



6200 Jefferson NE
Albuquerque, New Mexico 87109-3734
Phone: (505) 761-4489 Fax: (505) 761-4462
Web site: www.nm.nrcs.usda.gov

March 27, 2006

**NATIONAL ENGINEERING MANUAL
210-V
AMENDMENT NUMBER 42**

SUBJECT: ENG - PART 501 - AUTHORIZATIONS, SUBPART A - REVIEW AND APPROVAL
PART 511 - DESIGN, SUBPART A - PROCEDURES
PART 521 - POLLUTION ABATEMENT AND WATER QUALITY IMPROVEMENT

Purpose:

The purpose of this amendment is to distribute New Mexico amendments to portions of the National Engineering Manual.

Effective Date:

These amendments are effective upon receipt.

Filing Instructions:

<u>Remove Pages</u>	<u>Insert Pages</u>
NM-501-3(4) to NM-501-3(8) Dated May 1998 for Amendment NM36	NM501.04-1 to NM501.04-4 Dated March 2006 for Amendment 42
NM511-4(1) and NM511-4(2) Dated December 2003 for Amendment 39	NM511.03-1 to NM511.03-8 Dated March 2006 for Amendment 42
NM521-1(1) and NM521-1(2) Dated September 2004 for Amendment 40	NM521.01-1 and NM521.01-2 Dated March 2006 for Amendment 42

Receipt of this transmittal should be posted to the New Mexico tabulation sheet of the National Engineering Manual.

/s/ Mark G. Butler for David J. Pacheco

DAVID J. PACHECO
State Conservation Engineer

Enclosures

Distribution: All Field Offices
All Engineers

PART 501 - AUTHORIZATIONS
SUBPART A – REVIEW AND APPROVAL

NM501.04(b)(1)(i)

§NM501.04 Engineering job approval authority

- (a) The State Conservation Engineer has retained the job approval authority to approve designs for all agricultural waste projects, and the designs for dams, ponds, and dikes associated with agricultural waste projects for all job classes identified in NM-ENG-2. The following practices are involved:

Conservation Practice	Code
AGRICULTURAL WASTE	
Anaerobic Digester, Ambient Temperature	365
Anaerobic Digester, Controlled Temperature	366
Animal Mortality Facility	316
Closure of Waste Impoundments	360
Pond Sealing or Lining - Flexible Membrane	521A
Manure Transfer	634
Monitoring Well	353
Waste Facility Cover	367
Waste Storage Facility	313
Waste Treatment Lagoon	359
Waste Water Treatment Strip	635
DAMS, STRUCTURES & EARTHEN EMBANKMENTS	
Dam	402
Dike	356
Pond	378

In addition, all designs performed by non-NRCS persons, except for those prepared by licensed engineers registered under the Technical Service Provider program, for which NRCS has technical or financial responsibility, will be reviewed and approved by the State Conservation Engineer.

- (b) In-state engineering job approval authority (Classes I through V)
- (1) In general, the following is applicable for all low hazard projects:
- (i) Class I and Class II jobs include most of the engineering work involved in assisting farmers, ranchers, and landowners with smaller conservation practices.

Revision to NM501.04-1

(210-V-NEM, Amendment 42, March 2006)

PART 501 - AUTHORIZATIONS
SUBPART A – REVIEW AND APPROVAL

NM501.04(b)(1)(i)

§NM501.04 Engineering job approval authority

- (a) The State Conservation Engineer has retained the job approval authority to approve designs for all agricultural waste projects, dams, ponds, diversion dams, and dikes for all job classes identified in NM-ENG-2. The following practices are involved:

Conservation Practice	Code
AGRICULTURAL WASTE	
Anaerobic Digester, Ambient Temperature	365
Anaerobic Digester, Controlled Temperature	366
Animal Mortality Facility	316
Closure of Waste Impoundments	360
Pond Sealing or Lining - Flexible Membrane	521A
Manure Transfer	634
Monitoring Well	353
Waste Facility Cover	367
Waste Storage Facility	313
Waste Treatment Lagoon	359
Waste Water Treatment Strip	635

DAMS, STRUCTURES & EARTHEN EMBANKMENTS	
Commercial Fishpond	397
Dam	402
Dam, Diversion	348
Dike	356
Irrigation Regulating Reservoir	552
Irrigation Storage Reservoir	436
Pond	378
Sediment Basin	350

In addition, all designs performed by non-NRCS persons, except for those prepared by licensed engineers registered under the Technical Service Provider program, for which NRCS has technical or financial responsibility, will be reviewed and approved by the State Conservation Engineer.

- (b) In-state engineering job approval authority (Classes I through V)
- (1) In general, the following is applicable for all low hazard projects:
- (i) Class I and Class II jobs include most of the engineering work involved in assisting farmers, ranchers, and landowners with smaller conservation practices.

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NM501.04(b)(1)(ii)

These are usually prepared by technicians that have adequate training and experience for the type of practice being proposed.

- (ii) Class III and IV jobs are larger than Class I and II and are usually more complex. They normally require the skills of experienced field engineers and technicians.
 - (iii) Class V jobs are of a size or complexity that normally requires the skills of experienced field engineers and/or State Office Engineering Staff specialists. They require the approval of the Area Engineer and/or the State Conservation Engineer.
 - (iv) Projects not listed on NM-ENG-2, regardless of any assumed job class, shall require State Conservation Engineer approval.
- (2) Form NM-ENG-2 shall be used for issuing job approval authority and the following procedures shall be used:
- (i) Approval shall be based on size, complexity, and hazard, without regard to program type or sources of funds, for planning, design, or construction.
 - (ii) The recommended levels for each practice and in each category shall be based on the employee's training, experience, demonstrated competence, and the need within the employee's geographical area of responsibility.
 - (iii) The State Conservation Engineer shall complete NM-ENG-2 and establish the job approval authority for the Area Engineers.
 - (iv) The Area Engineer will recommend delegated authority for all engineers, civil engineering technicians, and soil conservation technicians if they are involved with the planning, design and construction of engineering conservation practices. The Area Engineer shall complete NM-ENG-2 and forward the form to the individual's supervisor for concurrence. The form shall then be sent to the State Conservation Engineer for approval. The State Conservation Engineer will distribute signed and dated copies of approved NM-ENG-2 to the individual, the individual's supervisor, and the Area Engineer.
 - (v) Job approval authority will be considered for new or reassigned individuals within six months after hiring or reassignment. Job approval authority may be changed at any time as individuals gain new skills, knowledge, experience, and/or demonstrated changed competency.
 - (vi) The Area Engineer, State Conservation Engineer, the individual, and the individual's supervisor are to maintain current copies of the delegated authority. Job approval authority expires three years after the authority is issued. The

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NM501.04(e)(1)

individual and the Area Engineer shall ensure that a new NM-ENG-2 is submitted in a timely manner when the authority issued is approaching its expiration date.

- (3) Form NM-ENG-2 shall be used in lieu of Exhibit 2 §501.09.
 - (4) Professional engineers licensed by the state of New Mexico will be routinely delegated Class IV or V job approval authority unless the State Conservation Engineer has reserved the job approval authority in §NM501.04(a).
 - (5) Issuance of job approval authority (or lack of applicable job approval authority) does not imply that individuals cannot work on jobs above that delegated authority. When this occurs, their work is to be reviewed and approved by an individual holding the appropriate level of delegated job approval authority prior to releasing the plan or design to the producer/landowner/sponsor.
 - (6) *There is no New Mexico amendment of this section.*
- (c) State Conservation Engineer's engineering job approval authority (Classes VI through VIII).
- (1) *There is no New Mexico amendment of this section.*
 - (2) Class VI and higher projects jobs are those having a significant size or complexity, and/or significant or high hazard potential. The State Conservation Engineer has retained the job approval authority to approve designs for all Class VI projects. The State Conservation Engineer shall obtain design reviews from design teams outside the state or the National Design, Construction and Soil Mechanics Center for Class VII projects. Class VI and Class VII construction projects shall be inspected by individuals assigned to the Project Construction Office.
 - (3) Designs for Class VI projects will be accomplished by the Area Engineer or by members of the State Office Engineering Staff. The decision as to which individuals will prepare the design will be made case-by-case. Designs for Class VII and Class VIII projects will be accomplished by members of the State Office Engineering Staff, shall be obtained with contracted engineering services, prepared by the National Design, Construction and Soil Mechanics Center, or elsewhere as discussed with the Director of the Conservation Engineering Division.
- (d) Engineering job approval authority for additional work.
- There is no New Mexico amendment of this section.*
- (e) Documentation of design review and engineering job approval.
- (1) Signatures are to be placed on the design documents as follows.

NM501.04-3

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SUBPART A – REVIEW AND APPROVAL

NM501.04(e)(1)(i)

- (i) Signatures are to be placed in the certification portion of the appropriate job sheets.
- (ii) Design narratives/reports are to be signed at the end of the report and prior to appendices.
- (iii) Construction specifications are to be signed on the back side of the cover sheet.
- (iv) Construction drawings are to be signed in the title block for each sheet.

(2) *This section is not applicable to New Mexico designs.*

(f) Associated plans and specifications.

There is no New Mexico amendment of this section.

PART 511 - DESIGN
SUBPART A - PROCEDURES

NM511.03(e)(3)

§NM511.03 Operating Procedures

(e) Community Ditch Cooperative Agreement

To be eligible for design under the Community Ditch Assistance Agreement between NRCS and the New Mexico Interstate Stream Commission, the project and sponsor must meet the following requirements:

- The project must promote water conservation through improvement of irrigation facilities and/or water management practices.
- The applicant must be a legally organized community ditch verified by the New Mexico Interstate Stream Commission.

The operating procedures for projects designed under the Community Ditch Cooperative Agreement shall be as follows:

- (1) Unless otherwise established, the District Conservationist shall be the contact between NRCS and the organized community ditch.
- (2) The District Conservationist shall initiate and maintain NM-ENG-251 (Group Ditch Project Status Sheet) and as applicable, complete the four worksheets (NM-ENG-251a through 251d). The District Conservationist shall complete the appropriate portions of Section A of NM-ENG-252 (Request for Engineering Services) and submit a copy of the completed forms to the Acequia Liaison.
- (3) The Acequia Liaison shall contact the New Mexico Interstate Stream Commission and request written approval for reimbursement in order to continue with the design of the proposed project. The Acequia Liaison shall assign a Project Control Number to facilitate tracking. The Acequia Liaison is responsible to initiate the Environmental Assessment process with the United States Army Corps of Engineers funded projects. Using NM-ENG-252 (Request for Engineering Services), the Acequia Liaison shall obtain a drawing number and a file code number from the State Conservation Engineer. A courtesy copy of the New Mexico Interstate Stream Commission approval letter shall be attached to the NM-ENG-252 sent to the State Conservation Engineer and to the Area Conservationist.

The Acequia Liaison shall initiate the billing process, on a quarterly basis, as outlined in the Community Ditch Cooperative Agreement. The billing is based on stages of project completion as follows:

- Planning
- Survey and Initial Design Calculations
- Preliminary Design
- Final Design
- Project Construction

NM511.03-1

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SUBPART A - PROCEDURES

NM511.03(e)(4)

- (4) The State Conservation Engineer shall complete the tracking portion of Section C of the NM-ENG-252 and provide a copy of the submitted NM-ENG-252 to the Area Conservationist, the Acequia Liaison, and the District Conservationist.
- (5) The Area Conservationist will direct the District Conservationist to complete the planning process established in the National Planning Procedures Handbook and the National Engineering Manual.
- (6) The District Conservationist is responsible for writing the group plan. The District Conservationist shall provide assistance to the community ditch for verifying water rights, obtaining permits, identifying cultural resources, and any applicable environmental concerns. The District Conservationist may request planning and/or design assistance from the Area Conservationist. The District Conservationist is responsible for notifying the Acequia Liaison when planning is complete regardless of any assistance that may be provided by others.
- (7) The Area Conservationist shall coordinate any requests for assistance with the Acequia Liaison, other Area Conservationists, and/or the State Conservation Engineer.
- (8) The final design shall be prepared in accordance with §511.02 of this manual, checked and reviewed in accordance with §511.05 of this manual, and forwarded to the State Conservation Engineer for concurrence.
 - (i) The designer is responsible for notifying the Acequia Liaison when each phase of the design is complete.
 - (ii) The designer shall evaluate the complexity of the design and identify the intensity of construction inspection recommended as part of the design narrative.
 - (iii) The State Conservation Engineer will review the completed design materials and when the materials have been signed and sealed, submit the design materials to the New Mexico Interstate Stream Commission for approval. The State Conservation Engineer shall notify the Acequia Liaison when the approved design is returned from the New Mexico Office of the State Engineer. Distribution of final approved design materials will be in accordance with §NM511.03(g) of this manual.
- (9) Upon completion of construction:
 - (i) The authorized NRCS representative shall complete the appropriate Conservation Practice Job Sheets and send the originals of the job sheets to the District Conservationist.

NM511.03-2

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SUBPART A - PROCEDURES

NM511.03(f)(4)

- (ii) The District Conservationist shall retain the originals of the job sheets, and furnish copies of the completed job sheets to the Acequia Liaison, Area Conservationist, State Conservation Engineer, and the community ditch.

(f) Agricultural Waste Management Projects

The procedures identified herein are a complement to §NM521.01, Pollution Abatement in Conservation Operations.

Designs prepared in accordance with the following Conservation Practice Standards are considered to be agricultural waste management projects:

- Dam - Code 472 (when the waste storage facility to be constructed is classified by the New Mexico Office of the State Engineer as a jurisdictional dam)
- Manure Transfer - Code 634
- Pond - Code 378 (when the pond is designed as a waste storage facility)
- Pond Sealing or Lining - Flexible Membrane - Code 521A (when the pond is designed as a waste storage facility)
- Pond Sealing or Lining - Soil Dispersant - Code 521B (when the pond is designed as a waste storage facility)
- Waste Storage Facility - Code 313
- Waste Treatment Lagoon - Code 359

Other Conservation Practice Standards may be applicable. The designer is to contact the State Conservation Engineer early in the design process to determine if these procedures are applicable.

- (1) Unless otherwise established, the District Conservationist shall be the contact between NRCS and the producer.
- (2) The District Conservationist shall initiate the design process for designs to be prepared by NRCS personnel by completing NM-ENG-252 (Request for Engineering Services) upon receipt of a request from a producer for design services. The District Conservationist shall submit the completed NM-ENG-252 to the Area Conservationist.
- (3) The Area Conservationist shall determine if the design can be accomplished by area personnel. If the design cannot be completed by area personnel, the Area Conservationist shall forward the request to the State Conservation Engineer.
- (4) The State Conservation Engineer shall determine if the design can be accomplished by state personnel, if an engineering services contract would be required, or if the producer is to be advised that NRCS would not be able to prepare the design.

NM511.03-3

PART 511 - DESIGN
SUBPART A - PROCEDURES

NM511.03(f)(5)

- (5) The designer shall prepare the design in accordance with §511.02 of this manual and, if applicable, the Summary Plan of the Comprehensive Nutrient Management Plan (CNMP).
- (6) The designer is responsible for ensuring the completed design satisfies the requirements of Part 531 of this manual. Site investigations must be performed by personnel trained to recognize geologic hazards.
 - (i) If the design is to be prepared by NRCS personnel, and the producer's facility is classified as a Concentrated Animal Feeding Operation (CAFO), the design is not to be started without a complete, signed CNMP provided to the designer. If the design is to be prepared by non-NRCS personnel and the producer's facility is classified as a CAFO, the State Conservation Engineer will not accept the design unless a completed, signed CNMP has been provided to the State Conservation Engineer.
 - (ii) If the producer's facility is not classified as a CAFO, the requirements of the Ground Water Quality Bureau of the New Mexico Environment Department shall be satisfied by the design. If the producer's facility is classified as a CAFO, the more stringent requirements of the Ground Water Quality Bureau of the New Mexico Environment Department or the Surface Water Quality Bureau of New Mexico Environment Department shall be satisfied by the design.
- (7) As a minimum, the designer shall ensure the following is addressed.
 - (i) The seasonal high ground water level in the project area must be established.
 - (ii) The organic content of the foundations of all structures must be below acceptable levels or the designs must include components to vent gas resulting from organic decay.
 - (iii) The maximum height of embankment and the potential volume for the effective height of an excavated/earthfill waste storage facility shall be established and compared to the definition of a jurisdictional dam as established by the New Mexico Office of the State Engineer. If the facility is a jurisdictional dam, the design shall be in accordance with the "Rules and Regulations Governing Dam Design, Construction and Dam Safety."
- (8) Pond waste storage facilities designed by NRCS personnel shall be in accordance with the following.

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SUBPART A - PROCEDURES

NM511.03(g)

- (i) Waste storage ponds that include utilization of wastewater shall be sized in accordance with the most current version of the pond sizing spreadsheet developed by New Mexico NRCS personnel.
 - (ii) Evaporative waste storage ponds shall be initially sized in accordance with the most current version of the pond sizing spreadsheet developed by New Mexico NRCS personnel. The output from that spreadsheet shall be used by the Soil-Plant-Atmosphere-Water (SPA-W) model to determine the correct size of the pond required. (Training is required to use the SPA-W model. The procedures, assumptions, and inputs are not part of this manual.)
 - (iii) If the producer's facility is a dairy and classified as a CAFO, and the CNMP includes the design of separate waste storage ponds, one a storm water runoff pond and one resulting from parlor operations, verify that the producer wants to have two separate waste storage pond systems. Both of the waste storage ponds in this situation will have to be lined with man-made materials. If the hydraulics of the system permit the combination of the two waste streams, a savings in liner cost may be achieved.
- (9) All agricultural waste management designs prepared by NRCS personnel must be approved by the State Conservation Engineer prior to the release of the design to producers, the New Mexico Environment Department, or any other applicable agencies. All agricultural waste management designs prepared by non-NRCS personnel involving federal cost sharing, such as the EQIP program, must be prepared by a professional engineer licensed by the state of New Mexico. Those designs, except those prepared by licensed engineers registered under the Technical Service Provider program, must be accepted by the State Conservation Engineer in writing prior to the release of the design to producers, the New Mexico Environment Department, or any other applicable agencies. Conservation Practice Job Sheets for the applicable codes shall be signed by the non-NRCS designer. A signed and sealed letter essentially duplicating the Engineer Certification portion of the job sheet will also be acceptable.
- (10) Completed designs shall be transmitted to the District Conservationist. The District Conservationist shall provide the design package to the producer and the District Conservationist shall obtain signatures from the producer on all applicable job sheets. Copies of the applicable job sheets shall be transmitted to the State Conservation Engineer.
- (g) Distribution of Final Design Materials

The following procedures are to be followed in reviewing, concurring, and/or approving engineering designs submitted to the State Conservation Engineer. These designs may be prepared by NRCS personnel or by licensed professional engineers outside of NRCS.

NM511.03-5

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NM511.03(g)(1)

- (1) A completed NM-ENG-252 shall be used to transmit final design materials (*i.e.*, prepared in accordance with §511.02 of this manual, checked and reviewed in accordance with §511.05 of this manual) to the State Conservation Engineer. Electronic copies of the final design materials are to be included to the maximum extent possible. The State Conservation Engineer shall determine if additional review is required and shall assign the review as appropriate.
- (2) At the completion of a review directed by the State Conservation Engineer, the reviewer shall prepare a review report and return the design materials to the State Conservation Engineer.
 - (i) If additional effort is required to complete the final design, the review report will be attached to a letter or memorandum advising the designer that additional work will have to be completed prior to approval or concurrence. The letter or memorandum is to be addressed to the District Conservationist with courtesy copies to the Area Conservationist, Area Engineer, and others as may be appropriate. A new NM-ENG-252 shall be used to resubmit the final design materials after the items identified in the review report have been resolved by the designer.
 - (ii) Once the review determines that the design is complete, the design materials will be sent to the appropriate agency for further processing or, if applicable, to the District Conservationist for implementation.
- (3) The following items are to be maintained in the State Office files:
 - Copy of correspondence
 - Copy of design computations
 - Copy of design report/narrative
 - Copy of Geologic Investigation Report and Soil Laboratory testing results
 - Copy of engineer's cost estimate (if applicable) including quantity computations
 - Copy of bid schedule (if applicable)
 - Copy of construction and material specifications
 - Copy of operation and maintenance plans/agreements
 - Original construction drawings (except for agricultural waste projects)
 - Copy of construction drawings for agricultural waste management projects
 - Copy of as-built drawings
 - Copy of the contractor's bid (if applicable)
 - Copy of completed and certified job sheets
- (4) The following items are to be sent to the Area Office from the State Conservation Engineer:
 - Copy of the design transmittal memorandum to the Field Office

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NM511.03(g)(6)

- Copy of design report/narrative
- Copy of engineer's cost estimate (if applicable) including quantity computations
- Copy of bid schedule (if applicable)
- Copy of construction and material specifications
- Copy of operation and maintenance plans/agreements
- Copy of construction drawings

(5) The following items are to be maintained in the Field Office files:

- Correspondence originals
- Design computation originals
- Design report/narrative originals (except for agricultural waste management projects)
- Copy of the design report/narrative for agricultural waste management projects
- Engineer's cost estimate original including quantity computations
- Copy of construction and material specifications
- Copy of operation and maintenance plans/agreements
- Copy of construction drawings prior to construction
- Original as-built construction drawings
- Copy of completed and certified job sheets

(6) The following originals are to be furnished to the producer for agricultural waste management projects:

- Design report/narrative originals signed and sealed by the State Conservation Engineer
- Copy of Geologic Investigation Report and Soil Laboratory testing results
- Two copies of the design report/narrative
- Construction drawing originals signed and sealed by the State Conservation Engineer on each sheet
- Two copies of the construction drawings
- Construction and material specification originals signed and sealed by the State Conservation Engineer.
- Two copies of the construction and material specifications
- Job sheet originals signed by the State Conservation Engineer and, if the design was prepared by a licensed professional engineer, the signature of the designer
- Two copies of the job sheets

NM511.03-7

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SUBPART A - PROCEDURES

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§NM521.01 Pollution Abatement in Conservation Operations

- (a) Planning. The NRCS may provide the following technical assistance to producers/operators in order to develop waste management plans, Nutrient Management Plans, and Comprehensive Nutrient Management Plans, as personnel are available.
- (1) Gather and assemble readily available resource data found in the Field Office. This will normally include soil, plant, climatic, and animal waste data; and crop nutrient and water balance data for the planned soils, crops, and livestock operation.
 - (2) Alternative waste management and disposal methods are to be considered and compared for environmental effects. Alternatives are to be discussed with the producer/landowner/operator.
 - (3) The planning objective is to assist operators to adopt a resource management system so all conservation concerns are addressed appropriately. As a minimum, the plan will be developed in conservation plan format. The plan must include a waste management system that incorporates conservation practices necessary to properly manage waste and prevent degradation of soil, water, air, plant, animal, and human resources. The plan must also include an appropriate operation and maintenance guide. Conservation practices may include Composting Facility (317), Manure Transfer (634), Waste Storage Facility (313), Waste Treatment Lagoon (359), Waste Utilization (633), Wastewater Treatment Strip (635), and others.
- (b) Design. All designs must be approved by a professional engineer licensed by the State of New Mexico. If the operator requests NRCS to prepare the design, he/she is to be advised that the request will be processed by NRCS through a priority system and an overall work load analysis. The operator may wish to utilize the services of a private engineering firm for design. The District Conservationist is to ensure the producer/operator is aware that under the Technical Service Provider program, an individual may be able to assist the operator in obtaining the necessary design.
- (1) Priority will be given to requests based on the following order:
 - (i) Where NRCS program funds are approved for the practices, with practices funded in prior years' having a higher priority.
 - (ii) An existing facility will have a higher priority than a new facility.
 - (iii) A facility under a deadline to meet local, state, or federal permit requirements.
 - (2) It is the policy of NRCS New Mexico to require a synthetic liner for any pond used for a Composting Facility - Code 317, Waste Storage Facility - Code 313 (dairy parlor waste, storm runoff, or combined ponds), or Waste Treatment Lagoon - Code 359. The lining requirements of Conservation Practice Standard 521A, Pond Sealing or Lining – Flexible Membrane, shall be met. The producer/operator must

PART 521 - POLLUTION ABATEMENT AND WATER QUALITY IMPROVEMENT

NM521.01(c)

obtain written approval from the New Mexico Environment Department in order to use any pond lining material other than 40 mil or thicker high density polyethylene (HDPE) or 45 mil or thicker ethylene propylene diene terpolymer (EPDM).

- (c) Installation. All installations must be certified by a professional engineer, licensed to practice in New Mexico. Inspection and certification of components installed under this policy must be by qualified personnel as indicated by current job approval authority and/or accepted certifications.
- (d) Operation and maintenance. The designer is to provide and review the operation and maintenance plan with the owner/operator.