Hugo CCR Landfill Closure Plan

Western Farmers Electric Cooperative

Project No. 85009

Revision 0
October 14, 2016

Hugo CCR Landfill
Closure Plan

Prepared for

Western Farmers Electric Cooperative
Project No. 85009
Hugo, Oklahoma

Revision 0
October 14, 2016

Prepared by

Burns & McDonnell Engineering Company, Inc.
Kansas City, Missouri

INDEX AND CERTIFICATION

Western Farmers Electric Cooperative
Hugo CCR Landfill
Closure Plan

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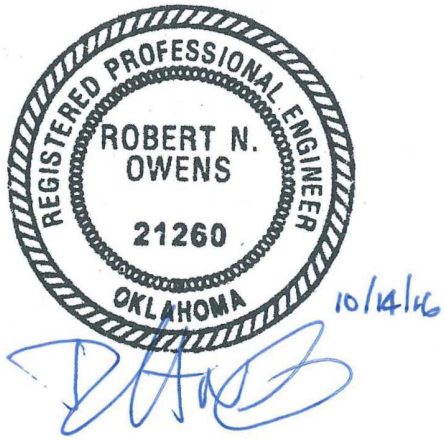
Certification

I hereby certify, as a Professional Engineer in the state of Oklahoma, that the information in this document was assembled under my direct personal charge. I am a "Qualified Professional Engineer" as defined by 40 C.F.R. § 257.53 by the fact that I have the technical knowledge and experience to make the specific technical certifications set forth herein. This Closure Plan meets the requirements of 40 C.F.R. § 257.102. This report is not intended or represented to be suitable for reuse by Western Farmers Electric Cooperative or others without specific verification or adaptation by the Engineer.



Robert N. Owens P.E. (No. 21260)

Date:

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LIST OF ABBREVIATIONS

Abbreviation	Term/Phrase/Name
ALM	Asset Life Management
BMcD	Burns & McDonnell
CCR	Coal Combustion Residual
C.F.R.	Code of Federal Regulations
CMMS	Computerized Maintenance Management System
EPA	Environmental Protection Agency
ESP	Electrostatic Precipitator
FGD	Flue Gas Desulfurization
NAVD 88	North American Vertical Datum of 1988
NGVD 29	National Geodetic Vertical Datum of 1929
OAC	Oklahoma Administrative Code
ODEQ	Oklahoma Department of Environmental Quality
RCRA	Resource Conservation and Recovery Act
USC	United States Code
USGS	United States Geological Survey
WFEC	Western Farmers Electric Cooperative

1.0 INTRODUCTION

Burns & McDonnell (BMcD) has compiled information and prepared this Written Closure Plan (Closure Plan) for the existing CCR Landfill (Landfill) at the Western Farmers Electric Cooperative (WFEC) Hugo Power Plant (Plant). The purpose of this Closure Plan is to comply with the United States Environmental Protection Agency's (EPA) Coal Combustion Residual Rule (CCR Rule), and the counterpart rules of the Oklahoma Department of Environmental Quality (ODEQ).

On April 17, 2015, EPA published the CCR Rule relating to the disposal of coal combustion residuals (CCR) materials generated at electric utilities' coal-fired units. The CCR Rule was promulgated pursuant to the Resource Conservation and Recovery Act (RCRA, 42 U.S.C. §§ 6901 *et seq.*), using the Subtitle D approach and is found at 40 C.F.R. § 257.50 *et seq*. Additionally, ODEQ adopted counterpart regulations to the CCR Rule effective September 15, 2016, which are found at OAC 252:517.

The owner or operator of a CCR Landfill subject to the CCR Rule must compile a Closure Plan in accordance with 40 C.F.R. § 257.102(b)(1) and OAC 252:517-15-7(b)(1). This Closure Plan provides the steps necessary to close the existing Landfill (sometimes also referred to herein as CCR Unit) at the Plant. The Closure Plan describe the steps necessary to close the Landfill at a point in its active life consistent with recognized and generally accepted good engineering practices. Specifically, this Closure Plan describes the following as required in 40 C.F.R. § 257.102(b)(1):

- A narrative description of how the Landfill will be closed.
  - For in-place closure:
    - A description of the final cover system, methods for installing final cover system, and methods for achieving compliance with the standards outlined in 40 C.F.R. § 257.102(d)
- An estimate of the maximum amount of material ever stored in the Landfill over its active life.
- An estimate of the largest area of the Landfill ever requiring a final cover as required by 40 C.F.R. § 257.102(d) at any time during the Landfill's active life.
- A schedule for completing closure activities, including the anticipated year of closure, sequential steps and estimated timeframes, and major milestones for permitting and construction activities.

2.0 CLOSURE PLAN

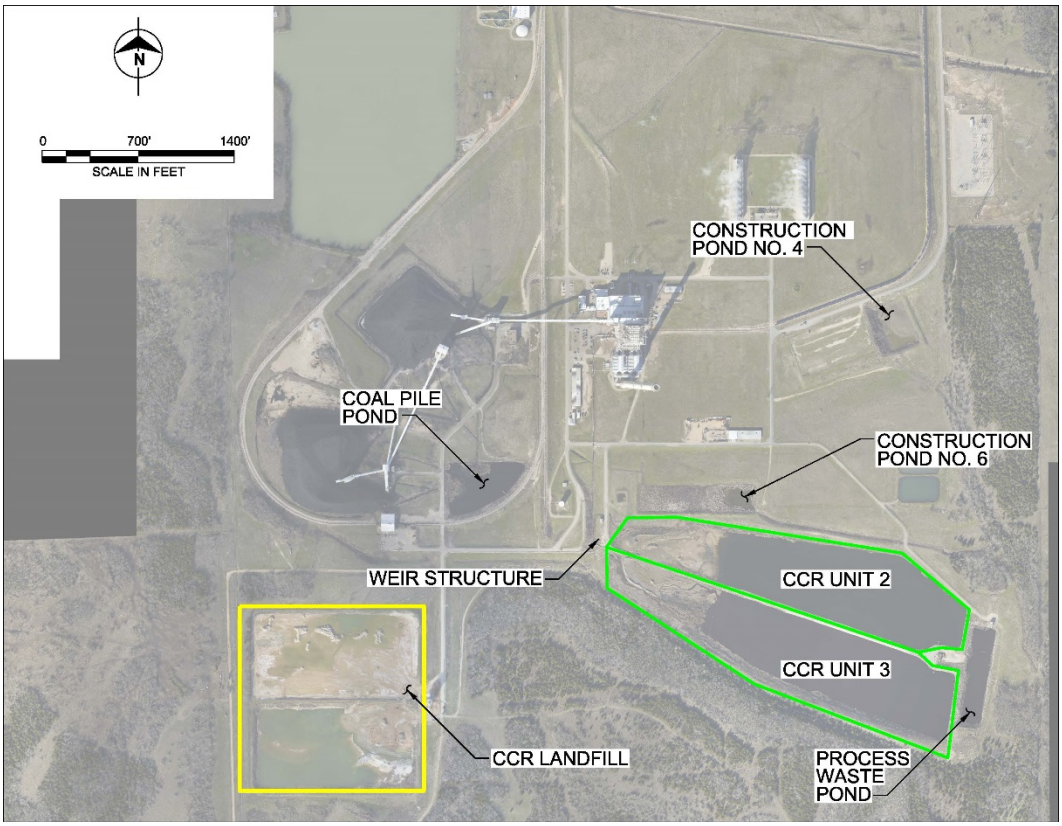
2.1 Landfill Description

The Plant is a single, coal-fired unit rated at 450 MW. The Plant is located south of highway US-70, west of the Town of Fort Towson, Oklahoma, and is owned and operated by WFEC. Bottom ash is available for beneficial reuse and managed in two cells of the Plant's CCR surface impoundment. Fly ash and economizer ash generated by the Plant are beneficially reused or managed in an on-site Landfill as described below.

Fly ash is pneumatically transported from the electrostatic precipitator (ESP) and stored temporarily in silos during normal operations. Fly ash is unloaded directly from the silo and sold for beneficial use. The remaining portion of the fly ash is placed in the on-site Landfill where it is managed or later excavated for sale for beneficial use. Fly ash is conditioned at the Landfill with water when unloading.

The Landfill is a special waste landfill registered with the State of Oklahoma. The Landfill is located on the west side of the Plant and is divided into two cells. See Figure 2-1 for a Site Plan.

Figure 2-1 Hugo Site Plan



2.1.1 CCR Inventory

Based on the Modification to the Closure/Post-Closure Plan prepared by Guernsey in 1999, provided in Attachment A, the estimated total volume for the Landfill is approximately 11,000,000 cubic yards. At the time of that Plan, the estimated maximum inventory of CCR in the Landfill was approximately 400,000 cubic yards. The Plant has reported 100 percent of the fly ash and economizer ash generated is under contract for sale. Fly ash and economizer ash that is not sold for beneficial reuse is sent to the Landfill, and on occasion, ash is removed from the landfill and sold for beneficial reuse.

2.1.2 CCR Extent

Based on a review of the construction drawings of the Landfill, and mapping performed as part of other CCR documentation, it is estimated that the waste boundary is about 42 acres. The bottom of the Landfill is at approximate elevation 492' and the top of the berm surrounding the Landfill is at approximate elevation 515' to 517'. Based on the Guernsey document, the final cover slope will be 2% or less. The maximum crest elevation for the final Landfill grading plan is approximately 521' feet.

2.2 Closure Method

The Landfill Closure Plan is described in this document and based on the Modification to the Closure/Post Closure Plan performed by Guernsey, and is included in Attachment A. Modifications to the existing Closure/Post Closure Plan are required for the final cover to be in compliance with the CCR Rule as noted in Section 2.2.1.

2.2.1 Final Cover System

The final cover system will be designed and constructed to meet the following criteria pursuant to 40 C.F.R. § 257.102(d)(3)(i)(A)-(D):

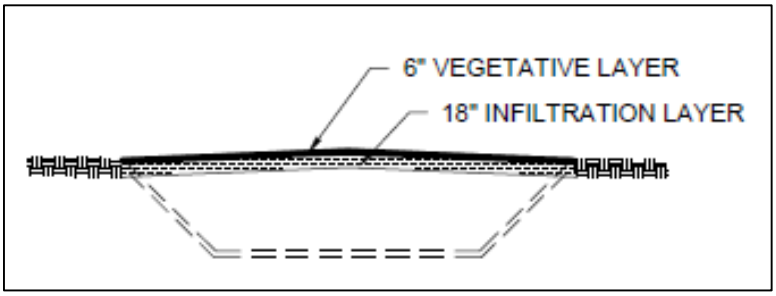
- Have a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present, or a permeability no greater than $1x10^{-5}$ centimeters per second (cm/sec), whichever is less.
- The infiltration of liquids through the closed Landfill must be minimized by the use of an infiltration layer that contains a minimum of 18 inches of earthen material.
- The erosion of the final cover system must be minimized by the use of an erosion layer that contains a minimum of six inches of earthen material that is capable of sustaining native plant growth.

- The disruption of the integrity of the final cover system must be minimized through a design that accommodates settling and subsidence.

The final cover system will consist of an 18-inch infiltration layer and six-inch vegetative soil layer. The CCR materials will form a suitable subgrade for installation of the final cover material. Because of the physical properties of coal ash material, minimal settling is anticipated. Furthermore, settling would occur during the (prolonged) period of filling up the Landfill and minimal settling is anticipated after installation of the cover.

The final cover system will minimize infiltration of liquids, thus minimizing leachate production and migration from the Landfill site. Precipitation will be directed to drainage ditches. Vegetation will be established within the vegetative layer to prevent erosion of the soil from the slopes. A typical cross section of the final cover is shown in Figure 2-2.

Figure 2-2: Typical Cover System



The final cover system is designed to minimize the infiltration of liquids through the closed Landfill and provides a vegetative erosion control layer. In order to comply with the CCR Rule, the construction drawings for the final cover system of the Landfill provide a final cover design that meets or exceeds the permeability of the liner system specified herein.

2.2.2 Installation of Final Cover

Installation of the final cover will include the following general steps:

- Development of construction plans and specifications.
- Final cover system construction bidding and procurement.
- Final cover system construction.
- Documentation of final cover system construction quality assurance activities.

Prior to development of the final cover system construction plans and specification, a ground or aerial survey will be conducted to develop a detailed surface topography. If vegetation exists on the surface of the CCR material or the intermediate cover, the vegetation will be removed. The soil subgrade will be prepared and the final cover system will be installed. The maximum area requiring final cover is estimated to be 42 acres, which is the waste boundary area for CCR waste disposal as indicated in Section 2.1.2.

Construction Quality Assurance (CQA) activities will be conducted in accordance with a CQA Plan. The final cover installation will be closely documented in a CQA documentation report.

2.2.3 Methods to Achieve Closure Performance Standards

As outlined in 40 C.F.R. § 257.102(d), the closure of the Landfill will at a minimum:

- Control, minimize or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste and releases of CCR, leachate, or contaminated run-off to the ground or surface waters or to the atmosphere.
- Preclude the probability of future impoundment of water, sediment, or slurry.
- Provide for slope stability to protect against sloughing or movement of the final cover system.
- Minimize the need for further maintenance of the Landfill.
- Be completed in the shortest amount of time consistent with recognized and generally accepted good engineering practices.

The following sections describe performance standards by which closure of the Landfill will meet these listed criteria.

2.2.3.1 Soil Borrow Areas

Soil borrow areas will be identified prior to closure activities. Borrow soil will be utilized to support the construction of the final cover system. Soil removed from these borrow areas will be amended as necessary to promote vegetative growth in the final cap. Borrow areas will be graded and seeded to prevent erosion.

2.2.3.2 Methods of Revegetation

All areas that require seeding, both for final cover and in soil borrow areas, will be mulched at a rate of 1.5 tons/acre. Soil samples may be obtained prior to seeding to determine if amendments are necessary to promote growth.

Vegetation will provide 90 percent ground cover. Vegetation ground coverage will be evaluated during routine post-closure inspections.

2.3 Closure Commencement

Closure of the Landfill will commence no later than 30 days after the date on which the Landfill receives the known final receipt of waste. At the time of development of this Closure Plan, the estimated year of final receipt of CCR material is 2035. The actual year is subject to change based on the Plant's ability to sell fly ash for beneficial reuse instead of sending it to the Landfill. For purposes of this Closure Plan, and in accordance with the CCR Rule, closure of the Landfill has commenced when the Plant ceases placing waste and completes any of the following actions or activities:

- Takes any steps necessary to implement the written Closure Plan.
- Submits a completed application for any required state or agency permit or permit modification.
- Takes any steps necessary to comply with any state or other agency standards that are a prerequisite, or are otherwise applicable, to initiating or completing the closure of a Landfill.

No later than the date the Plant initiates closure of the Landfill, a notification of intent to close the Landfill will be prepared. The intent to close will include a certification by a qualified professional engineer in the State of Oklahoma for the design of the final cover system. The notification has been completed when it has been placed in the Plant's CCR Operating Record. The notification will then be placed on the Plant's CCR public website.

The planned closure schedule for the Landfill is included within Appendix A of this plan.

2.4 Closure Completion

Closure for the Landfill will be completed within six months of commencing closure activities per the CCR Rule and Section 2.3 of this Closure Plan. The timeframe for completing closure of the Landfill may be extended if the Plant can demonstrate that it is not feasible to complete closure of the Landfill within the required timeframe due to factors beyond the facility's control. A request for the extension of closure timeframe will be completed pursuant to 40 C.F.R. § 257.102(f)(2).

Within 30 days of completion of closure of the Landfill, a notification of closure of the Landfill will be prepared and placed in the Plant's Operating Record and on the Plant's CCR public website. This notification will include a certification by a qualified professional engineer in the State of Oklahoma verifying that closure has been completed in accordance with this Closure Plan and the requirements of 40 C.F.R. § 257.102. In addition to the notification of closure, the Plant will have a deed notation prepared

in accordance with 40 C.F.R. § 257.102(i). The deed notation will be documented by a notification prepared and placed in the Plant's Operating Record in accordance with the requirements of 40 C.F.R. § 257.102(i).

The CCR Rule does not define "closure complete" for Landfills. For the purpose of this Closure Plan, closure of the Landfill is considered complete when the final cover system is installed and applicable construction completion documentation is completed.

3.0 REVIEW AND REVISIONS

This Closure Plan will be placed in the Plant's Operating Record in accordance with the CCR Rule. Pursuant to the CCR Rule, if there is a significant change to any information compiled in the Closure Plan, the relevant information will be updated and the revised document will be placed in the Plant Operating Record with notice and public accessibility as required by the CCR Rule. A record of revisions made to this document is included in Section 4.0.

4.0 RECORD OF REVISIONS

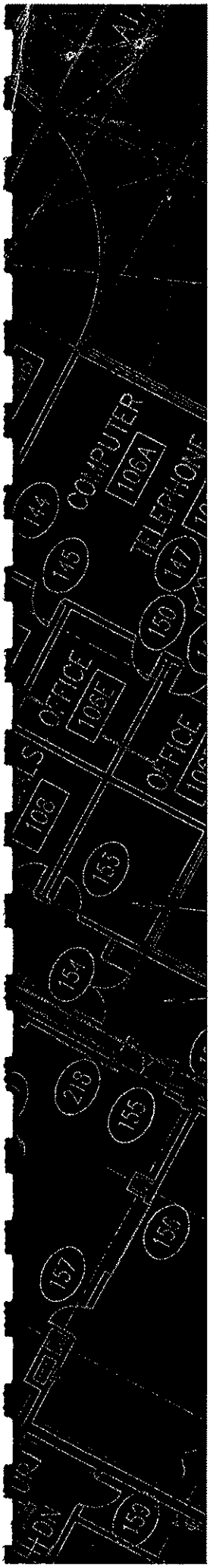
Revision Number	Date	Revisions Made	By Whom
0	10/14/2016	Initial Issue	Burns & McDonnell

APPENDIX A – CLOSURE SCHEDULE

Preliminary Closure Schedule

Closure Activity	Timeframe (Working Days)	Accumulated Duration (Working Days)
Preparation for Closure		
Permitting / design	120	120
Submit Notification of Intent to Close to ODEQ	20	140
Design documents issued for bid	0	140
Bid period	15	155
Bid evaluation	10	165
Contract Award	20	185
Final placement of CCR material	0	185
Commence construction / mobilization	30	215
Closure Construction		
Dewatering / stabilization	90	305
Grading / backfill of landfill	40	345
Install compacted clay layer and membrane	90	435
Install erosion layer (topsoil)	20	455
ODEQ inspection	20	475
Seeding	20	495
Site clean-up / demobilization	10	505
Closure Completion		
Submit Notification of Completion of Closure	20	525

ATTACHMENT A – MODIFICATION TO THE CLOSURE/POST CLOSURE PLAN



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GUERNSEY

ENGINEERS

•

ARCHITECTS

•

CONSULTANTS

Western Farmers Electric Cooperative
Anadarko, OK

PRELIMINARY
DRAFT

MODIFICATION TO THE CLOSURE/POST CLOSURE PLAN

FLY ASH PONDS 1 AND 2
HUGO GENERATING PLANT

HUGO, OK

APRIL 14, 1999

Western Farmers Electric Cooperative
Anadarko, OK

PRELIMINARY
DRAFT

MODIFICATION TO THE CLOSURE/POST CLOSURE PLAN

FLY ASH PONDS 1 AND 2
HUGO GENERATING PLANT

HUGO, OK

APRIL 14, 1999

Western Farmer's Electric Cooperative (WFEC)
Modified Closure Plan
Hugo Generating Plant

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Part I - Closure Plan
(Modified)

1.0 Introduction

Western Farmer's Electric Cooperative (WFEC) has obtained the services of C. H. Guernsey & Company (GUERNSEY) to review and modify the Closure/Post Closure Plan (PLAN) originally submitted in November, 1993 for the Fly Ash Ponds 1 and 2 at the Hugo Generating Plant in Hugo, OK (SITE).

This modification to the PLAN will further define the time required to fill the ponds and begin closure for them. All of the State and local requirements from the original plan remain in effect. This modification will also provide the appropriate reviewing agencies with the change in operational situations that are being considered by WFEC.

All applicable regulations have been reviewed and remain in effect concerning the PLAN. The purpose of the modification is to evaluate the financial exposure WFEC is required to maintain concerning closure activities and make recommendations to assist in minimize that financial exposure. This modification will further define the time required to fill the ponds and begin the actual closure process.

Another purpose of this modification is to take advantage of the opportunity to fill one of the ponds and begin the closure process. It is WFEC's intention to now close the ponds one at a time to make available the required area and to minimize the amount of financial assurance required to maintain the bond for the closure plan.

In January 1999, WFEC requested that GUERNSEY investigate the idea to close or partially close one of the ponds, thereby reducing the amount of financial assurance required to maintain the closure plan. After a lengthy investigation, the following questions were developed to determine the existing conditions concerning the ponds. Answers to these questions would assist in determining the feasibility of the partial closure.

1. Are both ponds currently being utilized?

   Information from the plant indicates that the North pond is approximately 60 per cent filled with the South Pond being approximately 20 per cent filled.

2. Could one pond be closed at a time?

   According to David Smit at the Oklahoma Department of Environmental Quality (ODEQ), this can be accomplished with a modified plan.

2. Could possibly one end of one pond and then the other end followed by the last pond?

While it is not specifically spelled out here, it was indicated in the PLAN that this was the intended course of action. However, post closure activities, such as monitoring and maintenance would require a significant amount of coordination to maintain proper closure.

3. If only one pond is being used, is it possible to remove any ash left in the other pond to the one currently being used?

   This is a viable solution to minimize the time required to fill one pond and close it out. However, the cost to relocate the existing material could be prohibitive.

4. Is water being utilized in the ponds or is the material being place dry?

   According to the information received, it is apparent that the material is being placed in a dry state.

5. If it is being placed dry, is there a need for the water in the pond? Also, is there a need for the ponding head device?

   There is not a significant need for water in the pond. The drainage system must be installed to allow for runoff to leave the pond during the life of the pond.

6. If the material is being placed dry and approval for the idea could be obtained, could the material in one pond be mounded to a depth of 6 - 8 feet above the top of the dike and immediately covered with top soil and establishing vegetation?

   To properly close the pond, the final cover material must be placed over the fly ash. This must be placed between the topsoil and the fly ash material. In addition, to ensure proper drainage of the cover surface, a 2.0 per cent slope must be maintained for the cover. Due to the width of the pond, the actual rise from the edge of the pond to the center is 6.28 feet.. However, the design for closure provides for the material at the edges of the pond to be within no more than 3 feet of the top of the dike. Therefore the material will only rise above the top of the dike a total of 3.28 feet.

7. Using the same idea in item 6, could the West end of one pond be closed out (say 60 - 80 feet) at a time?

   Yes, it can, but again, the final cover material should be placed and compacted over the fly ash to consider it being "closed out". In addition, the monitoring required during post closure could interfere with existing placement operations. If say 80 feet of the west end of one pond is closed out, then the volume of cover that would

contain the material would be 2.5 feet thick times 20 feet high times 700 feet wide. This results in a volume of 1300 cubic yards in the pond that could be utilized for ash storage. If you broke up the pond into 80 foot lengths and applied cover at each "closure", you would use approximately 19,000 cubic yards of available storage space with cover material.

8. Approximate length of time required to fill a pond? Previous estimates have a range of approximately 20 years. Some additional time estimates are included in this study and some of the factors which played into the establishment of these estimates are:

   - Current plant contractor has maintained a "0" balance on placement of ash into the pond. This is due to 100 per cent sales of the material.
   - What level of performance will be achieved (or maintained) by the successive contractor(s), and
   - How or what effect changes in the state or federal regulations will have on the use of the material.

The answers to these questions are used to further refine the recommendations previously made in the PLAN.

2.0 Pond Utilization

Currently, there is no material being placed in the ponds. Existing contracts project 100 per cent sale of the material until the end of year 2001. At that time, 100 per cent of the material could possibly be deposited in the ponds.

The volume of storage in each pond is calculated to be 544,822 cubic yards. This includes the prismoidal area located above the horizontal plane 3 feet below the top of the dike. The volume of storage available in this area above the level top of the pond is approximately 54,532 cubic yards per pond. With the information obtained, it was determined that an average monthly placement of material is approximately 4,843 cubic yards per month. Therefore, a pond, starting at empty, would take 112.5 months or 9.4 years to fill.

If indeed the North Pond is filled first, it would only take 51.7 months or 4.3 years. That would make the closure sometime in early 2006. Then the South Pond would be filled beginning with approx. 98,000 cubic yards of material already placed. That would leave 446,822 cubic yards available and it would take 92.3 months or 7.7 years at the calculated average rate of placement of 4,843 cubic yards per month. The South Pond would then be filled sometime in early 2013.

If the volume of the existing material already deposited in the South Pond were removed and placed in the North Pond, that would reduce the time to closure by 20 months, or 1.7 years. This would allow the North Pond to be closed in the year 2004. However, the cost of moving the existing

material from the south pond to the north could outweigh any potential savings gained in the depositing of the financial assurance.

If placement of the material were diverted to the south pond, it would allow the drainage system as designed to remain in place and allow for removal during the closure operations. The rate of deposit was calculated to be 4,843 cubic yards per month. With that rate, closure of the first pond (south) would take approximately 92 months, or 7.6 years to complete (year 2001). If the material in the North Pond were moved to assist in filling the South Pond, then the time would be shortened to 31.5 months or 2.6 years (2004).

Actually, the volume of material is wholly contained within the dike itself as the top of the cover will be equal to the top elevation of the existing dike. The fly ash material can indeed be mounded above the top of the dike, however, a maximum of 2 percent grade should be maintained on the cover to minimize erosion of the cover material. Therefore, the total height of the material above the level top can only be half the width of one pond (546/2 + 40.23 = 313.23') times the grade (2.0%) or 6.26 feet. With the cover being 3 feet deep, this will project the fly ash mound approximately 3 feet above the top of the dike.

3.0 Drainage

In the PLAN, it was recommended that the South Pond (No. 2) be closed first, either all at once, or in phases, followed by the North Pond (No. 1) in the same manner. The closure drainage system was designed to accommodate this sequence of closure.

However, information from the plant indicates that the North Pond is approximately 60 per cent filled with the South Pond being approximately 20 per cent filled. Therefore, the north pond is currently closest to being filled. If the North Pond is to be closed first, the drainage system as designed will require modification.

If the drainage system as recommend in the plan has already been installed, then a modification to this location should be implemented before continuing with placement of material in the North Pond. This modification will consist of re-routing the piping to the east and collecting along the north to intercept the outfall at the NE corner of the North Pond. This will require an additional 790 lineal feet of 24 inch diameter CGMP pipe, and two Manhole/Junction Boxes. In addition, the excavation for the piping will be significantly deeper and will cost more. Also, the existing piping under the ponds (not including the inlets) should be removed. It is called to be demolished at closure anyway, so this would be a good time to remove the piping. The total additional cost to modify the system already installed is $60,000. See Appendix B for cost estimates for the various alternatives.

If the drainage system has not yet been installed, the location of the piping can be modified such that the collector piping does not run under the ponds from South to North, but instead is installed along the east edge of the pond dike. At closure of either one of the ponds, the drain for that pond may be

removed without affecting the performance of the other pond and the collector pipe along the edge of the pond may be abandoned in place. The estimated cost for this modification is $20,100.

4.0 Final Cover and Surface Drainage

The intent to fill either pond first, thereby allowing partial closure, will require some coordination. To adequately drain the area above the ponds, a minimum of a 2% slope should be maintained to ensure that all surface water runs off the pond area. However, greater than a 2% slope could result in erosion of the final cover material. Therefore, to close out one pond and allow for the maximum storage of fly ash, the surface of the cover material should maintain a 2.0 percent slope in all directions. This is somewhat a problem on the side of the pond nearest the center dike. If the pond is mounded in the middle and drains to both sides, the runoff towards the dike would have to be intercepted and diverted away from the other pond 1. Therefore, a drainage piping system would be required to divert the water away from the dike area. This system should be installed in the trench currently occupied by the distribution piping in the center dike. Since this system is no longer in use, and it to be removed as a part of closure, we recommend the interim drainage piping be constructed in this location.

To allow for adequate drainage when both ponds are closed, additional cover material is required to provide minimal slope for storm water runoff above the ponds. In the original intent to close the ponds together, it was intended to mound the material above both ponds, thereby allowing for material to be deposited above the dike area. However, in closing one cell at a time the final cover must be in place to consider the pond closed. Therefore, it would not be feasible to consider the area above the top of the dike as usable storage. Upon closure of both ponds, it would be advisable for the proposed drain pipe to be removed and sufficient final cover material added in this area to facilitate overland or channel drainage.

The efforts to close the North Pond first would surely reduce the cost of the assurance sooner, but if indeed the drainage piping is already installed, it should be modified, and removed from under the pond prior to continuing with the material placement. A recommended modification is shown on Sketch C-1 in Appendix C.

5.0 Costs

The estimated costs for closure of both ponds at one time, based on the closure plan of 1993, is calculated to be approximately $3,654,843. This cost is in 1999 dollars.

The total cost for closing the either Pond first is estimated to be $1,991,801. This does not include any modification to the existing drain system. If the system has not yet been installed, it may be modified prior to installation to accommodate both ponds. The additional cost to modify the system from that already presented is approximately $20,100. This includes the addition of two junction

manholes and the additional excavation required to locate the piping out from under the ponds.

If the drainage piping has already been installed, then it must be amended as shown on attached sketch C-1. If indeed it has been installed, then the additional cost to modify the drainage system will be approx. $60,000.

Close the South Pond first. To close the south pond first will more closely follow the original plan and will not require any modification to the drainage system as originally designed. However, the volume of existing material already placed in the north pond is of such magnitude that it would financially be more conducive to concentrate storage efforts on the North Pond. If indeed the North Pond is to be the first to be closed, then the question is whether or not it is conceivable to relocated the existing material in the South Pond to the North Pond. The cost for moving the material is estimated to be approximately $1.10 per cubic yard. With approx. 98,000 cubic yards to be relocated that would increase the closure costs for the pond by $107,800.

All of the costs are shown in Appendix B.

6.0 Summary

Therefore, it is not only feasible to work towards closure of one pond at a time, but it appears to be financially correct as well.

To recap; the total costs for both ponds together in one closure plan (in 1999 dollars)

Closure Plan costs	$3,654,843
Post closure costs	$193,505
Total cost for Financial Assurance	$3,848,348

This figure can be carried out to a closure year of 2013. (14 more years)

By closing one pond at a time, the costs are :

Closure Plan costs (North)	$1,991,801
Post Closure costs (North)	$173,381
Closure Plan costs (South)	$1,684,517
Post Closure costs (South)	$173,030
Total cost for Financial Assurance	$4,022,729

However, only 1,857,547 will be carried out beyond the next 5 years.

All of the other requirements set forth in the previous plan remain except as modified in this plan.

Prior to actual closure, a formal field survey of the ponds and their contents should be performed. This should be an aerial survey, and probably should be considered as soon as possible. It would give a better idea of how much of each pond is being utilized.

Post Closure Plan
(Modified)

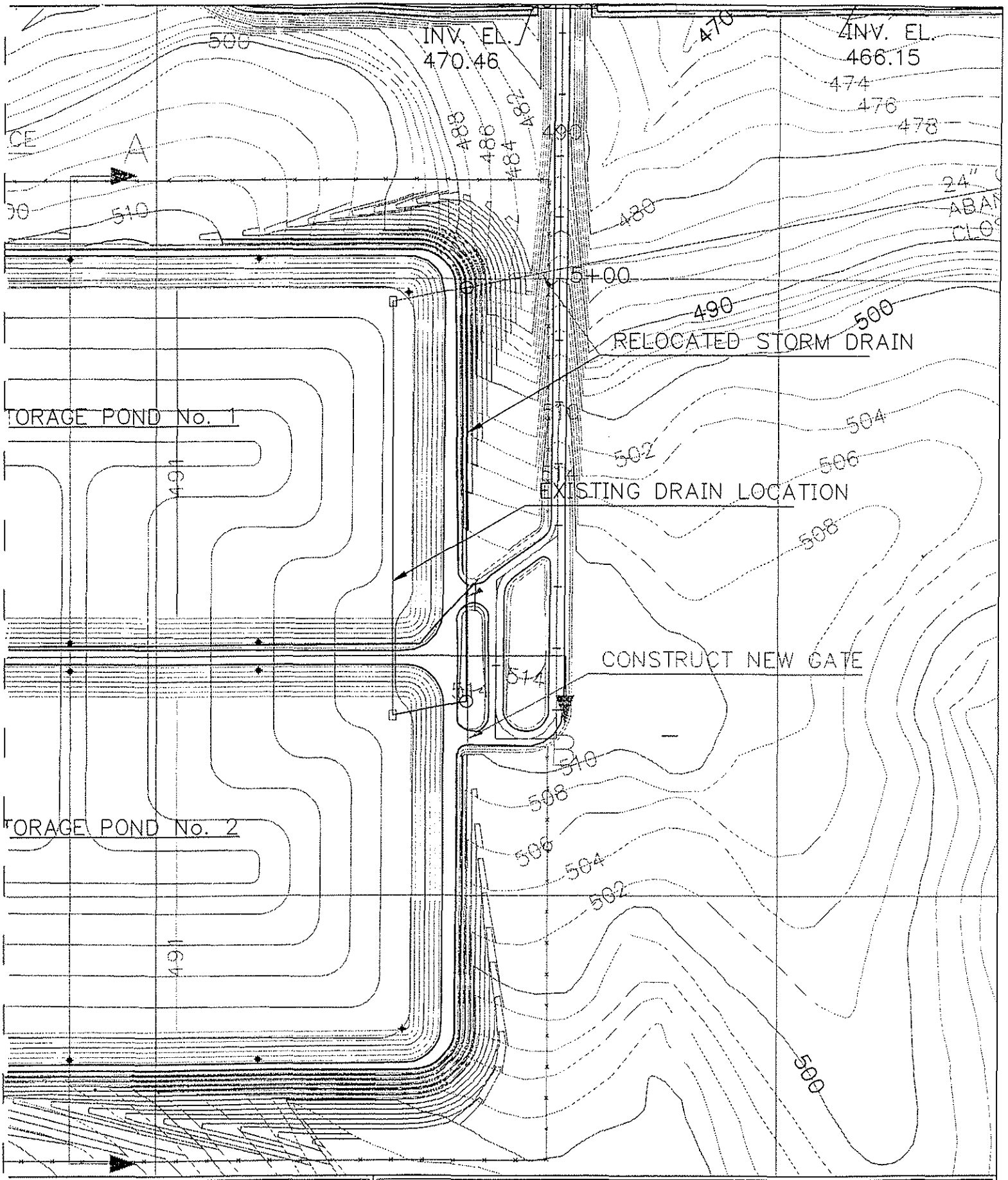
7.0 Information

The requirements for Post Closure remain as outlined in the original plan dated 1998. While only half the area is remaining open, the testing procedures will not change. The amount of tests, and the frequency are for an individual closure. Therefore, at the end of the final closure for the second pond, the testing may be combined.

Many of these issues may be addressed with a face to face meeting with the appropriate personnel at ODEQ.

Prior to proceeding further with this study, and revised plans, we recommend a combined meeting with the user, WFEC, the AE, GUERNSEY, and the reviewing agency, ODEQ.

APPENDIX A



C.H. GUERNSEY & COMPANY
Engineers · Architects · Consultants

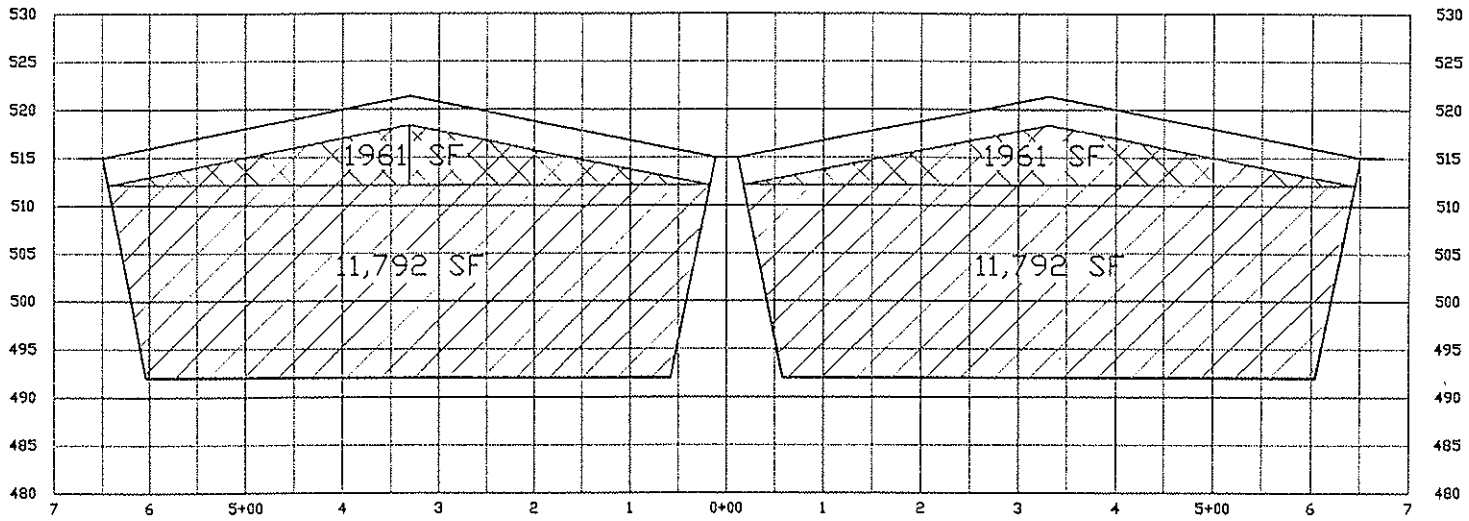
WESTERN FARMER'S ELECTRIC COOPERATIVE

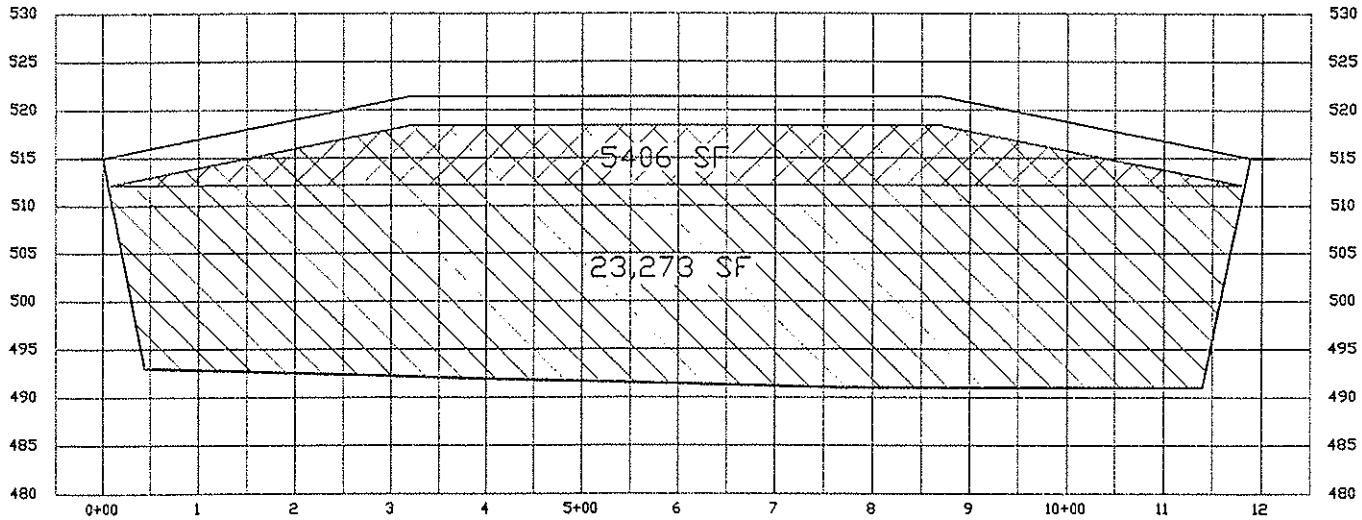
HUGO OK

PREPARED BY: ROB HASKINS
APPROVED BY: RAY WALTERS

PROJECT NAME: FLY ASH POND CLOSURE PLAN
AMENDMENT NO: MODIFICATION 1-1999

SKETCH NO: C-1





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WESTERN FARMER'S ELECTRIC COOPERATIVE

HUGO OK

PREPARED BY: ROB HASKINS
APPROVED BY: RAY WALTERS

PROJECT NAME: FLY ASH POND CLOSURE PLAN
AMENDMENT NO: MODIFICATION 1-1999

SKETCH NO: C-2

APPENDIX B

WESTERN FARMERS ELECTRIC COOPERATIVE
Hugo Generating Plant
Estimate of Probable Costs

			Unit	Total
Final Closure of Flyash Ponds 1 and 2				
Earthwork				
Right of Way Clearing and Restoration	40	Acre	1,240.00	49,600.00
Excavation Clay and Haul, 2 mi. R/T	210,609	CY	7.20	1,516,384.80
Placement with Compaction	168,487	CY	2.65	446,491.08
Topsoil	30,700	CY	13.75	422,125.00
Fertilize, Seed and Mulch	1,750	MSF	43.50	76,125.00
Haul Road - 8" Thick Rock with Fabric	8,450	LF	7.52	63,544.00
Storm Water Collection/Diversion System				
Inlet-Outlet Structures	3	EA	2,100.00	6,300.00
24" Corrugated Steel Pipe	2,420	LF	41.00	99,220.00
Utility Trench and Backfill	2,150	CY	10.32	22,188.00
Drainage Ditches	1,600	CY	2.00	3,200.00
New Monitoring Well	3	EA	5,000.00	15,000.00
Removal of Exsiting Systems				
Remove existing Concrete Anchors	12	EA	500.00	6,000.00
Remove existing DI Dispersion Pipe	1,200	LF	12.00	14,400.00
Plug Existing Monitoring Well	3	EA	300.00	900.00
Security System				
5-Strand Barbed Wire Fencing	5,400	LF	12.50	67,500.00
Gates	2	EA	720.00	1,440.00
Signage	1	LS	1,000.00	1,000.00
Construction Cost in 1999 Dollars				**$2,811,417.88**
Estimate of Probable Construction Costs				2,811,417.88
Engineering and Administration Services @	20.00%			562,283.58
Contingencies @	10.00%			281,141.79
Estimate of Final Closure Costs				**$3,654,843.24**

Estimate Costs base on 1999 Means Sitework Cost Guide

WESTERN FARMERS ELECTRIC COOPERATIVE
Hugo Generating Plant
Estimate of Probable Costs

				Unit	Total
Post Closure of Flyash Ponds 1 and 2					
	Routine Inspection	16	Semi- Annual	655.00	10,480.00
	Maintenance of On-Site Improvements	8	Annual	1,275.00	10,200.00
	Final Plugging of Groundwater Monitoring Wells	10	EA	1,600.00	16,000.00
	Maintaining Vegetation	16	Semi- Annual	1,370.00	21,920.00
	Repairing Final Cover	4,000	CY	7.20	28,800.00
	Maintaining Surface Drainage System	540	LF	4.50	2,430.00
	Replacing Defective Groundwater Wells	2	EA	4,470.00	8,940.00
	Plugging Defective Groundwater Wells	2	EA	1,600.00	3,200.00
	Air Sampling	N/A		0.00	0.00
	Soil Sampling	N/A		0.00	0.00
	Gas Sampling	N/A		0.00	0.00
	Groundwater Monitor Wells Sampling and Analysis	96	Semi- Annual	295.00	28,320.00
	Surface Water Sampling	N/A		0.00	0.00
	Collection Costs	16	Semi- Annual	1,160.00	18,560.00
	Construction Cost in 1993 Dollars				**$148,850.00**
	Estimate of Probable Construction Costs				148,850.00
	Engineering and Administration Services @	20.00%			29,770.00
	Contingencies @	10.00%			14,885.00
	Estimate of Final Closure Costs				**$193,505.00**

WESTERN FARMERS ELECTRIC COOPERATIVE
Hugo Generating Plant
Estimate of Probable Costs

Item No.	Description	Quantity	Units	Unit Cost	Total Cost
Final Closure of Flyash Pond					
	Earthwork				
	Right of Way Clearing and Restoration	20	Acre	1,240.00	24,800.00
	Excavation Clay and Haul, 2 mi. R/T	105,305	CY	7.20	758,192.40
	Placement with Compaction	84,244	CY	2.65	223,245.54
	Topsoil	15,350	CY	13.75	211,062.50
	Fertilize, Seed and Mulch	875	MSF	43.50	38,062.50
	Haul Road - 8" Thick Rock with Fabric	0	LF	7.52	0.00
	Storm Water Collection/Diversion System				
	Drainage Ditches	600	CY	2.00	1,200.00
	New Monitoring Well	1	EA	5,000.00	5,000.00
	Removal of Exsiting Systems				
	Remove existing Concrete Anchors	0	EA	500.00	0.00
	Remove existing DI Dispersion Pipe	0	LF	12.00	0.00
	Plug Existing Monitoring Well	0	EA	300.00	0.00
	Security System				
	5-Strand Barbed Wire Fencing	2,600	LF	12.50	32,500.00
	Gates	1	EA	720.00	720.00
	Signage	1	LS	1,000.00	1,000.00
	Construction Cost in 1999 Dollars				**$1,295,782.94**
	Estimate of Probable Construction Costs				1,295,782.94
	Engineering and Administration Services @	20.00%			259,156.59
	Contingencies @	10.00%			129,578.29
	Estimate of Final Closure Costs				**$1,684,517.82**

Estimate Costs base on 1999 Means Sitework Cost Guide

POND VOLUMES

STA ft	AREA sf	VOL. cy	CUM. VOL. cy
TO TOP OF DIKE			
0.00	0		
		5,565	5,565
38.23	11,792		
		122,754	128,319
319.30	11,792		
		234,903	363,222
857.16	11,792		
		120,919	484,142
1,134.03	11,792		
		6,148	490,290
1,176.26	0		
ABOVE TOP OF DIKE			
0.00	0		
		7,732	7,732
319.30	1,961		
		39,073	46,805
857.16	1,961		
		7,727	54,532
1,176.26	0		

POND NO	% FULL	% FULL VOLUME cy	AVAILABLE VOLUME cy
1	60.00%	294,174	250,648
2	20.00%	98,058	446,764
	TOTAL	392,232	697,412

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