to an upland area away from watercourses, streams, wetlands, wells, or sinkholes.

√ 2. If a suitable site is available, locate any burial site at least 50 feet away from adjacent property owners, and at least 200 feet away from watercourses, streams, wetlands, wells or sinkholes. Identify this area on a map and keep the map handy for future reference.

9.3 Rendering And Incineration

√ 1. Use a licensed rendering or incineration facility, if one exists locally.

Operation and Maintenance:

- Maintain soil stabilization practices until vegetation is re-established on top of burial sites.
- If composting, remember that animal carcasses are very high in nitrogen and have an average C:N ratio of 5:1. Because of this, they will likely require a supplemental carbon source to decompose properly.

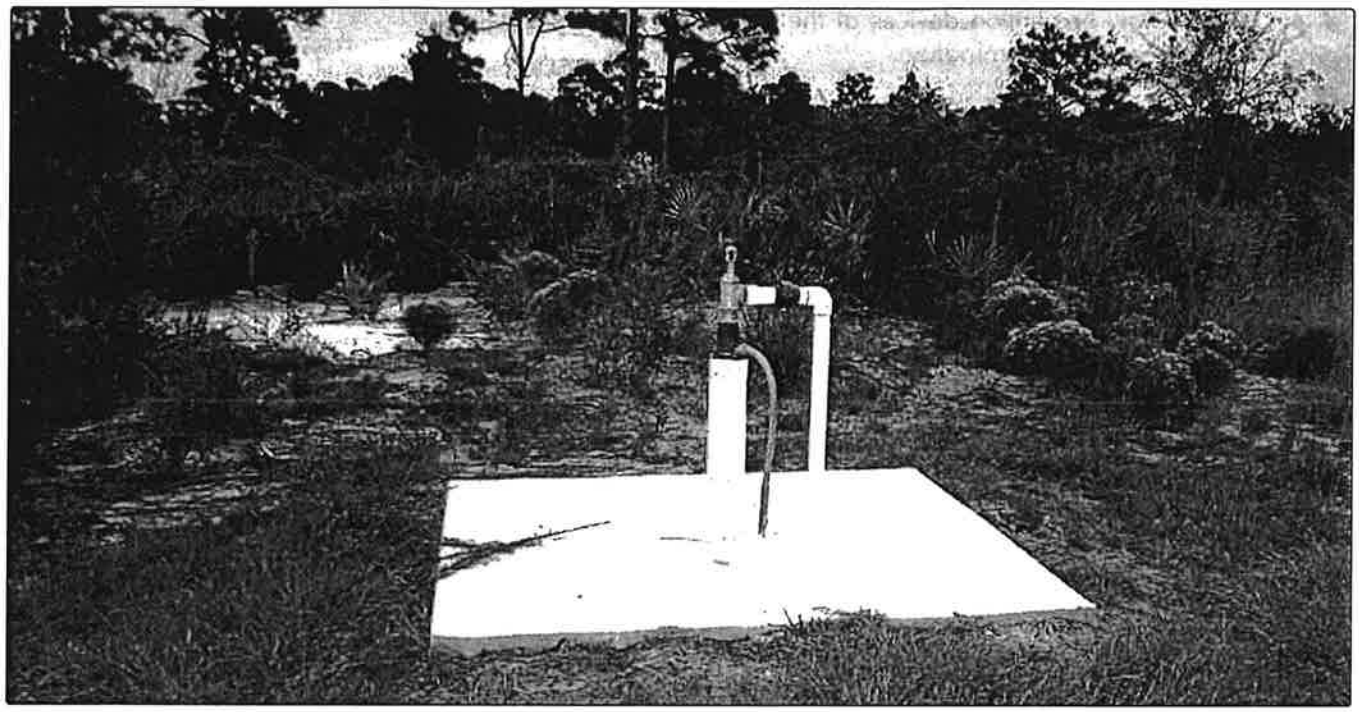
References:

(1) Beef Cattle Production Best Management Practices, LSU, http://www.lsuagcenter.com/en/crops_livestock/livestock/beef_cattle/production_management/Beef+Cattle+Production+Best+Management+Practices.htm

(2) USDA-NRCS Animal Mortality Facility, Code 316; Composting Facility, Code 317; FOTG-Section IV, http://www.nrcs.usda.gov/technical/efotg

(3) Composting Animal Mortality, Minnesota Department of Agriculture, http://www.mda.state.mn.us/animals/animals/composting.htm

(4) Chapter 585, Florida Statutes



10.0 WELLHEAD PROTECTION

With the majority of Florida's water supply originating from underground sources, or ***aquifers***, it is extremely important that ranchers make every effort to protect source waters. Successful wellhead protection ultimately involves the use of regulations and common-sense measures that address well placement and agricultural practices near wells. For new well construction, the initial focus should be on appropriate well location and sound well-construction practices. For all wells, it is important to conduct management activities near the wellhead that are aimed at reducing the potential for contamination. Wellhead protection is one of the most effective ways of protecting ground water quality and preventing human exposure to accidental contamination.

Working Definition:

Wellhead protection is the establishment of protection zones and safe land use practices around wells to protect source waters from accidental contamination.

10.1 Well Planning and Protection

√ 1. Construct new wells up-gradient as far as possible from likely pollutant sources such as petroleum storage tanks, septic tanks, chemical mixing areas, and livestock confinement facilities.

√ 2. Contact your regional water management district to see if the well requires a consumptive use or water use permit. Wells that serve public water systems must also meet the rule requirements of Chapter 62-521, F.A.C.

√ 3. Cap or valve any existing ***artesian*** (flowing) wells, in accordance with water management district requirements.

√ 4. For potable wells, exclude livestock within a 75-foot radius of the wellhead. This radius can be reduced if well construction records demonstrate well casing depths that extend through confining layers.

10.2 Well Construction and Operation

√ 1. Use a licensed Florida water well contractor and drill new wells according to local government code and water management district well construction permit requirements.

√ 2. At a minimum, surround new wells with a concrete slab approximately four (4) inches thick with a two (2) foot radius. Extend the casing above the ground surface a minimum of 12".

√ 3. Retrofit existing functional wells with a concrete collar with a one (1) foot radius or fence to protect them from damage.

√ 4. Use backflow prevention devices at the wellhead to prevent contamination.

☐ Maintain records of new well construction or modifications to existing wells. Proper records are important for future reference, in case problems arise with the well.

Operation and Maintenance:

- Try to maintain permanent vegetation within a 75-foot radius around wells.
- Inspect wellheads and pads regularly for leaks or cracks, and make any necessary repairs.
- Consider testing drinking water wells annually for coliform bacteria contamination to protect public health.

References:

(1) USDA-NRCS Water Well, Code 642; and Diversion, Code 362; FOTG-Section IV, http://www.nrcs.usda.gov/technical/efotg

(2) Farm-A-Syst Program, http://www.uwex.edu/farmasyst

(3) Aquifer Protection Program, SJRWMD, http://www.sjrwmd.com/technicalreports/pdfs/SP/SJ91-SP9_vol1.pdf

(4) Water Well Permitting and Construction Requirements, FDEP Rule 62-532, F.A.C., http://www.dep.state.fl.us/legal/Rules/rulelistnum.htm

11.0 WETLANDS AND SPRINGS PROTECTION

Wetlands and springs are important components of Florida's water resources. They often serve as spawning areas and nurseries for many species of fish and wildlife, perform important flood-storage roles, cycle nutrients in runoff water, contribute moisture to the hydrologic cycle, add plant and animal diversity, provide flash grazing opportunities, and offer valuable recreational opportunities for the public.

Wetlands are complex transitional ecosystems that provide a link between aquatic and terrestrial environments. Under Florida Law, "wetlands" are defined as areas that are inundated or saturated by surface water or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soils. Florida wetlands generally include swamps, marshes, bayheads, bogs, cypress domes and strands, sloughs, wet prairies, riverine swamps, hydric seepage slopes, tidal marshes, mangrove swamps and other similar areas. They generally do not include longleaf or slash pine flatwoods with an understory dominated by saw palmetto.

Chapter 62-340, F.A.C., entitled "Delineation of the Landward Extent of Wetlands and Surface Waters" contains the methodology that must be used by all state and local governments in Florida to determine the boundary between wetlands and uplands and other surface waters. The federal government (U.S. Army Corps of Engineers and USDA-NRCS) uses the "1987 Manual" to determine the boundary between uplands and waters of the United States, which includes wetlands in natural areas. The Food Security Act manual is used by USDA-NRCS to determine wetlands on agricultural lands. In most cases, the boundaries determined by both methodologies are the same or very close. Unauthorized impacts to wetlands may jeopardize USDA-NRCS cost-share benefits pursuant to the Food Security Act's Swampbuster provisions.

Springs, spring runs, and associated sinks are unique freshwater systems that emerge from the underlying limestone that is at or near the land surface. Springs are unique natural resource features and deserve special protection. Prior to substantial development in Florida, wetlands and spring systems once covered about half of the state's surface. That area has been greatly reduced, primarily because early water management efforts in Florida focused on draining wetlands to facilitate urban and agricultural lands development.

Working Definition:

Wetlands (defined in the glossary of this manual) are typically low landform areas with seasonal or permanent standing water that provide wildlife habitat and natural filtration. *Springs* are mostly

clear surface waters that are naturally low in nutrients and originate from ground water that emerges to the land surface.

11.1 Wetlands Protection and Impact Avoidance

√ 1. Use a county soil survey map to help identify "wetland" or hydric soil types and/or other depressional or frequently flooded areas.

√ 2. Use preservation, practical design alternatives, or modifications to eliminate or reduce adverse impacts to wetlands and springs

√ 3. Maintain a minimum 25-foot vegetative buffer exterior to the landward extent of all wetlands that meet the state's delineation methodology. If you have a water management district permit (ERP, MSSW), you must follow the buffer requirements in the permit.

√ 4. Obtain a USDA-NRCS wetland determination prior to conducting activities in a wetland. Failure to do so may jeopardize your federal cost-share eligibility.

11.2 Water Quality Treatment and Field Discharges

√ 1. Minimize adverse water quality impacts to receiving wetlands by using pretreatment practices such as filter strips, conservation buffers, swales, or holding water onsite. This can substantially reduce pollutants, especially suspended solids, and allow the wetland to more naturally assimilate nutrients.

√ 2. Rotate livestock through the wetland grazing system at an accelerated pace when excessive rainfall or mud becomes a persistent problem.

√ 3. Use spreader swales or other means to encourage sheetflow through the wetland buffer prior to discharging water from existing pasture ditches.

11.3 Special Criteria for First and Second Magnitude Springs

√ 1. Maintain a 100-foot vegetative buffer from springs, spring runs, and wet sinks.

√ 2. Use split-applications for fertilizers on pasture areas that contribute surface water directly to springs, spring runs, and wet sinks.

Operation and Maintenance:

- Limit the use of pesticides and fertilizers in and around wetlands and springs, and be careful to avoid spray drift impacts.

References:

(1) USDA-NRCS Wetland Enhancement, Code 659; Prescribed Grazing, Code 528; Nutrient Management, Code 590; Filter Strip, Code 393; and Diversion, Code 362; FOTG-Section IV, 659, http://www.nrcs.usda.gov/technical/efotg

(2) Water Management District's Environmental Resource Permitting Rule and Basis of Review, http://www.dep.state.fl.us/water/waterpolicy/districts.htm

(3) Protecting Florida's Springs: Land Use Planning Strategies and Best Management Practices, Department of Community Affairs, www.dca.state.fl.us/fdcp/DCP/publications

12.0 PRESCRIBED BURNING

Burning is a natural phenomenon in the flatwoods, marshes, and sloughs that make up the major rangeland areas in the state. Controlled use of fire is a valuable management tool, and is a natural component in forming plant communities and their structure. Prescribed burning suppresses many undesirable plant species to maintain their natural balance, and enhances the palatability and nutritional value of edible plants for wildlife and livestock. Reducing overpopulated brush and woody components in pastures and rangeland increases herbaceous vegetation, resulting in better forage and water-filtering capability. Furthermore, when prescribed burning is used to recycle accumulated litter and excessive brush in a beneficial way, the threat of wildfire is reduced.

Rangeland plant communities that depend upon periodic fires will quickly shift into transitional plant communities dominated by woody species when burning is suppressed. This shift will often reduce the usable area for wildlife and livestock. This is compounded as shading from woody plants inhibits the growth of grasses and other herbaceous plants. In addition, increased soil moisture uptake as a result of the woody plant overstory limits the available water needed for production of forage and ground water recharge.

Working Definition:

Prescribed burning is a cost-effective tool to reduce fuel buildup that can cause dangerous wildfire conditions, thus providing improved habitat for range management and increased protection to people, their homes, and the forest.

12.1 Burn Preparation

√ 1. Develop and implement a burn prescription plan that includes emergency contingencies, or enlist the help of a Certified Prescribed Burn Manager to conduct prescribed burns. Courses are available for training in the basics and regulations of burning.

√ 2. Ensure no burning bans are in effect, and that the proper permits, certification, and landowner permission are obtained prior to burning. Prescribed burns must be conducted in accordance with Florida Forest Service rules and section 590.125, Florida Statutes.

√ 3. Use burning in conjunction with roller chopping when developing pastures in native areas that have an abundance of palmettos.

√ 4. Burn only when weather conditions are favorable. Check wind conditions to ensure smoke from the burn will not adversely impact roadways or neighboring properties. Never leave a burn unattended.

12.2 Construction Of Fire Lines

√ 1. Carefully select fireline locations and avoid constructing them in wetlands. For firelines that are constructed with fencing through wetlands, follow the criteria in the "Fence Installation" BMPs.

√ 2. Use alternatives to plowed firelines, such as harrowed strips, wet lines, or grass strips. Existing barriers such as roads, ditches or canals can also be used as firelines.

√ 3. Construct firelines with the contour to minimize soil erosion.

12.3 Fire Safety And Control

√ 1. Ensure that adequate fire equipment is on hand and that the fire does not burn too hot. An intense burn can overexpose the ground floor, leading to erosion and destruction of valuable habitat.

√ 2. Ensure the fire is completely out before leaving the site.

Operation and Maintenance:

- Maintain soil stabilization practices until vegetation is re-established.
- Check fence posts and other infrastructure for integrity after intense burns.
- Grazing should be deferred for 30-90 days after a burn during the growing season. This will help ensure that new growth is able to re-establish.

References:

(1) USDA-NRCS Prescribed Burning Code 338, FOTG-Section IV, http://www.nrcs.usda.gov/technical/efotg

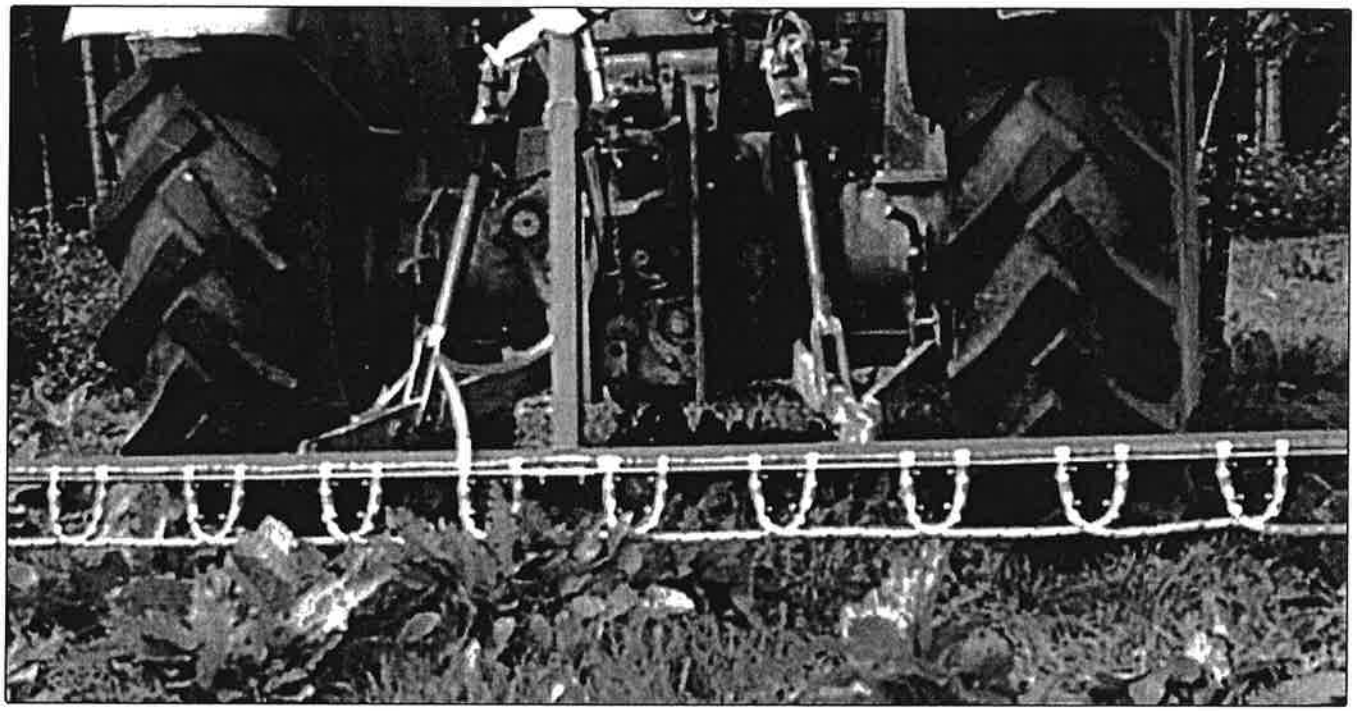
(2) Prescribed Burning Fact Sheet, USDA-NRCS

(3) BMPs for Prescribed Burning, South Carolina Forestry Commission, http://www.state.sc.us/forest/rbpb.htm

(4) Wisconsin DNR Water Quality BMP Field Manual http://www.wi.gov/forestry/usesof/bmp/bmptoc.htm

(5) Prescribed Burning Regulations in Florida, UF-IFAS FOR-67, http://edis.ifas.ufl.edu/FR055

(6) Section 590.125, Florida Statutes



13.0 INTEGRATED PEST MANAGEMENT AND PHARMACEUTICALS

Integrated pest management (IPM) is the approach of using scientific principles to manage problem pests. IPM does not mean that pesticides will be excluded. Instead, it means that pesticides are just one of many tools used to manage pests; however, pesticides should be used judiciously and only when needed. The goals of an IPM program are improved control of pests, more efficient pesticide management, more economical forage production, and reduction of potential hazards to humans and the environment through reduced pesticide exposure. IPM accomplishes these goals through the use of resistant plant species, improved cultural practices, biological control agents (parasitoids, predators), and selective use of pesticides. Although detailed IPM programs have not been developed for all types of cropping systems, IPM principles can be applied in many cases using applied science and logic. It is also important to predict economic losses and risks so the cost of various treatments can be compared to the potential losses.

Pharmaceutical misuse and waste handling, involving antibiotics and hormones, can have a negative impact on water quality and is an issue of increasing national concern. It is very important to use these products responsibly; therefore, follow all state and federal regulations and properly dispose of spent needles, expired or unused pharmaceuticals, and pharmaceutical containers.

Working Definition:

IPM is a broad, interdisciplinary approach to pest management using a variety of methods to systematically control pests.

13.1 General IPM Practices

√ 1. Store pesticides in a roofed structure with a lockable door, at least 100 feet from surface waters.

√ 2. When practical, construct a permanent mix/load facility with an impermeable surface, and locate it away from wells and/or surface waters. Where permanent facilities are not practical, use portable mix/load stations. When field mixing is necessary, loading activities should be conducted at random locations in the field with the aid of nurse tanks, if applicable. Use a check valve or air gap separation to prevent backflow into the tank when filling a sprayer.

√ 3. Practice IPM and use all pesticides in accordance with the label. When applying a pesticide close to a stream, canal, pond or other sensitive waterbody, choose a pesticide with an active ingredient that has a lower toxicity to aquatic organisms.

√ 4. Rinse, recycle, or dispose of empty pesticide containers following federal, state, and/or local regulations.

13.2 Pharmaceutical Use and Disposal

√ 1. Use FDA-approved products and only mix enough product to administer to affected cattle, which will result in little to no waste product.

√ 2. Follow label and dosing instructions to ensure that the proper dose is administered.

√ 3. Dispose of spent needles and unused pharmaceutical products in a responsible manner. Contact a veterinarian to obtain a puncture-proof container that is labeled "Biohazard". Dispose of spent needles in accordance with EPA guidelines and follow local solid waste regulations.

References:

(1) Best Management Practices for Agrichemical Handling and Farm Equipment Maintenance, FDACS and FDEP. http://www.floridaagwaterpolicy.com/BestManagementPractices.html

(2) Integrated Pest Management Program at the University of Florida. http://ipm.ifas.ufl.edu/

(3) Use Management Practices to Protect Groundwater from Agricultural Pesticides, UF-IFAS, PI 1. http://edis.ifas.ufl.edu/PI001

(4) Arsenic Contamination from Cattle-Dipping Vats, UF-IFAS, SL152. http://edis.ifas.ufl.edu/SS205

(5) Management Practices to Protect Surface Water from Agricultural Pesticides, UF-IFAS, PI 22. http://edis.ifas.ufl.edu/PI014

(6) Florida Cow-Calf and Stocker Beef Safety and Quality Assurance Handbook: Quality Control Points, UF-IFAS, Publication AN173. http://edis.ifas.ufl.edu/AN173

(7) Disposal of Medical Sharps, EPA, www.epa.gov/osw/nonhaz/industrial/medical/disposal.htm

APPENDICES

APPENDIX 1. GENERAL BMP REFERENCES

The documents listed below are very good sources of information for producers to consult on agricultural and environmental issues.

General BMP References

(1) *National Management Measures for the Control of Nonpoint Pollution from Agriculture*, U.S. Environmental Protection Agency, July 2003.

This manual provides guidance to States and the public regarding management measures that may be used to reduce nonpoint source pollution from agricultural activities. Chapter 4 deals with animal feeding operations and grazing management.

http://www.epa.gov/nps/agmm/

(2) *Best Management Practices for Agrichemical and Farm Equipment Maintenance*, Florida Department of Agriculture and Consumer Services, Florida Department of Environmental Protection, February 2000.

This manual lists responsible handling and use of pest control products, and pollution prevention actions that can be implemented at farm maintenance areas that protect the environment.

http://www.floridaagwaterpolicy.com/BestManagementPractices.html

(3) *Protecting Louisiana's Waters Using Best Management Practices*, Louisiana State University Agricultural Center, 2001.

This publication includes information on five main areas: nutrient management, pesticide management, soil and water management, pasture management and general farm BMPs.

http://www.lsuagcenter.com/en/environment/conservation/bmps/Protecting+Louisianas+Waters+Using+Best+Management+Practices.htm

(4) *Protecting Florida's Springs: Land Use Planning Strategies and Best Management Practices*, Florida Department of Community Affairs and Florida Department of Environmental Protection, November 2002.

This guide provides an introduction on the hydrologic importance of springs, comprehensive planning strategies, other information to manage development impacts, and specific criteria for other industries.

http://www.dca.state.fl.us/fdcp/DCP/publications

(5) *Beneficial Management Practices: Environmental Manual for Alberta Cow/Calf Producers*, Alberta Agriculture, Food and Rural Development, June 2004.

This manual was developed to inform and educate producers on beneficial management practices that can enhance soil, water, air and biodiversity. These BMPs protect the environment while keeping production practical and within the law.

http://www1.agric.gov.ab.ca/$Department/deptdocs.nsf/all/epw8724

University of Florida – Institute of Food and Agricultural Sciences References

Standardized Fertilization Recommendations for Agronomic Crops, UF-IFAS, Fact Sheet SL-129

This publication presents in abbreviated form the fertilization recommendations for agronomic crops based on soil tests performed by the UF/IFAS Extension Soil Testing Laboratory (ESTL). It contains the basic information from which ESTL soil-test reports and fertilization recommendations are generated.
http://edis.ifas.ufl.edu/SS163

Integrated Pest Management Strategies, UF-IFAS, Circular 1149

This circular describes the principles of integrated pest management (IPM) and advises strategies for implementation.

http://edis.ifas.ufl.edu/LH080

Florida Crop/Pest Management Profile: Beef Cattle, UF-IFAS, Circular 1259

This circular gives an overview of Florida's beef cattle industry and contains good information about pest control practices.

http://edis.ifas.ufl.edu/PI043

USDA – Natural Resources Conservation Service References

All references below accessed at:
http://www.nrcs.usda.gov/technical/efotg

(1) Conservation Practice Standard No. 314 (Brush Management)

(2) Conservation Practice Standard No. 338 (Prescribed Burning)

(3) Conservation Practice Standard No. 342 (Critical Area Planting)

(4) Conservation Practice Standard No. 382 (Fence)

(5) Conservation Practice Standard No. 393 (Filter Strip)

(6) Conservation Practice Standard No. 412 (Grassed Waterway)

(7) Conservation Practice Standard No. 472 (Use Exclusion)

(8) Conservation Practice Standard No. 528 (Prescribed Grazing)

APPENDIX 2. SETBACKS TABLE

Reference Table for Recommended Setbacks			
BMP #	**Practice**	**Setback (Feet)**	**Hydrologic Feature Type**
1.1.5	Fertilizer spreading	50	Wetlands, streams or sinkholes
1.3.3	Supplemental feeding and mineral stations	100	Watercourses, streams, wetlands, wells or sinkholes
2.2.1	Watering ponds	50*	Wetlands
2.3.3	Piped withdrawal of watercourses	100	Waterbody
8.1.1	New cowpens	200	Watercourses, streams, wetlands, wells or sinkholes
10.1.4	Livestock exclusion	75	Wellhead (potable wells)
11.1.3	Vegetative buffer	25	Wetlands
11.3.1	Vegetative buffer	100	Springs, spring runs, and wet sinks

** Check with the water management district to see if a greater setback is required.*

APPENDIX 3. CONTACT INFORMATION

EMERGENCY INFORMATION

Emergency Reporting Numbers

State Warning Point *Division of Emergency Management - contact in case of oil or hazardous substance spill*	24 hours/ Toll-Free	1-800-320-0519

Emergency Information and Follow-Up Numbers

State Emergency Response Commission *For follow-up reporting only.* *For an emergency, call the State Warning Point.*	Toll-Free	1-800-635-7179
State Warning Point Information Line	Monday - Friday, 8:00 AM - 5:00 PM	(850) 413-9900
DEP Emergency Response	Monday - Friday, 8:00 AM - 5:00 PM	(850) 245-2010

NON-EMERGENCY INFORMATION

Florida State Agency Numbers		**Toll Free**
Department of Agriculture and Consumer Services		
Office of Agricultural Water Policy	(850) 617-1727	
Division of Agricultural and Environmental Services	(850) 488-3731	
Bureau of Pesticides	(850) 487-0532	
Bureau of Compliance Monitoring	(850) 488-8731	
Division of Animal Industry	(850) 410-0900	
Department of Environmental Protection		
Nonpoint Source Management Section	(850) 245-7508	
Hazardous Waste Management Section	(850) 245-8707	
Northwest District Office (Pensacola)	(850) 595-8300	
Northeast District Office (Jacksonville)	(904) 807-3300	
Central District Office (Orlando)	(407) 894-7555	
Southeast District Office (West Palm)	(561) 681-6600	
Southwest District Office (Tampa)	(813) 632-7600	
South District Office (Ft. Myers)	(941) 332-6975	
Water Management Districts		
Northwest Florida (Tallahassee)	(850) 539-5999	
Suwannee River (Live Oak)	(386) 362-1001	1-800-226-1066
St. John's River (Palatka)	(904) 329-4500	1-800-451-7106
Southwest Florida (Brooksville)	(352) 796-7211	1-800-423-1476
South Florida (West Palm)	(561) 686-8800	1-800-432-2045

Other Helpful Numbers - Main offices, call to obtain local contact information

USDA-NRCS - Florida Main Office (Gainesville)	(352) 338-9500
UF/IFAS Extension Administration	(352) 392-1761
Association of Florida Conservation Districts *Soil and Water Conservation Districts*	(407) 321-8212

APPENDIX 4. ACRONYM LIST AND GLOSSARY

Adsorbed – Adhesion to a surface in a thin layer.

Animal Unit (AU) – Considered to be one mature cow of approximate 1000 pounds, either dry or with calf up to 6 months of age, or their equivalent, based on a standardized amount of forage consumed.

Aquifers – Soil or rock formations that contains ground water and serves as a source of water that can be pumped to the surface.

Artesian Well – A well from which water is forced out naturally under pressure. Artesian wells are bored where water in a layer of porous rock is sandwiched between two layers of impervious rock. Water flows up to the surface because distant parts of the aquifer are higher than the well-head.

Attenuate – To weaken or reduce in force, intensity, effect, quantity, or value.

Best Management Practice (BMP) – A practice or combination of practices determined by the coordinating agencies, based on research, field-testing, and expert review, to be the most effective and practicable on-location means, including economic and technological considerations, for improving water quality in agricultural and urban discharges. Best management practices for agricultural discharges shall reflect a balance between water quality improvements and agricultural productivity.

BMAP – Basin Management Action Plan.

BOD – Biochemical Oxygen Demand.

C:N – Carbon to Nitrogen ratio.

Continuous Grazing – The grazing of a specific unit by livestock throughout the year or for that part of the year during which grazing is feasible.

Conveyance Capacity – The amount of flow (generally expressed in cubic feet per second) that a canal/ditch can carry based on the size, shape, slope, and condition of the canal/ditch.

Cowpens – Fenced structure used to temporarily confine cattle for examination, medication, vaccination, administering parasite control, weighing, sorting, and /or identification. Confinement is commonly less than 12 hours, but occasionally cattle may be retained for up to one week. Pens are denuded of vegetation if heavily used, but contain vegetation when lightly used.

C-139 Basin – A SFWMD regulatory sub-basin wholly contained within Hendry County.

EAA – Everglades Agricultural Area

EDIS – Electronic Document Information System.

EPA – Environmental Protection Agency.

ERP – Environmental Resource Permit.

Eutrophication – A process whereby watercourse, such as lakes, estuaries, or slow-moving streams receive excess nutrients that stimulate excessive plant growth.

Evapotranspiration (ET) – The water lost to the atmosphere by evaporation and transpiration. Evaporation is the loss from open bodies of water and transpiration is the loss from living-plant surfaces.

FCWA – Federal Clean Water Act.

FDACS – Florida Department of Agriculture and Consumer Services.

FDEP – Florida Department of Environmental Protection.

FDOH – Florida Department of Health.

Flash-Grazing – The concept of grazing a normally excluded area with a large number of cattle for a short period of time, generally not exceeding three days.

FOTG – Field Office Technical Guide.

F.S. – Florida Statutes.

FWRA – Florida Watershed Restoration Act.

Gully Erosion – The erosion process whereby water accumulates in narrow channels and, over a short period time, removes the soil from this narrow area to considerable depths, ranging from one to two feet deep.

Hydraulic Drawdown – The amount by which the water level in an aquifer or water table is further lowered, when the water from that aquifer or water table is continually removed by man-made means (pumps, canals/ditches).

IPM – Integrated Pest Management.

MSSW – Management and Storage of Surface Waters.

N – Nitrogen.

NOI – Notice of Intent.

Normal Pool – A water level elevation based on consideration of biological indicators of sustained inundation, using reasonable scientific judgment used to standardize measurements of water levels and facilitate comparison among wetlands.

P – Phosphorus.

Paddocks – A subdivision of a pasture designed to provide short-duration grazing followed by an appropriate (related to species, soil type and weather conditions) rest period for regrowth and stand maintenance.

Perennial Streams – Streams or rivers that flow in a well-defined channel throughout most of the year under typical climatic conditions.

PPM – Parts per Million.

Prescribed Grazing – The controlled harvest of vegetation with grazing or browsing animals managed with the intent to achieve a planned objective(s).

Resource Management System-Level Conservation Plan – is a record of the decisions and supporting information for treatment of a unit of land or water consistent with the NRCS Field Office Technical Guide (FOTG) quality criteria for soil, water, air, plants, and animals, and takes into account economic and social considerations. The plan must be consistent with the NRCS National Planning Procedures Handbook, as amended, be approved by NRCS or an authorized technical service provider, and specify the schedule of operations and activities needed to address identified natural resource issues. For purposes of this definition, the plan must be updated at least every five years.

Rill Erosion – An erosion process in which numerous small channels only several inches deep are formed, occurs mainly on recently cultivated fields, cuts and fills and canal banks. Rills are smaller than gullies and can be driven across.

Rinsate – The solution remaining after rinsing something.

Riparian – Vegetated ecosystems along a watercourse through which energy, materials, and water pass. Riparian areas characteristically have a high water table and are subject to periodic flooding and influence from the adjacent watercourse.

Rip-rap – Large, loose angular stones that serve as a permanent erosion-resistant ground cover.

Rotational Grazing – Rotational grazing is the grazing of two or more subdivisions of pasture in sequence, followed by a rest period for recovery and re-growth.

Septage – A mixture of sludge, fatty materials, human feces, and wastewater removed during the pumping of an onsite sewage treatment and disposal system.

Sorbed – The action of a substance which is either adsorbed or absorbed onto another substance.

Spoil – The soil material obtained from excavating an area to construct such works as canals/ ditches and /or ponds. This material is typically used to build berms and/or dikes along or in the vicinity of the excavation site.

Supplemental Feeding – Supplying feed to range

animals when available forage is too limited to meet their minimum daily requirement.

SWCD – Soil and Water Conservation District.

TMDL – Total Maximum Daily Load.

Treatment Train – A combination of nonstructural and structural practices which have been determined to be effective for reducing or preventing pollution.

Turbid – In relation to water, it is described by having an opaque and cloudy appearance and containing suspended solids or other pollutants that may limit light penetration.

Turnout – The extension of a road ditch into a vegetated area to provide for the dispersion and filtration of stormwater runoff.

UF-IFAS – University of Florida, Institute of Food and Agricultural Sciences.

USDA-NRCS – United States Department of Agriculture, Natural Resources Conservation Service.

USGS – United States Geological Survey.

Water Control Structures – Any structure used to regulate surface or subsurface water levels.

Watercourse(s) – Any natural or man-made (ditch or canal) water feature that flows continuously or intermittently. For the purposes of this manual, watercourses do not include wetlands as part of their definition.

Watersheds – Described as drainage basins or regions of land where surface water drains downhill into a specified body of water.

Waters of the State – Defined in section 403.031(13), Florida Statutes, to include, but not limited to, rivers, lakes, streams, springs, impoundments, wetlands, and all other waters or bodies of water, including fresh, brackish, saline, tidal, surface, or underground waters. Waters owned entirely by one person other than the state are included only in regard to possible discharge on other property or water. Underground waters include, but are not limited to, all underground waters passing through pores of rock or soils or flowing through in channels, whether manmade or natural. Solely for purposes of s. 403.0885, waters of the state also include navigable waters or waters of the contiguous zone as used in s. 502 of the Clean Water Act, as amended, 33 U.S.C. ss. 1251 et seq., as in existence on January 1, 1993, except for those navigable waters seaward of the boundaries of the state set forth in s. 1, Art. II of the State Constitution.

Wetlands – As defined in section 373.019(25), Florida Statutes, wetlands means those areas that are inundated or saturated by surface water or groundwater at a frequency and a duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soils. Soils present in wetlands generally are classified as hydric or alluvial, or possess characteristics that are associated with reducing soil conditions. The prevalent vegetation in wetlands generally consists of facultative or obligate hydrophytic macrophytes that are typically adapted to areas having soil conditions described above. These species, due to morphological, physiological, or reproductive adaptations, have the ability to grow, reproduce, or persist in aquatic environments or anaerobic soil conditions. Florida wetlands generally include swamps, marshes, bayheads, bogs, cypress domes and strands, sloughs, wet prairies, riverine swamps and marshes, hydric seepage slopes, tidal marshes, mangrove swamps and other similar areas. Florida wetlands generally do not include longleaf or slash pine flatwoods with an understory dominated by saw palmetto.

WMD – Water Management District.

APPENDIX 5. NUTRIENT BUDGET WORKSHEET

Land User:	County:	Date:
Prepared By:	Field #(s):	

Table 1 – Field Conditions and Recommendations

Crop sequence/rotation (circle current crop)	Expected yield

Current soil test levels (ppm)			
P	K	pH	

Recommended nutrients/amendments to meet expected yield			
N	P_2O_5	K_2O	Lime

Table 2 – Nutrient Sources

	Pounds per acre		
Credits	N	P_2O_5	K_2O
1. Nitrogen credits from previous legume crop			
2. Residual from long-term manure application			
3. Irrigation water			
4. Other *(e.g., atmospheric deposition)*			
5. Total credits			
Plant available nutrients applied to field	N	P_2O_5	K_2O
6. Credits *(from row 5, above)*			
7. Fertilizer			
8. Manure/organic material			
9. Subtotal *(sum of lines 6, 7, and 8)*			
10. Nutrients recommended *(from table 1)*			
11. Nutrient status *(subtract line 10 from line 9)*			
If line 11 is a negative number, this is the amount of additional nutrients needed to meet the crop recommendation.			
If line 11 is a positive number, this is the amount by which the available nutrients exceed the crop requirements.			

Nutrient Management Specifications						
Amount to be applied (lb/ac)	N		P_2O_5		K_2O	
Method, form, and timing of application:						

Instructions to Complete the Nutrient Budget Worksheet

1. Table 1 – Field Conditions and Recommendations

- Enter the crop rotation and circle the current crop (Ex: Bermudagrass, hay or bahiagrass, grazed).
- Enter expected yield (Ex: 5 tons/ac if the crop was bermudagrass, hay or 20 animal unit month (AUM) if the crop was bahiagrass, grazed).
- Enter current soil test levels (ppm). These test levels should be from a Mehlich 1 test, which is what the UF/IFAS soil testing lab uses. A current soil test for phosphorus application should be one that is no more than 1 year old. If applying nutrients at maintenance levels on pasture and hayland, then a soil test should be no older than 5 years.
- Enter recommended nutrients/amendments to meet expected yield. If applying commercial fertilizers the recommendations will come from the UF/IFAS Circular SL-129 – Standardized Fertilization Recommendations for Agronomic Crops dated June 2007. If applying manures or organic by-products (i.e., municipal or sewage sludge), the recommendations will come from crop uptake rates from UF/IFAS research or from book values in the USDA-NRCS Agricultural Waste Management Handbook, Chapter 6. The lime value will come from the soil test results sheet.

2. Table 2 – Nutrient Sources

- Line 1 – Enter credits from previous legume crop. This credit is the amount of estimated nitrogen in pounds per acres that a legume (i.e., clovers, perennial peanut, soybeans) will add to the soil, so the preceding crop can use it. Amounts of nitrogen can be obtained from UF/IFAS research publications such as: Nitrogen Fixation and Inoculation of Forage Legumes, SS-AGR-56.
- Line 2 – Enter residual from long-term manure application. This credit is the amount of nitrogen in pounds per acre from manure application. The amount of nitrogen that becomes available depends on the rate of mineralization or decay and this decay depends on the type of manure and the length of time that it is on the field. For example fresh cow manure that is incorporated into the soil daily has a decay rate of 0.75; 0.15; 0.10; 0.05. This means that 75 percent of the incorporated nitrogen becomes available the first year, 15 percent of the remaining nitrogen becomes available in the second year, 10 percent of the remainder in the third year, and so on. So, with enough time 100 percent will become available for the plant to use. Book values for the mineralization can be found in the NRCS Agricultural Waste Management Handbook, Chapter 11 or from UF/IFAS research.
- Line 3 – Enter nutrient amounts from irrigation water. The irrigation water will need to be tested to determine what nutrient levels are present.
- Line 4 – Enter other credits. These can come from items such as atmospheric deposition, which only accounts for about 3 lbs of N, .35 lbs of P_2O_5, and .48 lbs of K_2O.
- Line 7 – Enter the nutrient amounts for commercial fertilizer.
- Line 8 – Enter the nutrient amounts for manure/organic material. These amounts will come from the analysis of the manure or organic material.
- Line 9 – Enter the sum of the credits, commercial fertilizer, and the manure/organic material.
- Line 10 – Enter the nutrients that were recommended to meet the expected yield from Table 1.
- Line 11 – Subtract the nutrients recommended from the sum of the credits, fertilizer, and manure. If this number is negative then additional nutrients need to be applied to meet the crop recommendation. If this number is positive then the available nutrients exceed the crop requirements and adjustments need to be made to limit overloading of nutrients.

3. Nutrient Management Specifications

- Enter the amount of the nutrients to be applied, which will come from the calculations in Table 2.
- Enter a description of the application method (i.e., broadcast with a spreader, applied through an irrigation system), form of the fertilizer (i.e. liquid, granular, or manure), and the timing of the application (i.e. date of application, growth stage of the crop).

(Adapted from USDA-NRCS literature)

EXAMPLE (BAHIAGRASS) WORKSHEET

Land User:	County:	Date:
Prepared By:	Field #(s):	

Table 1 – Field Conditions and Recommendations

Crop sequence/rotation (circle current crop)	Expected yield
Bahiagrass, graze	100 AUM

Current soil test levels (ppm)			
P	K	pH	
20 ppm	30 ppm	5.5	

Recommended nutrients/amendments to meet expected yield			
N	P_2O_5	K_2O	Lime
50 (Low – N option)	0	0	0

Table 2 – Nutrient Sources

	Pounds per acre		
Credits	N	P_2O_5	K_2O
1. Nitrogen credits from previous legume crop	0		
2. Residual from long-term manure application	0		
3. Irrigation water	0	0	0
4. Other *(e.g., atmospheric deposition)*	0	0	0
5. Total credits	0	0	0
Plant available nutrients applied to field	N	P_2O_5	K_2O
6. Credits *(from row 5, above)*	0	0	0
7. Fertilizer	50	0	0
8. Manure/organic material	0	0	0
9. Subtotal *(sum of lines 6, 7, and 8)*	50	0	0
10. Nutrients recommended *(from table 1)*	50	0	0
11. Nutrient status *(subtract line 10 from line 9)*	0	0	0
If line 11 is a negative number, this is the amount of additional nutrients needed to meet the crop recommendation.			
If line 11 is a positive number, this is the amount by which the available nutrients exceed the crop requirements.			

Nutrient Management Specifications						
Amount to be applied (lb/ac)	N	50	P_2O_5	0	K_2O	0
Method, form, and timing of application: Broadcast 147 lbs/ac of ammonium nitrate (34-0-0) granules.						
Apply in the early spring and incorporate into the soil immediately after application.						

APPENDIX 6. SOIL AND TISSUE TESTING INFORMATION

Soil Testing

The soil testing process comprises four major steps, and understanding each one clearly will increase the reliability of the process tremendously. The steps in the soil testing process are:

- soil sampling
- sample analysis
- interpretation of test results
- nutrient recommendations

Soil Sampling: Soil samples need to be representative of the field and soil types and the soil analysis results will be only as good as the submitted sample is. Samples collected from areas that differ from typical characteristics of the farm should be submitted separately and should not be consolidated with the primary samples. Using a management zone (area on the farm that is managed similarly) as a guiding factor to collect and consolidate samples is strongly recommended to optimize resources. Consult the IFAS Extension Fact Sheet SL181 for further information on soil sampling strategies. Ranchers can use the soil test sheet on page 71 when they have bahia grass in a phosphorus. For other forages and bahia grass in areas that are not phosphorus-limited, use the soil test sheet which can be found at: http://edis.ifas.ufl.edu/pdffiles/SS/SS18600.pdf.

Sample Analysis: The soil samples that are submitted to the testing laboratories undergo a series of physical and chemical processes that are specific to the soil types, crops, and management regimes. Once the soil samples are homogenized through grinding and/or sieving, a precise volume of the sample will be extracted for plant nutrient through an extraction procedure. The following standard methods are approved by the IFAS Soil Testing Laboratories for different soils in Florida:

a) Mehlich-1 extraction - this method is performed on all acid-mineral soils up to a soil pH of 7.3.

b) AB-DTPA extraction - this method is performed on alkaline (calcareous) soils with a pH of 7.4 and above.

c) Water extraction - this method is used for extraction of P in all organic soils.

d) Acetic acid extraction - this method is performed on all organic soils for extraction of K, Mg, Ca, Si, and Na.

It is extremely important that procedures used at the laboratories are well understood before submitting the samples since most BMPs are tied to the standardized procedures used by the labs at the land-grant universities in the state such as UF/IFAS. Similarly, it is also very important to note that the IFAS laboratory does not offer any test for N since there is no reliable test for plant available N under Florida conditions. N recommendations are based on crop nutrient requirements found in the research literature. More information regarding the procedures used at the IFAS Extension Soil Testing Laboratory in Gainesville can be found in the extension publication, Circular 1248.

Interpretation of Test Results: The primary goal of state laboratories in offering the soil testing service is to provide interpretation of the soil test results based on soil test-crop response trials and field calibration of the test results with the optimum economic yields of the various plant species. Economic yield increases resulting from added nutrients cannot be obtained once the test results are interpreted as 'High' resulting in no recommendation for that particular nutrient. The interpretations provided are specific to the soil and plant species.

Current interpretation tables can be obtained from SL 189 - IFAS extension fact sheet.

Tissue Testing

Tissue testing is the analysis and diagnosis of the plant's nutritional status based on its chemical composition. It is commonly performed as analyses on dried blades, leaves or dried *petioles* or on sap from fresh petioles, with results compared to recommended nutrient ranges.

Efficient fertilizer management is important to reduce costs, conserve natural resources, and to minimize potential impacts on the environment. These goals can be achieved through optimum management of the fertilizer component. Timely tissue testing is an important tool used in fertilizer management through monitoring the plant's nutritional status, and such testing is also used in diagnosing suspected problems like nutritional deficiency, toxicity or imbalance. As a management tool, tissue testing can increase a rancher's return by preventing deficiencies that can reduce yield(s), market quality, and profitability.

Methodology: Begin sampling soon after the crop is established and continue at regular intervals (weekly or biweekly). Individual plants, even side-by-side, may have different nutritional status.

Therefore, by sampling a sufficiently large number of plants, the effect of this error due to inherent variability should be minimized. It is preferable to include a soil sample together with a tissue sample when submitting samples to a diagnostic lab, since the soil sample may indicate other factors - such as pH - that may influence crop growth, nutrient availability, and uptake. Avoid plant tissue testing if the field has received foliar nutrient sprays containing micronutrients or nutrient-containing pesticides. Also, avoid sampling plants damaged by pests, diseases, or other chemicals when trying to monitor the nutritional status of the sod.

Whole-leaf sampling will be most useful early in the season, while later in the season, it can help to point to changes in fertilization practices that are needed for the next season. Fresh petiole sap testing for N and K, practiced regularly throughout the season, can help manage the current crop as well as provide guidance for the next crop. Sample a recently matured leaf blade. Collect enough leaf material so that the sample is representative of the crop stand, and that the sample is large enough to perform the required analyses.

If a deficiency is suspected, collect one *composite sample* from the area exhibiting the disorder and a second sample from an otherwise "normal" section for comparison when trying to diagnose a nutrient deficiency. Separate and properly label the "disorder" sample and the "normal" sample in order to make a valid comparison after analyses. Keep notes on condition of the sod and stage of growth, weather, and other variables for future reference.

Be careful not to crush or damage samples during cleansing. Avoid using tap water to rinse blade samples, since it can be high in nutrients such as calcium, iron, magnesium, or sulfate sulfur. Use distilled water instead. In most situations, cleansing is not needed. Blot the samples dry with absorbent paper after rinsing, and air-dry the samples several hours before shipment. Wrap the samples in absorbent paper and place them in a large envelope if a plant analysis kit is not available, and mail immediately.

Select a reputable laboratory that provides interpretations and recommendations based upon test results appropriate for your growing region. Interpretation guidelines should be based on actual field research, not on "typically observed" or historical lab databases. The laboratory should be reliable and certified and also offer a routine turnaround of less than 48 hours.

For more information please see SL 131, Plant Tissue Information Sheet, Soil and Water Science Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Last revised July 2005. http://edis.ifas.ufl.edu/SS182.

References:

Sartain, J.B. 2001. Soil Testing and Interpretation for Florida Turfgrasses. SL181. Soil and Water Science, Cooperative Extension Service. IFAS, p. 2. http://edis.ifas.ufl.edu/SS317.

Mylavarapu, R.S. and E.D. Kennelley. 2002. UF/IFAS Extension Soil Testing Laboratory Analytical Procedures and Training Manual. Soil and Water Science, Circular 1248, Cooperative Extension Service, IFAS, http://edis.ifas.ufl.edu/SS312.

Mylavarapu, R.S. 2002. The Process of Standardized Nutrient Recommendation Development for Successful Crop Production and Environmental Protection. SL 189, Soil and Water Science, Cooperative Extension Service, IFAS. http://edis.ifas.ufl.edu/SS401.

UF UNIVERSITY of FLORIDA
IFAS Extension

IFAS Analytical Services Laboratories
Extension Soil Testing Laboratory

PO Box 110740 / Wallace Building 631, UF / Gainesville, FL 32611-0740
EMAIL: SOILSLAB@IFAS.UFL.EDU WEBSITE: SOILSLAB.IFAS.UFL.EDU

Producer Bahia Test Information Sheet

Note: This Lab only tests samples from the State of Florida.

Mailing Address (please print)

Name _____ **Phone** _____

Address _____

City _____ **FL Zip** _____

Date _____ **E-Mail *** _____

*** In order to expedite reporting of results; please provide an e-mail address if possible.**

- **This form can be downloaded from our website.**
- **Detailed information on this test can be obtained from SL129 accessed at edis.ifas.ufl.edu**
- **For further information contact your local county Extension Agent**

Fill in all requested information, using one line per sample and additional sheets for more than 5 samples.

Lab Use only	County	Test(s) Requested (see Page 2 or back)	Acreage	Sample ID For Soil	Sample ID For Leaf Tissue	Cost

Check _____ **Money Order** _____ **Cash** _____ **Total** _____

Important Information for Soil Sample Collection and Submission

Before Sampling:

1. Develop a soil sampling plan of your field. Samples should represent the area being tested, so collect samples from areas that are of the same soil type, appearance, or cropping history. Sample problem areas separately, if needed. From this plan, count the number of samples you will collect.
2. Soil sample bags, addressed shipping boxes, and information sheets are available free from your county Cooperative Extension office. Obtain the materials you need to complete your sampling plan.

Collecting Samples:

1. Collect soil from 20 or more spots within each area, mixing these samples in a clean plastic bucket.
2. Sample from soil surface to depth of tillage, usually 0 to 6 inches. For pastures, sample from 0 to 4 inch depth.
3. Spread the composited material on clean paper or other suitable material to air dry. Do not send wet samples.
4. Mix the dry soil, and place about one pint of soil in a labeled sample bag.

Sending samples to the Extension Soil Testing Laboratory:

1. Enter each sample's identification on its sample bag and in the Soil Sample Identification column. List each sample separately.
2. Lime and fertilizer recommendations are provided only if the crop code(s) is listed.
3. Include the analysis code for each desired test.
4. Enter costs from the Analysis Cost list found on page 2 of this form.
5. Sum the costs of all samples and analyses. Make check or money order payable to: **University of Florida**.
6. Include the completed Producer Bahia Test Information Sheet and the check or money order in the shipping box with the sample(s).

Test results:

A soil test report will be emailed / mailed to you within 5 to 10 days after your sample arrives at the Extension Soil Testing Laboratory. Contact your county Extension office if you have questions concerning the Bahia Test Report.

Revised February 2009

How To Take, Prepare, and Submit Plant Tissue Samples (for Analysis B1)

1. Ensure that each sample contains at least a generous handful of plant material (around half a gallon).
2. Do not sample leaves contaminated with soil or sprays. If all tissue is dusty or spray contaminated, wash leaves gently with flowing distilled water.
3. Do not sample disease-, insect-, or mechanically damaged plant tissue.
4. Place tissue samples directly into a clean paper or cloth bag or envelope. Do not use plastic containers. If the plant tissue is wet or succulent, allow plant material to air dry for at least one day, before mailing.
5. When sampling suspected nutrient-deficient plants, two samples are recommended; one sample from normal plants, and another sample from abnormal plants.
6. When sampling, the plant part and plant maturity are important factors. Be sure to collect the proper plant part at the recommended time. A general rule of thumb is to sample the youngest, fully mature leaves during the growth cycle, or just prior to fruit set.
7. Please do not provide any roots along with the sample.

Important Information

There are three types of tests available for Bahiagrass pastures in Florida (see Table below for details)

Phosphorus Testing and Recommendation for Bahiagrass

- Soil tests alone are not adequate for determining P fertilization needs of Bahiagrass.
- A tissue and soil test must be submitted together to determine P fertilization needs.
- Phosphorus should not be applied if tissue P is at or above 0.15% even if soil tests Very Low or Low for P.
- If P recommendations are not desired and the producer only is interested in K, Mg, Ca levels and pH then a Standard Producer Soil Test will apply. This WILL NOT include P fertilizer recommendations.

Analysis Test Code	Analysis Name	Determinations Made	Analysis Cost
B1	Standard Soil and Tissue Test	pH, lime requirement, P, K, Ca, Mg	$15.00
1	Standard Soil Test	pH, lime requirement, K, Ca, Mg and P test value only	$7.00
2	pH and Lime Requirement	pH and lime requirement	$3.00
3	Micronutrient Test	Cu, Mn, Zn	$5.00

APPENDIX 7. INCENTIVE PROGRAMS FOR QUALIFYING FARMS

The implementation of Best Management Practices can reduce non-point sources of pollution, conserve valuable soil and water resources, and improve water quality. The implementation of these management practices can also be expensive and, in some cases, may not be economically feasible for agricultural producers. To reduce the financial burden associated with the implementation of selected practices, several voluntary cost-share programs have been established. These programs are designed to conserve soil and water resources and improve water quality in receiving watercourses. The narrative below is intended to provide basic information regarding the primary federal, state, and regional cost-share programs. Sources of additional information have also been included, and ranchers are encouraged to contact the identified agencies or organizations for current information about each program.

I. Programs Administered by USDA - Farm Services Agency (FSA):

Conservation Reserve Program (CRP): This program encourages farmers to convert highly erodible cropland or other environmentally sensitive lands to vegetative cover including grasses and/or trees. This land use conversion is designed to improve sediment control and provide additional wildlife habitat. Program participants receive annual rental payments for the term of the contract in addition to cost share payments for the establishment of vegetative cover. CRP generally applies to highly erodible lands and is more applicable to North Florida.

Conservation Reserve Enhancement Program (CREP): CREP uses a combination of federal and state resources to address agricultural resource problems in specific geographic regions. This program (which is not limited to highly erodible lands) is designed to improve water quality, minimize erosion, and improve wildlife habitat in geographic regions that have been adversely impacted by agricultural activities.

Emergency Conservation Program (ECP): The ECP provides financial assistance to farmers and ranchers for the restoration of farmlands on which normal farming operations have been impeded by natural disasters. More specifically, ECP funds are available for restoring permanent fences, terraces, diversions, irrigation systems, and other conservation installations. The program also provides funds for emergency water conservation measures during periods of severe drought.

For further information on CRP and CREP, including eligibility criteria, please contact your local USDA Service Center. Information is also available on the Internet at www.fsa.usda.gov.

II. Programs Administered by USDA - NRCS:

Environmental Quality Incentives Program (EQIP): EQIP provides financial assistance for the implementation of selected management practices. Eligibility for the program requires that the farm have a USDA-NRCS approved Conservation Plan. Practices eligible for EQIP cost share are designed to improve and maintain the health of natural resources and include cross-fences, water control structures, brush management, prescribed burning, prescribed grazing, nutrient management and other erosion control measures.

Conservation Security Program (CSP): CSP is a voluntary conservation program that supports ongoing stewardship on private lands. It rewards farmers and ranchers who are meeting the highest standards of conservation and environmental management. Its mission is to promote the conservation and improvement of soil, water, air, energy, plant and animal life.

Wetlands Reserve Program (WRP): WRP is a voluntary program designed to restore wetlands. Program participants can establish easements (30-year or perpetual) or enter into restoration cost-share agreements. In exchange for establishing a permanent easement, the landowner usually receives payment up to the agricultural value of the land and 100 percent of the wetland restoration cost. Under the 30-year easement, land and restoration payments are generally reduced to 75 percent of the perpetual easement amounts. In exchange for the payments received, landowners agree to land use limitations and agree to provide wetland restoration and protection.

Wildlife Habit Incentives Program (WHIP): The Wildlife Habitat Incentives Program provides financial incentives for the development of fish and wildlife habitat on private lands. Program eligibility requires that landowners develop and implement

a Wildlife Habitat Development Plan. Participants enter multiyear (5 to10 year) agreements with USDA-NRCS.

For further information on these programs, including eligibility criteria, please contact your local USDA Service Center. Information is also available on the Internet at the following web site: www.nrcs.usda.gov

III. Programs Administered by State and Regional Entities:

Soil and Water Conservation Districts: In order to assist agricultural producers in the implementation of BMPs, the Florida Department of Agriculture and Consumer Services has executed a number of cost-share contracts with several of the state's Soil and Water Conservation Districts and Resource Conservation and Development Councils, Inc. Many of these cost-share contractors administer cost-share programs using *Applicant's Handbooks* which include reimbursement rates and rancher selection criteria.

Water Management District Cost Share Memoranda: The Department of Agriculture and Consumer Services has executed Memoranda of Agreement (MOA) with certain Water Management Districts to provide coordination for BMP cost-share programs. Each MOA will identify the primary program areas within the District's geographical boundaries, and designates the agency responsible for program administration.

For further information on these programs, including eligibility criteria, please contact your regional Water Management District, local Soil and Water Conservation District or the Florida Department of Agriculture and Consumer Services. Information and links to other sites are also available on the Internet at the following web site: www.floridaagwaterpolicy.com

APPENDIX 8. EXAMPLE RECORD KEEPING FORMS

Ranchers are required to keep accurate records to document BMP implementation. Record keeping also aids ranchers in operating and maintaining BMPs, and is required for the following BMP Groups:

1.1 **Fertilizer Management** - Maintain records of fertilizer application. Records should include soil test analysis, date of application, fertilizer formulation, application rate, location and acreage, and worksheet results

3.1 **Prescribed Grazing** - Maintain grazing records by pasture, and develop a contingency plan for floods and droughts in order to adjust the required grazing demands.

3.2 **Comprehensive Prescribed Grazing** - Keep records on stocking numbers, grazing days, and length of rest periods for each pasture or field.

5.2 **Ditch Construction and Maintenance** - Keep records of all ditch maintenance activities, and keep any records that relate to ditch design cross-sectional area.

10.2 **Well Construction and Operation** - Maintain records of new well construction or modifications to existing wells. Proper records are important for future reference, in case problems arise with the well.

The tables below correspond to of all the record-keeping requirements contained in this manual. They serve as a set of templates to develop your own record-keeping system. You may maintain your records as hard copies or in an electronic format, depending on your preference. You may use these tables, develop your own, or choose commercially available record-keeping software suited to your commodity.

Soil Sample Records

Date	Field Location	# of Samples	Name of Lab	Records Location

Tissue Sample Records

Date	Field Location	# of Samples	Name of Lab	Records Location

Fertilization/Nutrient Records

Date	Location	Acreage Covered	Type[1]	Formulation[2]	Analysis[3]	Rate (Lbs/Acre)

Rainfall (in.)

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.

Well Records

Location	Year Constructed	Constructed By	Last Modified	Modified By	Records Location

Ditch/Waterway Records

Location	Design Cross-Section[4]	Current Cross-Section[1]	Date of Last Cross-Section Inspection	Records Location

Grazing Rotations

Pasture Location	Pasture Size	Stocking Rate (Head/Acre)	Forage Type	# of Days Grazed	Date Last Grazed

[1] Organic, Inorganic, Chemical [2] Granular, Water Soluble, etc. [3] e.g. 10-10-10 [4] Ditch Invert and side slopes

APPENDIX 9. EMPLOYEE TRAINING POINTS

Good Housekeeping and Pollution Prevention

- Stress the importance of protecting water quality and the environment, as stewards of the land
- Stress the importance of ranch and facility appearance
- Have a schedule or plan for mowing or grazing grassed waterways and filter strips
- Plan for maintenance activities on access roads
- Have a schedule or plan to remove mineral or feeding areas
- Properly maintain cowpen runoff management areas
- Properly store potential pollutants in a designated area
- Secondary containment for above ground storage tanks (fuel, oil, etc.)
- Discuss proper storage, use and disposal of solvents and degreasers, as well as paints, used oil, anti-freeze and batteries
- Discuss ways to handle potential pollutants to reduce the chance of a spill

Animal Mortality Management

- Movement of dead animals away from waterbodies
- Proper disposal methods for your operation
- Reduction of third party inquiries due to improper management

Nutrient Management and Spreading

- Proper forage tissue and soil analysis (apply only what the plant needs)
- Discuss timing of fertilizer application
- Discuss locations to avoid when spreading fertilizer materials
- Discuss proper storage, loading and calibration of equipment

Proper Operation and Maintenance of Facilities

- Inform employees about filter strips, grassed waterways, and waste storage ponds
- Discuss the preventive maintenance schedule for all control facilities (dams, dike, terraces, diversions, berms)
- Discuss facility inspections
- Discuss proper procedures for reporting and repairing problems with control facilities
- Record rainfall using rain gauges
- Have a measuring device in retention ponds
- Have a wastewater discharge plan

Documentation and Records Retention

- Stress importance of record keeping
- Have a schedule for retaining records
- List activities and events that should be documented

  For example:
  - ➢ Fertilizer rate/location/date
  - ➢ Irrigation amounts applied and rainfall
  - ➢ Well construction
  - ➢ Pesticide spraying
  - ➢ Hazardous waste disposal
  - ➢ Ditch maintenance activities
  - ➢ Grazing days and rest periods

EMPLOYEE TRAINING RECORD

Date: _____

Topic(s) Discussed:

_____

_____

_____

_____

_____

Employee(s)	Present Responsibility

Trainer: _____

Signature: _____

APPENDIX 10. GUIDANCE FOR STORMWATER MANAGEMENT

- Contact your local NRCS District Conservationist to obtain information about the soil types for the proposed location. The District Conservationist can identify soil types that are historically prone to flooding or standing water. Evaluate the storage capacity, size, and elevations of existing ditches, ponds, creeks, rivers, and wetlands, and the size, layout, and elevations of the fields. You should also contact your county or water management district to obtain maps (FEMA, FIRM) or other information related to flooding issues at the proposed or existing location. You can access this information via the web at http://www.fema.gov/hazard/map/firm.shtm.
- Determine the maximum storm size for which you want to provide flood protection. The flood control design storm addressed by WMD ERP regulations varies from a 25-year, 24-hour storm to a 100-year, 3-day storm. For example, a 25-year, 24-hour storm produces from 8 to 10 inches of rainfall in a 24-hour period. Generally, the larger the design storm event used, the more extensive the stormwater management system needs to be. Factors that will affect this decision include land availability, the existence of internal natural features such as creeks, rivers, ponds, or wetlands, the potential to flood downstream property owners, and costs.
- Consult with a public or private agricultural engineer to discuss your stormwater management needs and considerations, especially if you are farming on poorly drained lands. Find an engineer qualified to provide an appropriate stormwater runoff analysis for your site.
- Include both nonstructural pollution prevention BMPs and structural BMPs, as needed and feasible to meet desired stormwater management objectives. If structural BMPs are needed, determine what is appropriate for your farm characteristics and stormwater management objectives. Each of the WMD ERP regulations and handbooks include specific design guidelines for various structural stormwater BMPs. The construction of a stormwater management system (e.g., retention or detention pond) may require an ERP or other WMD surface water management permit. Therefore, please check with your water management district before beginning construction of any stormwater management system. Typical structural BMPs include:
  - Retention basins that capture stormwater and allow it to percolate into the soil, evaporate, or transpire. These infiltration BMPs are used in areas with sandy soils and a wet-season water table that is at least two feet beneath the bottom of the retention basin. Special designs are needed in Karst areas or springsheds to minimize movement of pollutants, especially nutrients, into the ground water.
  - Wet detention ponds that capture stormwater, detain it, and slowly release the runoff to downstream waters or stormwater systems. Wet ponds are used in areas with a high water table.
  - Grassed waterways used to convey stormwater to structural BMPs. Grassed waterways also help filter runoff and, in many cases, allow stormwater to infiltrate.
  - Typical nonstructural BMPs include field buffers, riparian buffers, nutrient management, minimizing soil compaction and impervious areas.

APPENDIX 11

Notice of Intent and BMP Checklist

ADAM H. PUTNAM
COMMISSIONER

Florida Department of Agriculture and Consumer Services
Office of Agricultural Water Policy

FDACS- OAWP
1203 Governor's Sq. Blvd.
Suite 200
Tallahassee. FL 32301

NOTICE OF INTENT TO IMPLEMENT
WATER QUALITY BMPs FOR FLORIDA COW/CALF OPERATIONS (2008)

Rule 5M-11.004, F.A.C.

- **Complete all sections of the Notice of Intent** (NOI). Each NOI may list only properties that are within the same county and are owned or leased by the same person or entity, and on which applicable BMPs will be identified and implemented under this manual.
- Submit the **NOI**, along with the **BMP Checklist**, to the Florida Department of Agriculture and Consumer Services (FDACS), at the address below.
- **Keep a copy of the NOI and the BMP checklist in your files** as part of your BMP record keeping.

You can visit http://www.freshfromflorida.com/onestop/forms/01520.pdf to obtain an electronic version of this Notice of Intent to Implement (NOI) form.

If you would like assistance in completing this NOI form or the BMP Checklist, or with implementing BMPs, contact FDACS staff at (850) 617-1727 or AgBmpHelp@freshfromflorida.com.

Mail this completed form and the BMP Checklist to: **FDACS Office of Agricultural Water Policy**
1203 Governor's Square Boulevard, Suite 200
Tallahassee, Florida 32301

Person To Contact

Name: _____

Business Relationship to Landowner/Leaseholder: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

Telephone: _____ FAX: _____

Email: _____

☐ **Landowner or** ☐ **Leaseholder Information** *(check all that apply)*

NOTE: If the Landowner/Leaseholder information is the same as the Contact Information listed above, please check: ☐ **Same as above**. If not, complete the information below.

Name: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

Telephone: _____ FAX: _____

Email: _____

Complete the following information for the property on which BMPs will be implemented under this NOI. You may list multiple parcels if they are located within the same county and are owned or leased by the same person or entity.

Operation Name: _____

County: _____

Tax Parcel Identification Number(s) from County Property Appraiser

Please submit a copy of your county tax bill(s) for all enrolled property, with owner name, address, and the tax parcel ID number(s) clearly visible. If you cannot provide a copy of the tax bill(s), please write the parcel owner's name and tax parcel ID number(s) below in the format the county uses. Attach a separate sheet if necessary *(see form provided)*.

Parcel No.: _____ Parcel Owner: _____

Parcel No.: _____ Parcel Owner: _____

Parcel No.: _____ Parcel Owner: _____

Parcel No.: _____ Parcel Owner: _____

Parcel No.: _____ Parcel Owner: _____

☐ Additional parcels are listed on separate sheet. *(check if applicable)*

Total # of acres of all parcels listed ***(as shown property tax records)***: _____

Total # of acres on which BMPs will be implemented under this NOI: _____

In accordance with section 403.067(7)(c)2, Florida Statutes, I submit the foregoing information and the BMP Checklist as proof of my intent to implement the BMPs applicable to the parcel(s) enrolled under this Notice of Intent.

Print Name: _____

(check all that apply) ☐ **Landowner** ☐ **Leaseholder** ☐ **Authorized Agent** *(see below)**

*Relationship to Landowner or Leaseholder: _____

Signature: _____ Date: _____

Name of Staff Assisting with NOI:

NOTES:

1. You must keep records of BMP implementation, as specified in the BMP manual. All BMP records are subject to inspection.
2. You must notify FDACS if there is a full or partial change in ownership with regard to the parcel(s) enrolled under this NOI.
3. Please remember that it is your responsibility to stay current with future updates of this manual. Visit the following website periodically to check for manual updates: www.floridaagwaterpolicy.com

Additional Tax Parcel Listings

Operation Name: _____

County: _____

Parcel No.: _____ Parcel Owner: _____

Parcel No.: _____ Parcel Owner: _____

Parcel No.: _____ Parcel Owner: _____

Parcel No.: _____ Parcel Owner: _____

Parcel No.: _____ Parcel Owner: _____

Parcel No.: _____ Parcel Owner: _____

Parcel No.: _____ Parcel Owner: _____

Parcel No.: _____ Parcel Owner: _____

Parcel No.: _____ Parcel Owner: _____

Parcel No.: _____ Parcel Owner: _____

Parcel No.: _____ Parcel Owner: _____

Parcel No.: _____ Parcel Owner: _____

Parcel No.: _____ Parcel Owner: _____

Parcel No.: _____ Parcel Owner: _____

Parcel No.: _____ Parcel Owner: _____

Parcel No.: _____ Parcel Owner: _____

FLORIDA COW/CALF WATER QUALITY BMP CHECKLIST

Checklist Instructions:

Note: Before you fill out this checklist, follow the section on BMP Enrollment and Implementation, which begins on page 3 of this manual. You must read the BMPs in Sections 1.0 - 13.0 before filling out the checklist, in order to know what the practices entail. The checklist summaries are for identification purposes only.

1. Check "In Use" for each BMP that you are currently practicing and will continue to practice. If you have a Conservation Plan, enter the FOTG code number in the "In Use" column for all currently implemented practices contained in the plan that are covered in the checklist, and place a check mark in the column for currently implemented practices not contained in the plan.
2. For the applicable BMPs you do not implement currently but will implement, enter the month and year you plan to implement them in the "Planned" column. Where relevant, enter the FOTG code number and month/year of planned implementation in the "Planned" column. Schedule BMPs to be implemented as soon as practicable. FDACS rule requires that applicable Level I BMPs in the manual be implemented as soon as practicable, but not later than 18 months after submittal of the Notice of Intent (NOI) to Implement. This timeline applies to all practices in a Conservation Plan that are identified under the Level I BMPs in the checklist. If you need additional time to implement the following Level I BMPs, you must justify the time needed in the space provided at the end of the checklist: 2.2 Upland Pond Construction Criteria; 2.3 Other Watering Sources; 5.3 Installation of Water Control Structures; 6.3 Riparian Buffer.
3. If you have a Conservation Plan, make sure you identify in the checklist all applicable BMPs that are in the plan and those that are not in the plan. If the plan contains practices that are not covered in the BMP checklist, list the FOTG code number and the names of those practices in the space provided at the end of the checklist.
4. For BMPs you will not implement, check all of the following that apply under "Will Not Implement":
   - NA = Not Applicable (you do not have a resource concern that requires use of the BMP)
   - TNF = Technically Not Feasible
   - ENF = Economically Not Feasible
   - Other – If you select "Other," please explain your reason in the comments section at the end of the form.
5. Make sure you are aware of and follow the record-keeping requirements. BMP groups that include record keeping are marked by the following pencil icon: ✎
6. Mail this BMP checklist with your NOI form to FDACS, and keep a copy of both documents in your files. If you have developed a Conservation Plan, submit a copy of the plan along with the NOI and checklist.

BMP #	BMP Group (See body of manual for full description)	In Use/CP#	Planned	Will not implement (check reason below)			
		Check below/ Enter FOTG #	Enter month/ year	NA	TNF	ENF	Other
1.0 Nutrient Management							
1.1.	Level I - Fertilizer Management ✎						
1.	Use Mehlich-1 soil test results or equivalent to determine P application rate						
2.	Determine supplemental fertilizer needs using appendix 5 worksheet						
3.	Use IFAS publication SL-129 to determine fertilization rates						
4.	Time fertilizer applications for maximum nutrient uptake						
5.	Prevent spreading fertilizer material within 50′ of streams, sinkholes, or wetlands						

BMP #	BMP Group (See body of manual for full description)	In Use/CP# Check below/ Enter FOTG #	Planned Enter month/ year	Will not implement (check reason below) NA	TNF	ENF	Other
1.2. Level I - Residuals or Biosolids Application							
1.	Follow FDEP/FDOH regulations for residuals/septage application						
2.	Request the Calcium Carbonate Equivalency and nutrient analysis of treated biosolids						
3.	Obtain copy of FDEP "Agricultural Use Plan"						
1.3. Level I - Animal Nutrition and Feedstock							
1.	Manage supplemental feed to avoid high nutrient loads						
2.	Locate confined feeding areas away from sensitive features						
3.	Locate mineral and supplemental feed 100' from sensitive features						
1.4. Level I - Animal Waste Management							
1.	Manage livestock distribution to reduce waste accumulation						
2.	Use concentrated on-site manure sources for fertilizer						
2.0 Alternative Cattle Water Sources							
2.1. Level I - Water Needs Inventory							
1.	Inventory existing water sources and compare to livestock demand						
2.	Review water management district records on regional well water quality data						
2.2. Level I - Upland Pond Construction Criteria							
1.	Construct ponds less than 2 acres and locate at least 50' from wetlands, or further based on water management district requirements						
2.	Construct cattle access areas with minimum 3:1 slope						
2.3. Level I - Other Watering Sources							
1.	Locate troughs/shade to keep cattle from streams or watercourses						
2.	Construct troughs/tanks with stable base						
3.	Extend pipe at least 100' from waterbody						
3.0 Prescribed Grazing							
3.1. Level I - Prescribed grazing guidelines							
1.	Manage forages/pastures to promote plant vigor, prevent erosion and maintain soil moisture						
2.	Use rotational grazing or other measures for regrowth						
3.	Manage wetlands through flash grazing or exclusion						
3.2. Level II - Comprehensive Prescribed Grazing							
1.	Develop grazing schedules based on NRCS Code 528						
2.	Incorporate cross-fencing in larger pastures						

BMP #	BMP Group (See body of manual for full description)	In Use/CP# Check below/ Enter FOTG #	Planned Enter month/ year	Will not implement (check reason below) NA	TNF	ENF	Other
4.0 Sediment and Erosion Control Measures							
4.1.	**Level I - General Erosion and Sediment Control Measures**						
	1. Minimize vegetation clearing during construction						
	2. Clear land during dry season						
	3. Vegetate road banks and disturbed areas within 14 days of construction						
	4. Use rock crossings for low flow streams						
	5. Manage livestock to prevent erosive trails						
4.2.	**Level I - Silt Fences**						
	1. Use silt screens (less than 3 months) for sheet flow						
4.3.	**Level II - Check Dams**						
	1. Install check dams perpendicular to flow						
4.4.	**Level II - Sediment Traps**						
	1. Install sediment traps within conveyance system or near cowpens						
	2. Retrofit associated sediment trap structures with flashboard risers						
4.5.	**Level III - Grade Stabilization Structures**						
	1. Clear construction area of debris						
	2. Vegetate disturbed areas within 14 days of construction						
	3. Fence around structure to exclude livestock						
	4. Install structures during the dry season						
	5. Follow criteria for fill placement and spreading per this BMP						
	6. Prevent damage from overtopping the structure, and divert excess flows						
	7. Follow earth embankment side slope specifications per this BMP						
	8. Obtain technical assistance as needed						
5.0 Water Resources Management							
5.1.	**Level I - Water Supply**						
	1. Know quantity/quality of irrigation source						
	2. Determine water requirements for forage grasses						
5.2.	**Level I - Ditch Construction and Maintenance** ■						
	1. Follow appropriate grades and plans during ditch excavation						
	2. Use appropriate setbacks to avoid hydraulic drawdown impacts to wetlands						
	3. Use structural control measures in areas with high water velocity						
	4. Control broadleafs to maintain permanent vegetative cover						
	5. Remove unconsolidated sediments from ditches						

BMP #	BMP Group (See body of manual for full description)	In Use/CP# Check below/ Enter FOTG #	Planned Enter month/ year	Will not implement (check reason below) NA	TNF	ENF	Other
5.3. Level I - Installation of Water Control Structures							
1.	If economically feasible, install water control structures to rehydrate wetlands that have offsite flows						
2.	Maintain boards in all structures to reduce discharge volume						
5.4. Level I - Grassed Waterways							
1.	Install grassed waterways per USDA-NRCS specifications						
6.0 Conservation Buffers							
6.1. Level I - Field Borders							
1.	Install and maintain field borders at perimeter on new improved pastures						
2.	Time planting borders for plant survival and consider using native species						
6.2. Level I - Filter Strips							
1.	Install filter strip to treat runoff from concentrated livestock areas						
2.	Follow filter strip construction criteria in this BMP						
6.3. Level I - Riparian Buffers							
1.	Install and maintain riparian buffer if > 1% slope, and follow NRCS criteria						
7.0 Fence Installation							
7.1. Level I - General Fence Installation							
1.	Minimize soil and vegetative disturbances while clearing land						
2.	Select materials based on purpose and site conditions						
3.	Adjust stocking rates or subdivide larger pastures						
4.	Stabilize streambanks and provide alternative water sources in improved pastures, or install exclusion fencing						
5.	Provide riparian buffer in native or semi-improved pastures that runoff to perennial streams						
7.2. Level I - Fence Installation in Wetlands							
1.	Minimize use of mechanical equipment, and limit clearing to 12′ on either side of fence						
2.	Perform work during the dry season						
7.3. Level II - Livestock Use Exclusion							
1.	In area regulated by water management district, install exclusion fencing 300′ from discharge point						
2.	In area not regulated by water management district, install exclusion fencing 500′ from discharge point						
3.	Install exclusion fencing adjacent to perennial streams where significant erosion occurs						

BMP #	BMP Group (See body of manual for full description)	In Use/CP# Check below/ Enter FOTG #	Planned Enter month/ year	Will not implement (check reason below) NA	TNF	ENF	Other
8.0 High-Intensity Areas							
8.1.	**Level I - High-Intensity Area Management**						
1.	Locate new cowpens 200′ from sensitive features; use berm						
2.	Direct runoff from high-intensity areas away from sensitive features						
8.2.	**Level II - Design Retrofits**						
1.	Use aggregate materials to prevent erosion						
2.	Treat discharges occurring into sensitive features						
9.0 Animal Mortality							
9.1.	**Level I - Sanitation and Disease Control Measures**						
1.	Transport carcasses in a sanitary manner						
2.	Clean equipment that comes into contact with carcasses						
3.	Report dangerous diseases to the state veterinarian (refer to list in this BMP)						
9.2.	**Level I - Disposal**						
1.	Move carcasses to upland areas						
2.	Locate burial sites at least 200′ from sensitive features and 50′ from adjacent property						
9.3.	**Level I - Rendering and Incineration**						
1.	Use a licensed rendering/incinerating facility						
10.0 Wellhead Protection for Drinking Water Wells							
10.1.	**Level I - Well Planning and Protection**						
1.	Construct new wells upgradient from likely pollutant sources						
2.	Research well permit requirements						
3.	Cap or valve free-flowing wells						
4.	Keep livestock 75′ from potable wells						
10.2.	**Level I - Well Construction and Operation** ■						
1.	Use a Florida-licensed water well contractor						
2.	Follow pad and casing specifications in this BMP						
3.	Retrofit existing wells with concrete collar and fence						
4.	Use backflow prevention devices at the wellhead						
11.0 Wetlands and Springs Protection							
11.1.	**Level I - Wetland Protection and Impact Avoidance**						
1.	Identify wetland or hydric soil types using soil survey						
2.	Eliminate or reduce adverse impacts to wetlands						
3.	Maintain a 25′ vegetative buffer from wetlands, or follow buffers prescribed in your WMD permit						
4.	Obtain a USDA-NRCS wetland determination prior to conducting activities in a wetland						

BMP #	BMP Group (See body of manual for full description)	In Use/CP#	Planned	Will not implement (check reason below)			
		Check below/ Enter FOTG #	Enter month/ year	NA	TNF	ENF	Other
11.2. Level I - Water Quality Treatment and Field Discharges							
1.	Use pretreatment practices to protect wetlands						
2.	Rotate livestock through wetlands at accelerated pace						
3.	Use spreader swales or other means to encourage sheetflow						
11.3. Level I - Special Criteria for First and Second Magnitude Springs							
1.	Maintain a 100' vegetative buffer around spring features						
2.	Use split applications of fertilizers on pasture areas that discharge to spring features						
12.0 Prescribed Burning							
12.1. Level I - Burn Preparation							
1.	Develop and implement a burn prescription plan, or use a Certified Prescribed Burn Manager						
2.	Obtain burn permit from DOF and heed burning bans						
3.	Use burning in conjunction with roller chopping in areas with an abundance of palmettos						
4.	Burn only when weather conditions are favorable						
12.2. Level I - Construction of Firelines							
1.	Carefully select fireline locations and avoid constructing them in wetlands						
2.	Use alternatives to plowed firelines						
3.	Construct firelines with the contour to minimize soil erosion						
12.3. Level I - Fire Safety and Control							
1.	Have adequate fire equipment and control burn temperature						
2.	Ensure fire is completely out before leaving the site						
13.0 Integrated Pest Management and Pharmaceuticals							
13.1. Level I - General IPM Practices							
1.	Store pesticides in roofed structure with lockable door, at least 100' from surface water						
2.	Use appropriate mix/load sites and measures, per this BMP						
3.	Practice IPM and use all pesticides in accordance with label						
4.	Rinse, recycle, or dispose of empty pesticide containers following all applicable regulations						
13.2. Level I - Pharmaceutical Use and Disposal							
1.	Use FDA-approved products, and mix only the amount needed						
2.	Follow label and dosing instructions						
3.	Dispose of spent needles and unused pharmaceutical products responsibly						

List additional BMPs you are implementing per your conservation plan that are not listed in the above checklist.

FOTG #	Practice Name/Description	In Use/CP # *Check Below*	Planned *Enter mo./yr.*

BMP #	Comments: Please enter "other" reasons below for not implementing BMPs.

BMP Group	Justification for additional time to implement specified Level I BMPs
2.2	
2.3	
5.3	
6.3	