



October 8, 2008

Attn: Charles Garlow, Attorney-Advisor
OECA, Air Enforcement Division
U.S. Environmental Protection Agency
1200 Pennsylvania Ave, N.W. – MC 2242A
Washington, DC 20460

Dear Mr. Garlow:

Enclosed please find our response to the Request to Provide Information Pursuant to the Clean Air Act as discussed in the EPA letter to COGEMA Mining, Inc. dated September 2, 2008, signed by Adam Kushner, Director Air Enforcement Division. As we discussed on September 30, 2008, and confirmed through an exchange of e-mail on the same date, we are responding to the first three questions of Appendix B to the referenced EPA letter, to be followed in November with the balance of the information requested. Your cooperation on this matter is appreciated.

We are perplexed by the EPA request for information on in situ leach uranium recovery ponds in the context of 40 CFR Part 61, Subpart W. It has always been the understanding of COGEMA Mining and affiliated firm Pathfinder Mines Corporation that the intent of Subpart W was to regulate radon releases from conventional uranium milling solid tailings piles or ponds. Pathfinder Mines complied with Subpart W in 1990-1992 by conducting, as required, annual radon flux tests at its Lucky Mc or Shirley Basin conventional milling sites in Wyoming. Both sites then went into final decommissioning, foregoing further testing until the completion of the tailings radon barrier placement, pursuant to Appendix A of 10 CFR Part 40. Upon completion of the radon barrier placement at each site, final radon flux testing was conducted (solution Pond 3 at Shirley Basin remains open since it is utilized for 11(e)(2) byproduct waste disposal from certain in situ leach facilities - the activity is licensed by the U.S. Nuclear Regulatory Commission).

During the 1990-1992 radon flux testing, representatives from EPA Region 8 were involved in the establishment of the sampling protocols at both Lucky Mc and Shirley Basin. While there were questions from EPA regarding the appropriateness of proposed solid tailings pond units for sampling, there was never any question about the fact that solution-only ponds were not sampled. There was at that time concurrence between EPA Region 8 and Pathfinder Mines regarding what type of tailings material was being regulated under Subpart W and hence required radon flux testing: solid tailings

A

generated by conventional mill ore grinding and uranium extraction from that processed ore. Solution ponds at both sites were appropriately excluded from the sampling protocol. The logical inference is that ISL solution ponds are similarly not subject to the Subpart W standard and attendant sampling protocol.

Included with this submittal is a certification signed by the General Manager for COGEMA Mining, Inc. and Pathfinder Mines Corporation, Mr. Bernard Bonifas. If you have any questions regarding the submitted information, do not hesitate to contact me.

Sincerely,



Tom Hardgrove
Manager, Environmental and Regulatory Affairs

Encls.

Cc: Andrew M. Gaydosh, U.S. EPA Region 8
T. Pennington, AREVA NC
B. Bonifas

COGEMA Mining, Inc. & Pathfinder Mines Corp.
Appendix B Response to EPA Inquiry Dated September 2, 2008.
Submitted to EPA October 8, 2008

Prepared by T. Hardgrove, Manager, Environmental and Regulatory Affairs.

- 1) Pathfinder Mines Corporation, an affiliated corporation to COGEMA Mining, Inc., Conventional Uranium Mill and Tailings Facilities:
(see enclosed location maps)
 - a. Lucky Mc Mill and Tailings
Located in SE $\frac{1}{4}$ Section 9, SW $\frac{1}{4}$ Section 10, W $\frac{1}{2}$ Section 15, E $\frac{1}{2}$ Section 16, NE $\frac{1}{4}$ Section 21, and Section 22, T33N, R90W, Wyoming.
 - b. Shirley Basin Mill and Tailings
Located in Section 27 and the E $\frac{1}{2}$ Section 28, T28N, R78W, Wyoming.

Information provided by T. Hardgrove and R. Owens.

- 2) COGEMA Mining, Inc. (COMIN) Uranium In-situ Leaching Facilities:
(see enclosed location maps)
 - a. Irigaray Mine –
Plant and Evaporation/Holding Ponds located in E $\frac{1}{2}$ Section 8 and W $\frac{1}{2}$ Section 9, T45N, R77W, Wyoming.
 - b. Christensen Ranch Satellite Plant
Plant and Evaporation/Holding Ponds located in Section 7, T44N R76W, Wyoming.
 - c. Holiday/El Mesquite Plant and Ponds
Located at N 27.41656° W 098.75465°, in south Texas.
 - d. O'Hern Satellite Plant and Ponds
Located at N 27.39381° W 098.80412°, in south Texas.
 - e. West Cole Satellite Plant and Ponds
Located at N 27.46099° W 098.84441°, in south Texas.

Information provided by T. Hardgrove, R. Owens, and J. Vasquez.

- 3) Information on each facility listed in items 1 and 2:

Conventional Uranium Mill and Tailings Facilities –

Lucky Mc Mill and Tailings –

- a) Status: permanently shut down and decommissioned.
Method of Operation: Not applicable (operations ceased in 1991).

CERTIFICATION STATEMENT

Concerning the Appendix B Responses (responses to questions 1 through 3) submitted to EPA on October 8, 2008,

I certify under penalty of law that I have examined and am familiar with the information in the enclosed documents, including all attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are, to the best of my knowledge and belief, true and complete. I am aware that there are significant penalties for knowingly submitting false statements and information, including the possibility of fines or imprisonment pursuant to section 113(c)(2) of the Act, and 18 U.S.C. §§ 1001 and 1341.


Bernard Bonifas, General Manager


Date

Methods by which compliance assured: Site went into decommissioning status in late 1991. Subsequently, tailings piles were reclaimed consistent with 10 CFR 40 Appendix A. Final radon flux test performed after placement of radon barrier. Average flux was less than 0.8 pCi/m²/sec.

b) History of operation:

- i) Original mill construction date: 1958. Solid tailings ponds constructed approximately 1958 (Pond 1), 1969 (Pond 2), and 1980 (Pond 2A).
- ii) Plan of operation: Operations were more or less continuous from 1975 through 1985 when production was interrupted to renovate the mill. Production restarted in late 1987 and continued for approximately six months (into 1988) when the operation went on standby until late 1991.
- iii) Ownership changes: Facility changed 80% of ownership from General Electric to COGEMA in 1982 with the remaining 20% acquired from GE in 1987. The corporate parent name only subsequently changed from COGEMA to AREVA in 2006).
- iv) Facility status: decommissioned, currently awaiting permanent transfer to U.S. Department of Energy long term stewardship.

c) Size of tailings impoundments: Pond 1 = 60 acres; Pond 2 = 77 acres; Pond 2A = 76 acres; Solution Pond 3 = 11 acres; and Solution Pond 4 = 52 acres. No liners under any of the ponds. Decommissioned ponds have zero capacity. Ponds are located immediately north of the former mill site, extending some 9,100 feet south to north.

d) Pond 1:

- i. Construction date: 1958.
- ii. Solid tailings placement date(s): 1958 – 1970 with minor additions in 1987-88.
- iii. Date of placement on standby: 1988.
- iv. Closure date: 1991.

Pond 2:

- i. Construction date: 1969.
- ii. Solid tailings placement date(s): 1970 - 1980.
- iii. Date of placement on standby: 1980 (although interim earthen cover was progressively installed over the tailings during the 1980's).
- iv. Closure date: 1991.

Pond 2A:

- i. Construction date: 1980.
- ii. Solid tailings placement date(s): 1980 – 1988.
- iii. Date of placement on standby: 1988.
- iv. Closure date: 1991.

Pond 3 (Solution only):

- i. Construction date: 1960.
- ii. Solid tailings placement date(s): N/A.
- iii. Date of placement on standby: 1988.
- iv. Closure date: 1991

Pond 4 (Solution only):

- i. Construction date: 1963 (Dam reconstructed in 1980-81).
- ii. Solid tailings placement date(s): N/A.
- iii. Date of placement on standby: 1988.
- iv. Closure date: 1991

Information provided by T. Hardgrove and R. Owens.

Shirley Basin Mill and Tailings –

- a) Status: permanently shut down and decommissioned with the exception of the Pond 3 area which is currently utilized as a licensed 11(e)(2) byproduct material disposal area pursuant to 40 CFR 192.32(a)(3)(iv).

Method of Operation: Not applicable (operations ceased in June, 1992).

Methods by which compliance assured: Site went into decommissioning status in 1992. Subsequently, solid tailings piles were reclaimed consistent with 10 CFR 40 Appendix A. Final radon flux test performed after placement of radon barrier over solid tailings ponds and mill site/ore pad. Average flux was 3.46 pCi/m²/sec.

- b) History of operation:

- i) Original mill construction date: 1970-1971. Solid tailings ponds constructed 1969 (Pond 4), and 1976 (Pond 5). The solution only Pond 3 was constructed approximately 1969-1970.
- ii) Plan of operation: Conventional milling operations were more or less continuous from 1970 until 1992 when production permanently ceased.
- iii) Ownership changes: Facility changed 80% of ownership from General Electric to COGEMA in 1982 with the remaining 20% acquired from GE in 1987. The corporate

parent name only subsequently changed from COGEMA to AREVA in 2006).

iv) Facility status: mill and solid tailings ponds decommissioned; solution pond 3 area currently utilized for 11(e)(2) byproduct material disposal.

c) Size of tailings impoundments: Pond 3 = 34 acres; Pond 4 = 162 acres; Pond 5 = 144 acres. No liners under any of the ponds. Decommissioned ponds have zero capacity. Pond 3 basin has theoretical liquid capacity, but is not utilized for solution storage. Ponds are located immediately northwest of the former mill site.

e) Pond 3:

- i. Construction date: 1969 – 1970.
- ii. New tailings continuous placement date(s): not applicable.
- iii. Date of placement on standby: not applicable.
- iv. Closure date: not applicable.

Pond 4:

- i. Construction date: 1969.
- ii. New tailings continuous placement date(s): 1970 - 1976.
- iii. Date of placement on standby: 1976 (used for excess solution storage during the balance of the operational life of the mill).
- iv. Closure date: 1992.

Pond 5:

- i. Construction date: 1976.
- v. New tailings continuous placement date(s): 1976 - 1992.
- vi. Date of placement on standby: not applicable.
- vii. Closure date: 1992.

Information provided by T. Hardgrove and R. Owens.

In-situ Leaching Facilities –

Irigaray Mine –

- a) Status: standby.
Method of Operation: Not applicable (no solid tailings – solution ponds only).
Methods by which compliance assured: COMIN interprets 40 CFR 61.252 as applicable to conventional uranium mills that

generate solid tailings and not to solution ponds. Solution ponds at in situ operations have an assumed radon flux of zero (see Part 61, Appendix B, Method 115).

b) History of operation:

- i) Original plant construction date: 1978 - 1979. Evaporation ponds constructed 1978-1979 (Ponds A, B, C, D, and E), and 1979 (Ponds RA and RB).
- ii) Plan of operation: Operations were initiated in 1979 and continued with some interruptions until 1990 when mining operations were terminated. From 1990 to 2002 active aquifer restoration was ongoing. During that period the restoration process relied upon the continued use of the evaporation ponds. Upon completion of aquifer restoration and post-restoration aquifer monitoring, five of the seven evaporation ponds underwent partial decommissioning beginning in June, 2003, involving the removal of contaminated sediments, the Hypalon liners, the under-drains and leak detection systems, and any other contaminated soils. The contaminated soils were sent to the Shirley Basin 11(e)(2) disposal site. The remaining ponds (B and RB) are intact and currently hold solution (from natural precipitation, as periodically augmented to assure coverage of the bottom sediments with water).
- iii) Ownership changes: The facility is owned by Malapai Resources Company, an Arizona corporation which is a wholly-owned subsidiary of Fuel International Trading Corporation (FITCO), a Delaware Corporation. Electricité de France (EDF), a major French utility company acquired Malapa/FITCO in 1990. Malapai entered into a Joint Participation with Total Minerals Company (TOMIN) in 1990 whereby TOMIN became operator of the property. COGEMA, a French corporation, acquired TOMIN in 1993 and changed the name to Cogema Mining, Inc. COGEMA became AREVA NC, Inc. in 2006. The property is currently owned by Malapai Resources Company and operated by Cogema Mining, Inc. The property is beneficially owned 71% by AREVA and 29% by EDF.
- iv) Facility status: on standby; portions of the plant have been decommissioned. Remaining plant facilities consist of the "back end" of the processing, involving resin elution, precipitation, and concentrate drying/packaging. An amendment of the NRC license was approved by the NRC on 9/30/08 to allow a resumption of production at Christensen Ranch which would entail the restart of some

plant activities at Irigaray. However, no startup date has been established at this point.

c) Size of evaporation ponds:

Pond	Surface area (ac.)	Dimensions (ft)	Capacity (gal.)
A	1.43	160 x 390	2,052,861
B	1.44	250 x 250	2,052,861
C	1.43	160 x 390	2,052,861
D	1.44	250 x 250	2,052,861
E	0.57	100 x 250	879,798
RA	2.75	260 x 460	6,451,850
RB	2.98	250 x 520	6,451,850

Ponds A through D are located immediately southwest of the plant site. Pond E is located immediately east of the plant, and Ponds RA and RB are immediately north of the plant.

d) Dates of pond construction and use:

Pond	Constr.	Use Period	Date to Standby	Current Status
A	1978-79	1979-2002	Not Applicable	Partial Decomm.
B	1978-79	1979-2002	2003	Standby
C	1978-79	1979-2002	Not Applicable	Partial Decomm.
D	1978-79	1979-2002	Not Applicable	Partial Decomm.
E	1978-79	1979-2002	Not Applicable	Partial Decomm.
RA	1979	1979-2002	Not Applicable	Partial Decomm.
RB	1979	1979-2002	2003	Standby

Information provided by T. Hardgrove, R. Owens, D. Anderson, and L. Arbogast

Christensen Ranch Satellite Facility –

a) Status: standby.

Method of Operation: Not applicable (no solid tailings – solution ponds only).

Methods by which compliance assured: COMIN interprets 40 CFR 61.252 as applicable to conventional uranium mills that generate solid tailings and not to solution ponds. Solution ponds at in situ operations have an assumed radon flux of zero (see Part 61, Appendix B, Method 115).

b) History of operation:

- i) Original plant construction date: 1983 – 1989. Evaporation ponds CR-1 and CR-2 constructed 1988 -1989; ponds CR-3 and CR-4 constructed 1996. The permeate pond was constructed in 1988.
- ii) Plan of operation: Operations were initiated in 1989 and continued until 2000 when mining operations were

terminated. From 2000 to 2005 active aquifer restoration was ongoing. During that period the restoration process relied upon the continued use of the evaporation ponds. Since completion of aquifer restoration in 2005, the four evaporation ponds have been on standby with periodic clean water additions to maintain water levels over the bottom sediments. The permeate pond is an unlined structure that exclusively stores very clean permeate water that was generated by the aquifer restoration reverse osmosis process in the plant. All operations are on standby; an amendment of the NRC license to allow a resumption of operations was approved by the NRC on 9/30/08, but no startup date has been determined.

- iii) Ownership changes: The facility is owned by Malapai Resources Company, an Arizona corporation which is a wholly-owned subsidiary of Fuel International Trading Corporation (FITCO), a Delaware Corporation. Electricité de France (EDF), a major French utility company acquired Malapai/FITCO in 1990. Malapai entered into a Joint Participation with Total Minerals Company (TOMIN) in 1990 whereby TOMIN became operator of the property. COGEMA, a French corporation, acquired TOMIN in 1993 and changed the name to Cogema Mining, Inc. COGEMA became AREVA NC, Inc. in 2006. The property is currently owned by Malapai Resources Company and operated by Cogema Mining, Inc. The property is beneficially owned 71% by AREVA and 29% by EDF.
- iv) Facility status: on standby; a resumption of operations is planned but no startup date has been set at this time.

c) Size of evaporation ponds:

<u>Pond</u>	<u>Surface area (ac.)</u>	<u>Dimensions (ft.)</u>	<u>Capacity (gal.)</u>
CR-1	0.92	100 x 400	1,795,439
CR-2	0.92	100 x 400	1,795,439
CR-3	0.92	100 x 400	1,795,439
CR-4	0.92	100 x 400	1,795,439
Perm.	1.6	160 x 440	8,472,100

All of the ponds are located immediately south of the plant. Ponds CR-1 through CR-4 are lined with Hypalon. As noted above, the permeate pond is unlined due to the very clean water it stores.

d) Dates of pond construction and use:

Pond	Construction	Use Period	Date to Standby	Current Status
CR-1	1988-1989	1989-2005	2005	Standby
CR-2	1988-1989	1989-2005	2005	Standby
CR-3	1996	1996-2005	2005	Standby
CR-4	1996	1996-2005	2005	Standby
Perm.	1988	1989-2005	2005	Standby

Information provided by T. Hardgrove, R. Owens, D. Anderson, and L. Arbogast.

Holiday-El Mesquite Facility –

a) Status: decommissioning.

Method of Operation: Not applicable (no solid tailings – solution ponds only).

Methods by which compliance assured: COMIN interprets 40 CFR 61.252 as applicable to conventional uranium mills that generate solid tailings and not to solution ponds. Solution ponds at in situ operations have an assumed radon flux of zero (see Part 61, Appendix B, Method 115).

b) History of operation:

- i) Original plant construction date: 1979. Evaporation pond HEM North Pond constructed 1978; HEM South Pond constructed 1981; HEM Backwash Pit and Chemical Sump constructed 1979. The HEM North and South Ponds were lined with Hypalon; the backwash pit and chemical sump were constructed with reinforced concrete and interior Hypalon liners..
- ii) Plan of operation: Operations were initiated in 1979 and continued with some interruption until 1996 when mining operations were terminated. From 1996 to 2002 active aquifer restoration was ongoing. During that period the restoration process relied upon the continued use of the evaporation ponds. Since the completion of aquifer restoration all activities have been devoted to the decommissioning of the plant and attendant facilities. Upon completion of aquifer restoration in 2002, HEM South was dewatered with decommissioning occurring in 2005. Decommissioning consisted of the removal of bottom sediments, removal of the liner, and removal of any adjacent contaminated soils. All contaminated materials from the pond decommissioning were transported to Pathfinder's Shirley Basin site for disposal. The backwash pit and chemical sump were cleaned out in 2004 with contaminated material transported to Shirley Basin. The empty structures still exist, but only occasionally hold

water from rainfall. The HEM North Pond continues to be used. It serves as a holding pond for water contaminated by plant site decommissioning activities. The contaminated water held in HEM North is eventually injected into a permitted deep disposal well.

- iii) Ownership changes: The facility is owned by Malapai Resources Company, an Arizona corporation which is a wholly-owned subsidiary of Fuel International Trading Corporation (FITCO), a Delaware Corporation. Electricité de France (EDF), a major French utility company acquired Malapa/FITCO in 1990. Malapai entered into a Joint Participation with Total Minerals Company (TOMIN) in 1990 whereby TOMIN became operator of the property. COGEMA, a French corporation, acquired TOMIN in 1993 and changed the name to Cogema Mining, Inc. COGEMA became AREVA NC, Inc. in 2006. The property is currently owned by Malapai Resources Company and operated by Cogema Mining, Inc. The property is beneficially owned 71% by AREVA and 29% by EDF.
- iv) Facility status: decommissioning.

c) Size of evaporation and other ponds:

<u>Pond</u>	<u>Surface area (ac.)</u>	<u>Dimensions (ft.)</u>	<u>Capacity (gal.)</u>
HEM N.	0.92	200 x 200	2,300,000
HEM S.	0.92	200 x 200	1,725,000
Back W.	0.115	100 x 50	299,000
Chm. Sump	0.115	100 x 50	299,000

All of the ponds were located in the immediate vicinity of the plant. Pond HEM North is lined with Hypalon. The backwash pit and chemical sump are constructed of reinforced concrete. As noted above, pond HEM South is decommissioned.

d) Dates of pond construction and use:

<u>Pond</u>	<u>Construct.</u>	<u>Use Period</u>	<u>Date Stndby</u>	<u>Current Status</u>
HEM N.	1978	1979-present	NA	In use
HEM S.	1981	1981-2002	NA	Decommiss.
Back W.	1979	1979-2002	NA	Partly Decomm.
Chm. Sump	1979	1979-2002	NA	Partly Decomm.

Information provided by T. Hardgrove, B. Bonifas, D. Anderson, and D. Benevides.

O'Hern Facility –

a) Status: decommissioned.
 Method of Operation: Not applicable (no solid tailings – solution pond only).
 Methods by which compliance assured: COMIN interprets 40 CFR 61.252 as applicable to conventional uranium mills that generate solid tailings and not to solution ponds. Solution ponds at in situ operations have an assumed radon flux of zero (see Part 61, Appendix B, Method 115).

b) History of operation:

- i) Original plant construction date: 1975. Evaporation pond with Hypalon liner constructed 1976.
- ii) Plan of operation: Operations were initiated in late 1975 and continued until 1989 when mining operations were terminated. From 1989 to 1997 active aquifer restoration was ongoing. During that period the restoration process relied upon the continued use of the evaporation pond. Upon completion of aquifer restoration in 1997, the pond was on standby (pending regulatory approval of restoration), and was decommissioned in 2001. Contaminated materials and liner were removed for disposal at Shirley Basin. Upon final release, the remnant excavation was backfilled.
- iii) Ownership changes: The facility is owned by Malapai Resources Company, an Arizona corporation which is a wholly-owned subsidiary of Fuel International Trading Corporation (FITCO), a Delaware Corporation. Electricité de France (EDF), a major French utility company acquired Malapa/FITCO in 1990. Malapai entered into a Joint Participation with Total Minerals Company (TOMIN) in 1990 whereby TOMIN became operator of the property. COGEMA, a French corporation, acquired TOMIN in 1993 and changed the name to Cogema Mining, Inc. COGEMA became AREVA NC, Inc. in 2006. The property is currently owned by Malapai Resources Company and operated by Cogema Mining, Inc. The property is beneficially owned 71% by AREVA and 29% by EDF.
- iv) Facility status: decommissioned.

c) Size of evaporation pond:

Pond	Surface area (ac.)	Dimensions (ft.)	Capacity (gal.)
O'Hern	0.34	132 x 112	461,000

The pond was located immediately adjacent to the now decommissioned plant.

d) Dates of pond construction and use:

<u>Pond</u>	<u>Construction</u>	<u>Use Period</u>	<u>Date to Standby</u>	<u>Current Status</u>
O'Hern	1976	1976-2000	NA	Decommiss.

Information provided by T. Hardgrove, B. Bonifas, D. Anderson, and D. Benevides.

West Cole Facility –

- a) Status: decommissioned and released to unrestricted use.
Method of Operation: Not applicable (no solid tailings – solution ponds only).
Methods by which compliance assured: COMIN interprets 40 CFR 61.252 as applicable to conventional uranium mills that generate solid tailings and not to solution ponds. Solution ponds at in situ operations have an assumed radon flux of zero (see Part 61, Appendix B, Method 115).
- b) History of operation:
- i) Original plant construction date: 1980. Two evaporation ponds (West Cole North and West Cole South) were constructed with Hypalon liners in 1980.
 - ii) Plan of operation: Operations were initiated in 1981 and continued with interruption until 1989 when mining operations were terminated. From 1989 to 2003 active aquifer restoration was ongoing. During that period the restoration process relied upon the continued use of the evaporation ponds. Upon completion of aquifer restoration in 2003, the two ponds were subject to decommissioning. The decommissioning was accomplished in 2004. All contaminated materials and liners were removed for transport to Shirley Basin for disposal. The pond sites were then backfilled with clean soil. After the successful completion of all plant and ancillary facilities decommissioning, the West Cole property was formally released for unrestricted use.
 - iii) Ownership changes: The facility is owned and operated by Cogema Mining, Inc. (previously named Total Minerals), which is owned by AREVA NC, Inc., a Delaware corporation, which is owned by AREVA, a French corporation. Due to the decommissioned and released status of the West Cole site, COGEMA Mining, Inc. has little remaining legal obligation for the site. There are two wells that provided clean water to the site that still have to be plugged and abandoned, and there is an access gate that must be removed.

iv) Facility status: decommissioned and released to unrestricted use.

c) Size of evaporation ponds:

<u>Pond</u>	<u>Surface area (ac.)</u>	<u>Dimensions (ft.)</u>	<u>Capacity (gal.)</u>
WC N.	0.23	100 x 100	301,195
WC S.	0.23	100 x 100	301,195

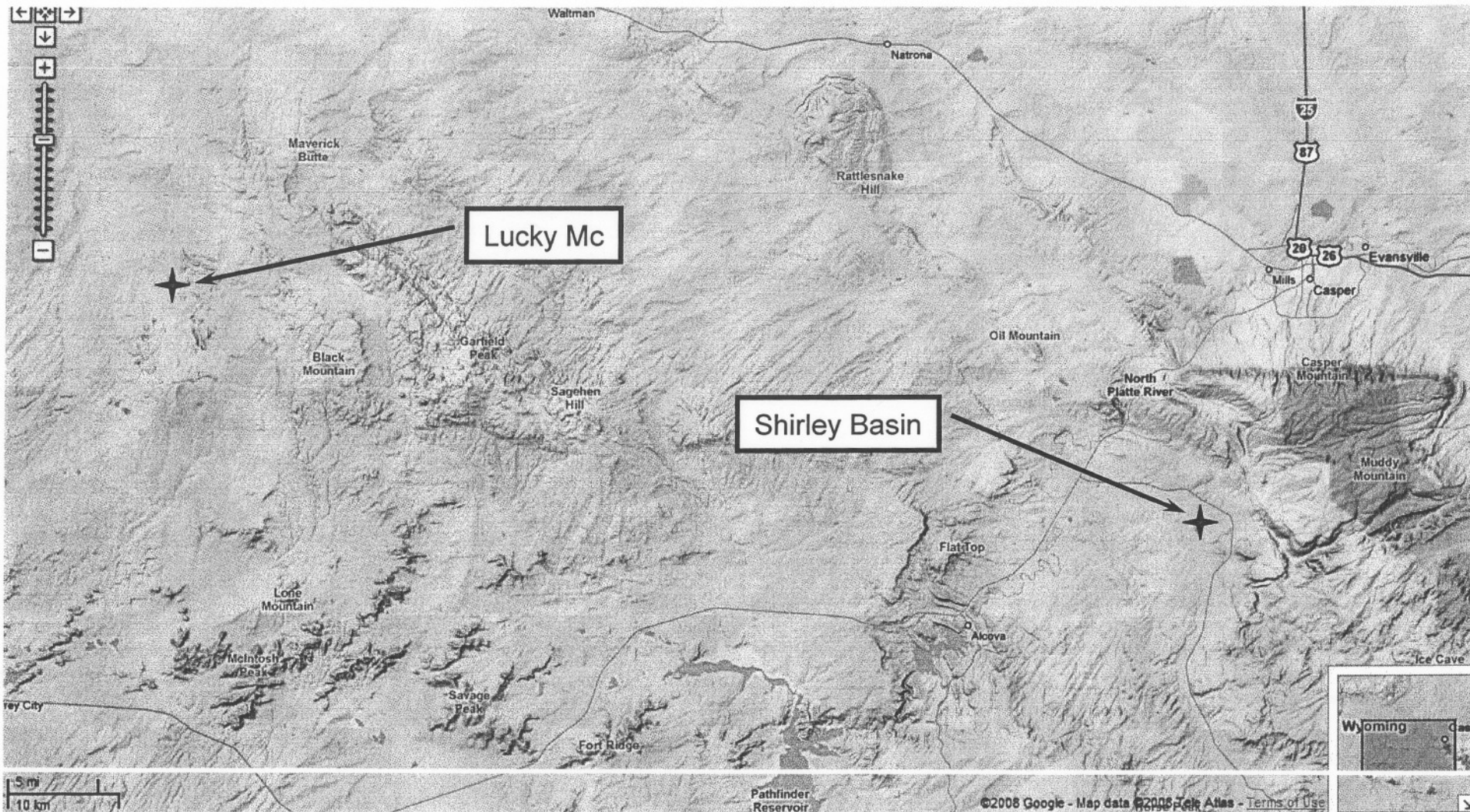
All of the ponds were located in the immediate vicinity of the plant.

d) Dates of pond construction and use:

<u>Pond</u>	<u>Construction</u>	<u>Use Period</u>	<u>Date to Standby</u>	<u>Current Status</u>
WC-N.	1980	1981-2003	NA	Decommiss.
WC-S.	1980	1981-2003	NA	Decommiss.

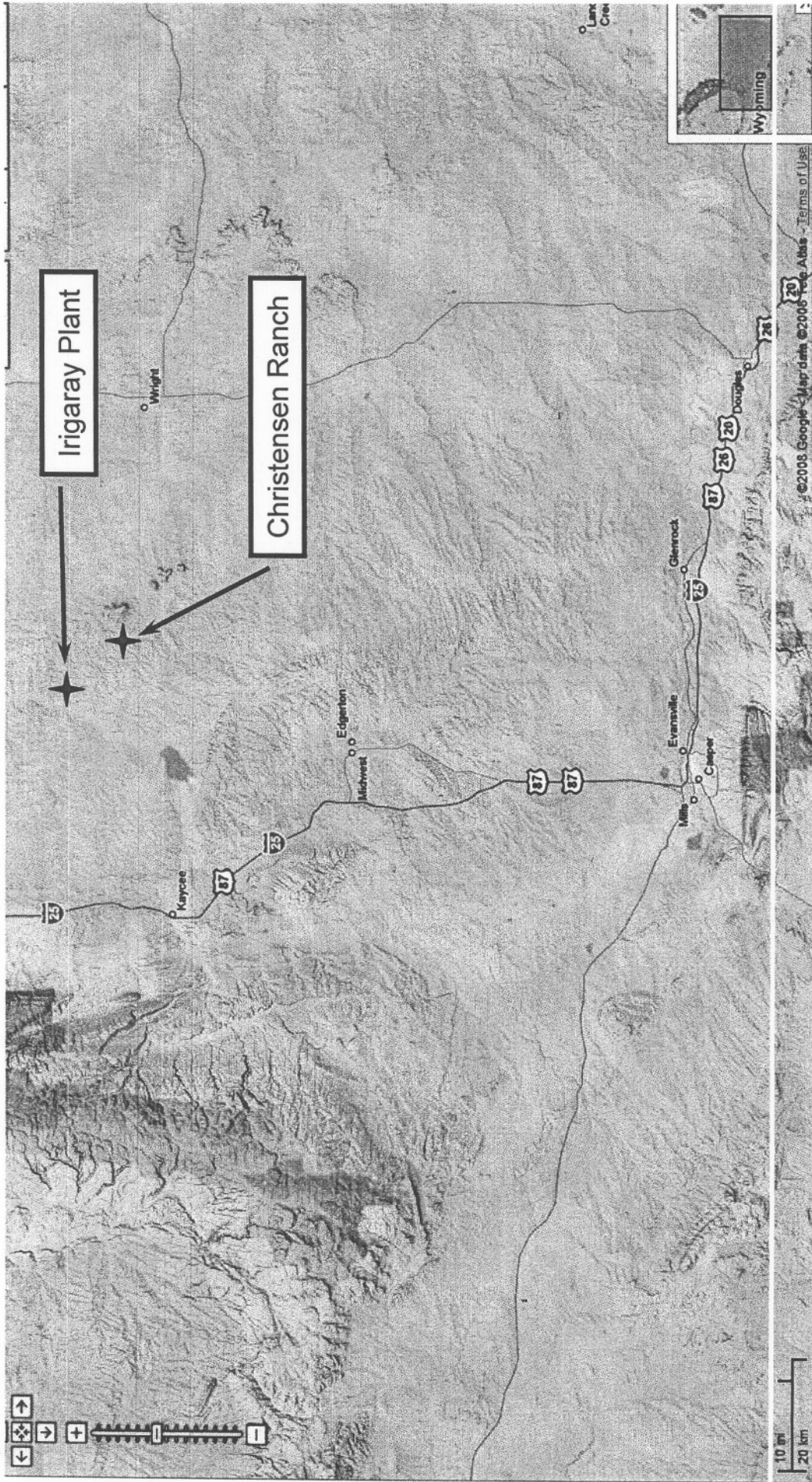
Information provided by T. Hardgrove, B. Bonifas, D. Anderson, and D. Benevides.

4) Additional Information: TO BE SUBMITTED BY NOVEMBER 8, 2008.

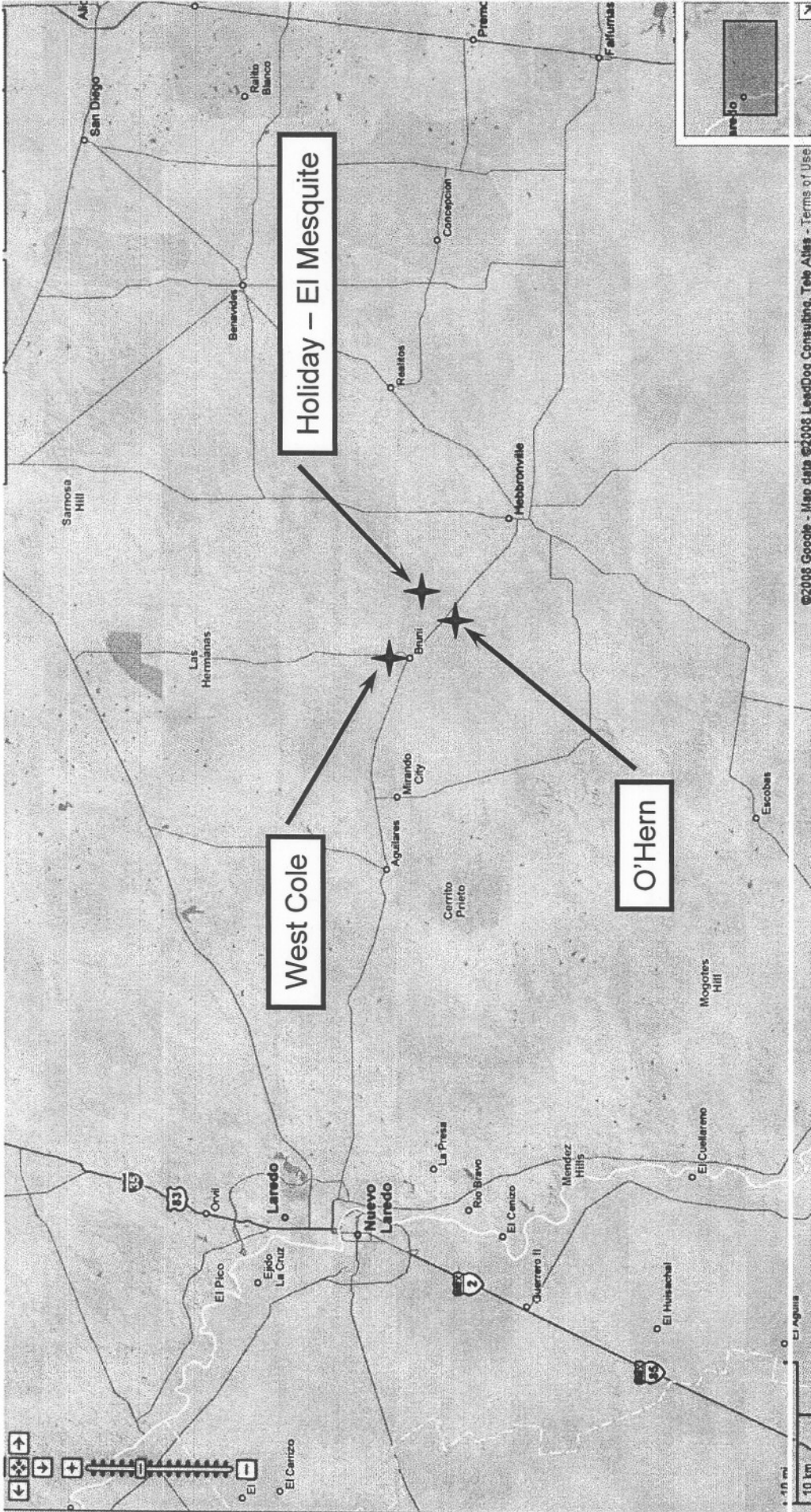


A
PATHFINDER

Lucky Mc Project
Shirley Basin Project
General Location Map



A
COGEMA MINING
 Irigaray and Christensen
 Ranch
 General Location Map



A
COGEMA MINING
 Texas Operations
 General Location Map



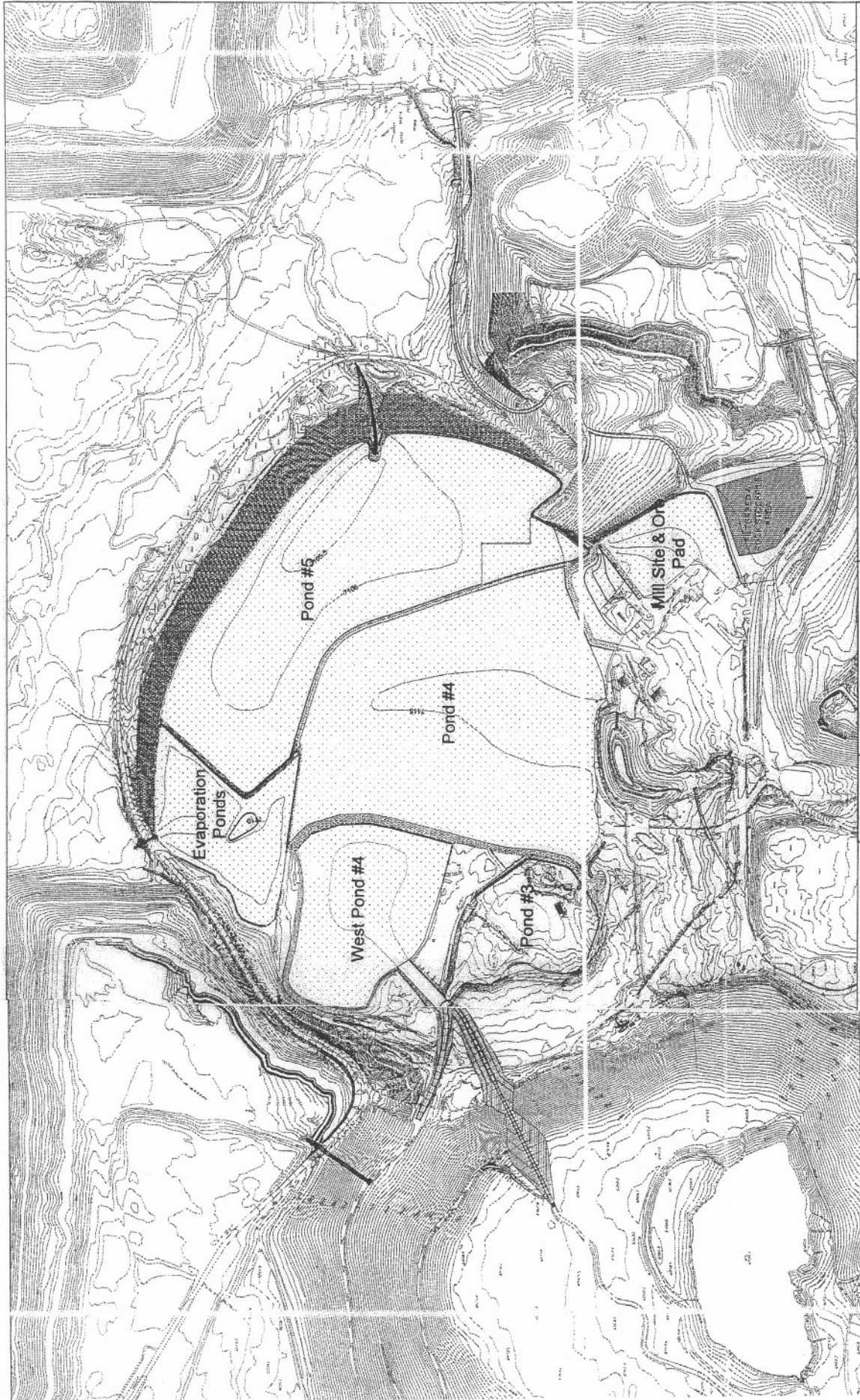
Geology:
 Enviro:
 Drawing: RMO
 Date: 10-9-2008
 Revision:

State: Wyoming County: Fremont
 Scale: 1"=750'
 Drawing ID: LM As Built Final.dwg

Project Overview



Pathfinder
 Mines Corp.
 Lucky Mc Project



Pathfinder
Mines Corp.
Shirley Basin Project

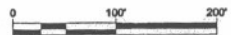
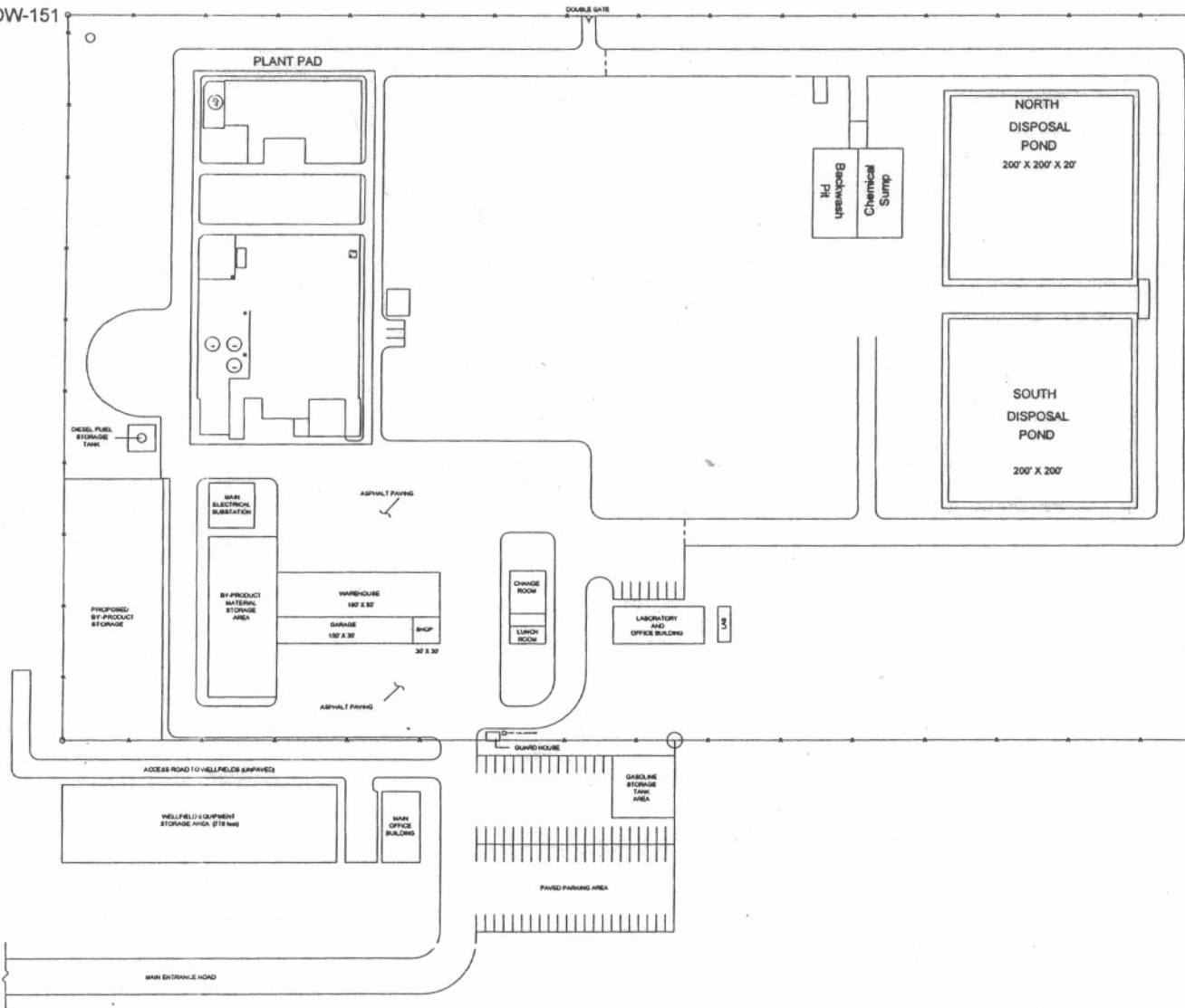


Project Overview

State: Wyoming County: Carbon
Scale: 1"=75'
Drawing ID: SB As Built 2006.dwg

Geology:
Enviro:
Drafting: RMO
Date: 10-5-2006
Revision:



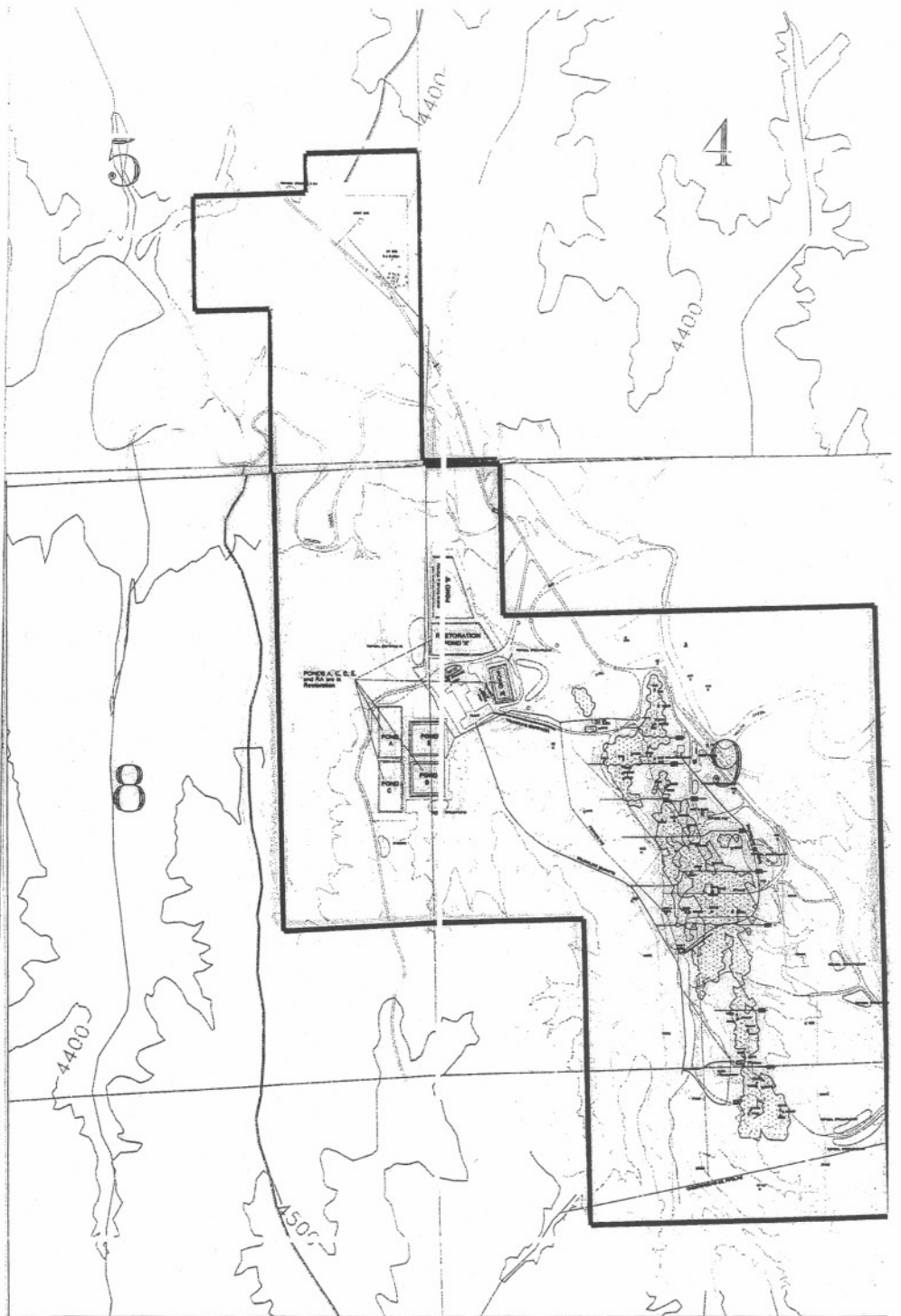



Geology:
 Enviro:
 Drafting:RMO
 Date:10-8-2008
 Revision:

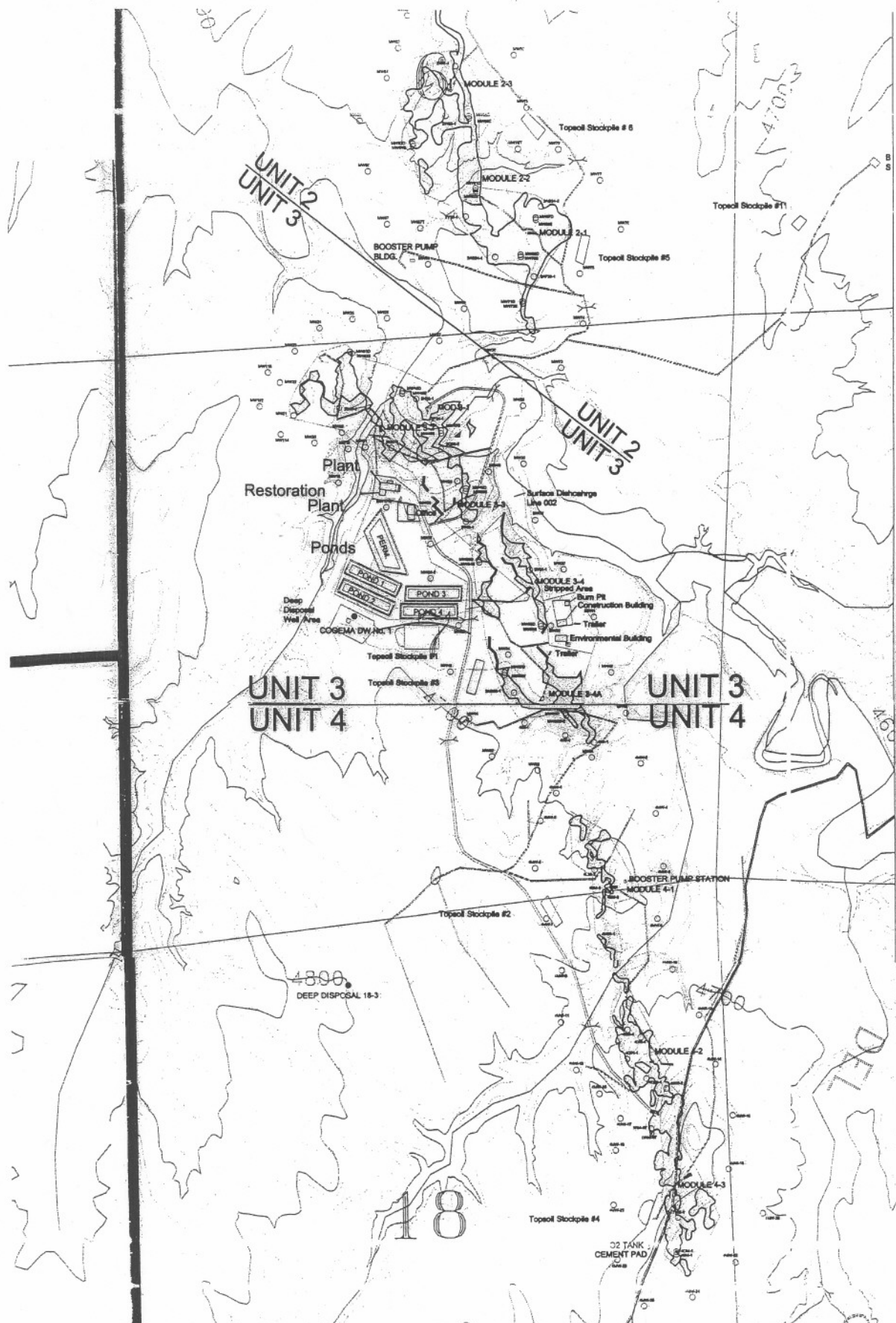
State: Texas County:Duval
 Scale:1"=150'
 Drawing ID: HEM Plant.dwg

Project Overview





	<p>Geology: Enviro: Drafting:RMQ Date: Revision:10-4-2000</p>	<p>State: Wyoming County: Johnson Scale:1"=750' Drawing ID: FIG IR Site.dwg</p>	<p>Project Overview</p>	 <p>COGEMA Mining, Inc. Ingaray Project</p>
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Geology:
 Enviro:
 Drafting:RMO
 Date:
 Revision:10-8-2006

State: Wyoming County: Johnson
 Scale:1"=750'
 Drawing ID: FIG CR Site.dwg

Project Overview



COGEMA
 Mining, Inc.
 (Christensen Project)