

REGULATORY INFORMATION DISTRIBUTION BY EM (RIDS)

ACCESSION NBR: 8610200370 DOC. DATE: 86/10/02 NOTARIZED: NO DOCKET #  
 FACIL: 50-329 Midland Plant, Unit 1, Consumers Power Co. 05000329  
 50-330 Midland Plant, Unit 2, Consumers Power Co. 05000330  
 AUTH. NAME AUTHOR AFFILIATION  
 COOK, J. W. Consumers Power Co.  
 RECIP. NAME RECIPIENT AFFILIATION  
 BERKOW, H. N. Standardization & Special Project Directorate

SUBJECT: Forwards "Midland Site Stabilization Rept," providing response to request for info re environ review of util request to withdraw 860821 GL application. Agreement w/Dow Chemical Co reached re facility conversion.  
 SEE REPTS.

DISTRIBUTION CODE: A001D COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 3 + 144  
 TITLE: OR Submittal: General Distribution

NOTES: App for permit renewal. Requested exp date 891201. 05000329  
 App for permit renewal. Requested exp date 890701. 05000330

	RECIPIENT ID CODE/NAME	COPIES LTR ENCL	RECIPIENT ID CODE/NAME	COPIES LTR ENCL
	PWR-B EB	1 1	PWR-B PEICSB	2 2
	PWR-B FOB	1 1	PWR-B SSPDLA	1 0
	PWR-B SSPD 01	5 5	MICHAELS, T	1 1
	PWR-B PEICSB	1 1	PWR-B RSB	1 1
INTERNAL:	ACRS 09	6 6	ADM/LFMB	1 0
	ELD/HDS2	1 0	NRR/DHFT/TSCH	1 1
	NRR/ORAS	1 0	<u>REG FILE</u> 04	1 1
	RONB	1 1		
EXTERNAL:	EG&G BRUSKE, S	1 1	LPDR 03	1 1
	NRC PDR 02	1 1	NSIC 05	1 1

add: AEOD/PTB

NRR PWR-B ADTS

LTR ENCL.  
 1 1  
 1 1

original w/pictures & Drawings  
 To: Reg Files

TOTAL NUMBER OF COPIES REQUIRED: LTR 31 ENCL 27



**Consumers  
Power  
Company**

**James W Cook**  
Vice President - Projects, Engineering  
and Construction

General Offices: 1945 West Parnall Road, Jackson, MI 49201 • (517) 788-0453

October 2, 1986

Mr Herbert N Berkow, Director  
Standardization and Special  
Projects Directorate  
Division of PWR Licensing-B  
Office of Nuclear Reactor Regulation  
US Nuclear Regulatory Commission  
Washington, DC 20555

MIDLAND ENERGY CENTER  
DOCKET NOS 50-329 AND 50-330  
RESPONSE TO REQUEST FOR INFORMATION FOR  
ENVIRONMENTAL REVIEW  
FILE: 1300, 0485.2, 0485.11 SERIAL: 32848

- References:
- 1) H N Berkow letter to J W Cook, Request for Additional Information for Environmental Review of Applicant's Request to Withdraw the Midland Plant, Units 1 and 2, Operating License Application, dated August 21, 1986
  - 2) NRC Staff Response to Consumers Motion for Authorization to Withdraw Operating License Application, dated August 25, 1986
  - 3) J W Cook letter to H R Denton, Withdrawal of Licensing Applications, Serial 32744, dated July 1, 1986
  - 4) CPCo Motion for Authorization to Withdraw Operating Licensing Application and for Dismissal of Operating License and Order of Modification Proceedings and Motion for Termination of Appeal Board Jurisdiction, dated July 11, 1986
  - 5) CPCo Response to July 16, 1986 Board Order, dated August 15, 1986

Reference 1 requested specific responses to six questions dealing with the current site status, environmental stabilization activities, and future site plans. Communications between our staffs has resulted in identifying specific items to be addressed. Reference 2 informed the ASLB that the questions will be answered in an Environmental Report (Site Stabilization Plan) to form the basis of the Staff's environmental review and ultimately of its Environmental Assessment. The enclosure to this letter, the Midland Site

8610200370 861002  
PDR ADDCK 05000329  
PDR  
A

OC0986-0010A-MP02

*11* Add: AEOO/PTB  
NRN PWR-B ADTS

*Ltr Encl*  
1 1  
1 1

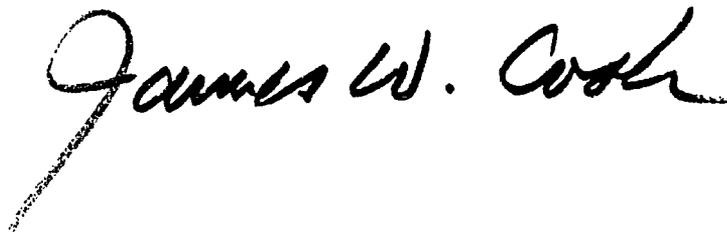
*Original  
w/ Pictures &  
Drawings  
to: Reg Files*

Stabilization Report, provides a complete responses to the Staff's questions and requests for information.

References 3, 4 and 5 provided information relevant to the Staff's six questions. We have just recently reached an agreement in principle with Dow Chemical Company to convert the Midland Energy Center to a combined-cycle, gas-fired cogeneration facility. The responses in the Site Stabilization Report which address questions as to what happens if the conversion option does not come to pass should not be construed to mean that we expect any other outcome other than a successful completion as a combined-cycle, gas-fired cogeneration plant.

From 9 to 12 September, 1986, Central Michigan experienced heavy rains, resulting in widespread flooding. The Tittabawassee River crested on 13 September with the waters reaching approximately the 614 foot elevation at the Midland Site. Other than the Outage Building, the Site facilities experienced no significant damage. Some storm-related erosion corrective measures will be necessary.

Consumers requests that if your review of the report identifies any areas where clarification or additional information is necessary, the Staff should feel free to directly work with our staff to conclude the review. We ask that these matters be expedited to the extent possible to support our 1986 nuclear plant abandonment activities.

A handwritten signature in black ink that reads "James W. Cook". The signature is written in a cursive style with a long, sweeping underline that extends to the left.

JWC/WRB/lr

CC: HRDenton, NRC  
TSMichaels, NRC  
JGKepler, NRC Reg III  
Service List

## SERVICE LIST

Frank J Kelley, Esq  
 Attorney General of the  
 State of Michigan  
 Carole Steinberg, Esq  
 Assistant Attorney General  
 Environmental Protection Div  
 720 Law Building  
 Lansing, MI 48913

Myron M Cherry, Esq  
 Cherry & Flynn  
 Suite 3700  
 Three First National Plaza  
 Chicago, IL 60602

Lynne Bernabei, Esq  
 Thomas Devine, Esq  
 Louis Clark, Esq  
 Government Accountability Project  
 of the Institute for Policy Studies  
 1901 Q Street, NW  
 Washington, DC 20009

Mr D W Montgomery  
 Babcock & Wilcox  
 PO Box 1260  
 Lynchburg, VA 24505

James E Brunner, Esq  
 Consumers Power Company  
 212 W Michigan Avenue  
 Jackson, MI 49201

Samuel A Haubold, Esq  
 Kirkland & Ellis  
 200 East Randolph Drive  
 Chicago, IL 60601

Thomas S Moore  
 Atomic Safety & Licensing  
 Appeal Panel  
 E/W 532  
 US Nuclear Regulatory Commission  
 Washington, DC 20555

Charles Bechhoefer, Esq  
 Atomic Safety & Licensing  
 US Nuclear Regulatory Commission  
 Washington, DC 20555

OC0986-0010A-MP02

Steve Gadler, Esq  
 2120 Carter Avenue  
 St Paul, Minnesota 55108

Atomic Safety & Licensing  
 Appeal Panel  
 US Nuclear Regulatory Commission  
 Washington, DC 20555

Chief, Docketing & Services  
 US Nuclear Regulatory Commission  
 Office of the Secretary  
 Washington, DC 20555

Ms Mary Sinclair  
 5711 Summerset Street  
 Midland, MI 48640

Mr Joseph Rutberg  
 Asst Chief Hearing Counsel  
 US Nuclear Regulatory Commission  
 Office of the Executive Legal  
 Director  
 Washington, DC 20555

Atomic Safety & Licensing  
 Board Panel  
 US Nuclear Regulatory Commission  
 Washington, DC 20555

Ms Barbara Stamiris  
 5795 North River Road, Route 3  
 Freeland, MI 48623

Alan S Rosenthal, Chairman  
 Atomic Safety & Licensing  
 Appeal Panel  
 E/W 532  
 US Nuclear Regulatory Commission  
 Washington, DC 20555

Mr Gustave A Linenberger, Jr  
 Atomic Safety & Licensing  
 Board Panel  
 US Nuclear Regulatory Commission  
 Washington, DC 20555

Dr Jerry Harbour  
 Atomic Safety & Licensing  
 Board Panel  
 US Nuclear Regulatory Commission  
 Washington, DC 20555

MIDLAND SITE STABILIZATION REPORT  
DOCKET NOS 50-329 AND 50-330

October 2, 1986

8610200372 861002  
PDR ADDCK 05000329  
A PDR

RP0886-0047A-MP02

**REGULATORY DOCKET FILE COPY**

WRB 9/19/86

TABLE OF CONTENTS

	<u>Page</u>
1. SCOPE	1
2. GENERAL SITE STABILIZATION	1
3. SITE STATUS	1
A. Power Block Area	2
B. Access Road and Parking Areas	4
C. Poseyville Laydown Area	5
D. Cooling Pond Area	5
E. Transmission Corridor	7
4. CONCLUSION	9

TABLE

Table 1 - Construction and Miscellaneous Facilities

FIGURES

Figure 1 - August 1983 Aerial View of MEC Site

Figure 2 - April 1986 Aerial View of MEC Main Plant Area

Figure 3 - FSAR Figure 1.2-1, Station Arrangement

Figure 4 - Environmental Report Figure 2.1-1, Site Plan

ATTACHMENTS

Attachment 1 - MDNR Letter Dated 8/28/84, Re Midland Cooling Pond Dewatering Program

Attachment 2 - MDNR Letter Dated 10/18/84, Re NPDES Permit No MJ 0042668 Midland Nuclear Plant (Authorizes Dewatering of the Cooling Pond)

Attachment 3 - CPCo Letter PBL-0685-2 80EP10.1, Dated 6/12/85, Re Special Conditions 30, 31 and 32 of NPDES Permit No MJ 0042668 with Enclosed "Midland Cooling Pond Dewatering Program Summary Report"

Attachment 4 - CPCo Letter Hitt 114-84, Dated 12/17/84, transmitting "Midland Cooling Pond Maintenance Program"

Attachment 5 - MDNR Letter Dated 9/26/85, Re Approval of Midland Cooling Pond Maintenance Program and Midland Cooling Pond Dewatering Program Summary Report

Attachment 6 - Form 8-K; CPCo Report to the Securities and Exchange Commission, dated September 19, 1986

## MJDLAND SITE STABILIZATION REPORT

### 1. SCOPE

This report addresses the actions taken by CPCo relative to the Midland Energy Center (MEC) following suspension of construction in July 1984. The activities associated with the plans to convert the MEC to a natural gas combined-cycle plant, the abandonment of nuclear facilities and the related Construction Permit/Operating License application termination are described. Specifically addressed is the "Request for Additional Information for Environmental Review of Applicant's Request to Withdraw the Midland Plants, Units 1 and 2, Operating License Application" in H N Berkow's letter to J W Cook dated August 21, 1986.

### 2. GENERAL SITE STABILIZATION

On July 16, 1984, the Board of Directors of CPCo ordered shutdown of design, construction and testing activities for the Midland Plant. Initial activities were to secure the remedial soils work, place the plant systems and equipment in a long-term layup mode, implement a preventive maintenance and storage program and demobilize the construction forces. The purpose of these activities was to maintain the plant in such a way as to preserve the option to restart the project.

Initial site stabilization actions included draining the cooling pond, filling open excavations, improving site drainage, grading and seeding and placing riprap in vulnerable areas. No additional actions are presently necessary for the environmental protection of the site in the shut down condition. Some activities of a maintenance nature continue and are described in following report sections. Future actions associated with other industrial site use would fall under the purview of the Michigan Department of Natural Resources (MDNR). Donald L Inman, Chief, Environmental Enforcement Division, MDNR is responsible for assuring compliance with state environmental laws. His office telephone number is (517) 373-3503 and his address is Michigan Department of Natural Resources, Box 30028, Lansing, Michigan 48909.

### 3. SITE STATUS

On April 8, 1986, the Company's Board of Directors authorized conversion of Unit 1 of the Midland Project to a natural gas-fired, combined-cycle generating plant. On June 18, 1986 the Board authorized abandonment of the nuclear steam supply systems and other buildings and components of the Midland Project which are not usable for the gas-fired, combined-cycle plant. An environmental report was submitted on July 11, 1986 to the Department of Energy Economic Regulatory Administration in support of an exemption from the Fuel Use Act of 1978 requested for the plant conversion. Site construction (eg, demolition of unnecessary buildings, extension of fill area for gas turbines) would begin no earlier than 1987. On September 17, 1986 the Dow Chemical Company and Consumers Power Company announced that they had reached an agreement in principle to work together

to convert the plant into a natural gas combined-cycle cogeneration plant (see Form 8-K, Attachment 6).

The gas conversion and nuclear abandonment is specifically addressed for the various site areas in later report sections. As this effort moves forward, or should some other plan be developed for future use of the site, it will be necessary to secure appropriate approvals and authorizations or modifications to existing approvals from federal, state and local agencies prior to implementation. Precise identification of future site land uses, and resultant erosion and runoff control measures, and soil stabilization activities are not possible at this time.

Overall, the currently existing facilities will remain in place. Figure 1 is an aerial view of the site taken in August 1983. As can be seen, construction utilized nearly all of the available area. Figure 2 is an April 1986 aerial view looking northeast toward the Power Block Area with the Dow industrial facilities in the background.

Salvage activities will continue through the end of 1986 and beyond. Many of the non-permanent buildings will continue to be used as warehousing for salvageable equipment. These facilities are also usable in support of future construction. Facilities not normally occupied are locked if there are hazards associated with unauthorized entry. A security force has remained in place to control site entry and to maintain routine site security inspections.

#### A. Power Block Area

##### Description

The power block area described in the Environmental Report as 10 acres, included the land north of the cooling pond at a nominal 634 foot elevation (ER-OLS Section 2.1.3.1). This area contains the reactor buildings, turbine building, diesel generator building, auxiliary building and miscellaneous permanent and temporary ancillary, support and warehousing structures. For the purpose of this report, however the term "Power Block Area" refers to all of the area "on the hill," and the property north of this area to the river, comprising a total of about 52 acres. Construction has utilized nearly all of this property.

FSAR Figure 1.2-1; Station Arrangement (provided as Figure 3) shows the constructed facilities in the power block area. This area is zoned industrial and is adjacent to Dow Chemical's facilities, including a brine pond.

##### Status

Structures currently remaining which are in addition to those shown in Figure 1.2-1 are listed in Table 1. For construction of the Gas Conversion Option, the Project Field Office, Change House, Welders Test Shop, Site Access Control Building, and Support Services Building

would all be removed and the gas turbines would be placed in the area these structures occupy. Consumers Power does not plan to dismantle any of other structures. To do so would be costly and not to the advantage of the Company or its customers. The structures do not represent a hazard or other adverse condition.

The following structures will be abandoned regardless of the final site disposition:

- Unit 1 and 2 reactor buildings
- Auxiliary Building North of Column Row "G"
- Radwaste Building
- Calibration Building
- Cooling Tower

The remaining structures shown on Figure 1.2-1 will be utilized in the gas-fired, combined-cycle power plant.

At the time of Project shutdown, the underpinning work in progress was reviewed and a plan was developed to stabilize the structures. This plan was implemented. The activities required for stabilization were concurred with by Region III and verified by site inspections as documented in Inspection Reports (50-329/84-22 & 84-26 and 50-330/84-23 & 84-27). Monitoring of the area since that time has confirmed the adequacy of the building underpinning in its present configuration. The plans for plant conversion will require that the soils remedial program be completed in a manner which assures suitability of the structures for their use in the converted plant. Presently physical barriers are in place to prevent unauthorized access. In the unlikely event that the facility is not completed as a gas-fired, combined-cycle power plant, then suitable physical barriers and administrative controls will remain in place to prevent unauthorized entry into the underpinning areas.

Following the termination of construction, trailers and some other temporary construction support buildings were removed. Environmental protection measures included grading and assurance of proper drainage. Salvage of equipment and construction facilities remains as an ongoing effort. The wells and freezeway vertical elements remain in place although the surface piping has been removed. Some construction utilities (power, natural gas, compressed air) and equipment (shoring, cribbing), parking piers, support slabs and foundation of removed structures remain in place. Debris has been and will continue to be disposed of in a licensed landfill. Hazardous wastes were disposed of by utilizing licensed contractors.

The temporary Heater Boiler Structure is in use to provide winter heating for the plant buildings. The remaining structures listed in Table 1 currently serve as warehousing for materials being salvaged. They represent a future resource as construction support facilities for the gas conversion option or other site power plant or industrial

use. When and if they are removed, debris will be disposed of in a licensed landfill.

### Summary

Site stabilization work in the power block area is complete. The area is served by a storm drainage system, to which a program of routine maintenance applies. Riprap is in place in areas subject to erosion. Seeding or indigenous vegetation covers the embankments. Grading and other specific measures are being employed, as necessary, to address specific conditions resulting from the ongoing salvage operations. Facilities currently in place will remain except as specifically mentioned above.

## B. Access Road and Parking Areas

### Description

Included in this 95-acre area is all the site property north of the cooling pond dike and west of the Power Block Area. Except for extreme westerly end, all the area between the pond dike and Bullock Creek has been utilized for parking and roads. Within this area are the Outage Building, Zack Storage Building, Warehouse No 2, the Support Services Building, Meteorological Tower and miscellaneous construction support temporary structures. The construction and miscellaneous structures are listed in Table 1. A drainage system is in place for this area.

### Status

The parking areas consist of a hard packed surface. Concrete parking piers and fencing remain in place. Some indigenous vegetation is taking hold in areas where there is no current traffic. These parking areas will be useful for future plant construction and operation.

The 100-meter meteorological (Met) tower is located on the edge of the site boundary directly west of the power block area. Met tower routine maintenance includes assurance of structural integrity and obstruction marking. The Met tower is not required for gas-fired, combined-cycle conversion since preconstruction air quality monitoring is not required. If a coal conversion project is undertaken, preconstruction air quality monitoring is a requirement. The Met tower represents a future resource for low band frequency (two-way radio) support of Company operations in the Central Region. Regardless of final plant disposition, there are no plans to remove the Met tower.

The buildings remaining in the parking areas are to be kept for support of the gas-fired, combined-cycle plant construction and for ongoing salvage efforts. The exception is the Support Services Building as mentioned in A, above. At such time it is determined that it is in the Company's best interest to remove the temporary buildings, the debris will be disposed of in a licensed area landfill.

The site access road is contained in a narrow corridor of land bounded by Dow Chemical property to the north and private lands to the south. A stockpile of fill material remains on the south side of the road. These materials will be used for the gas-fired, combined-cycle plant. There is also an adjacent stockpile, not owned by Consumers, on private property. This stockpile area is surrounded and contained by heavy indigenous vegetation.

An intermittently flowing old Dow brine well is located on the south edge of the parking lot area. Some erosion was recently found where the water flows to a drainage ditch. This has been corrected.

#### Summary

The access road and parking lot areas are environmentally stable and no further actions are required. The structures within these areas will be kept for ongoing and future site purposes.

### C. Poseyville Laydown Area

#### Description

This approximately 68-acre area is located off but adjacent to the site. It extends from the west side of the cooling pond to Poseyville Road. An underground drainage system was installed during its construction. The surface consists of a 4 to 12-inch thick limestone layer.

#### Status

The laydown area contains cribbing and temporary storage structures for construction materials and plant equipment. Significant consolidation and/or material removal has taken place because of the ongoing salvage efforts. The area will continue to be used for storage and represents a resource for the future gas-fired, combined-cycle plant construction. When, and as the temporary facilities are removed, resulting debris will be disposed of in a licensed land fill area.

The Midland Training Center is located within the laydown area. The Center and the approximately 6-acre parcel on which it is situated do not belong to the Company. A major tenant in the building is Great Lakes Junior College. The Company currently occupies part of the building.

The laydown area is environmentally stable.

#### Summary

No remaining stabilization activities are necessary in the laydown area. It is our current intent that the area be preserved as a future resource, irrespective of the disposition of the Midland Site proper.

#### D. Cooling Pond Area

##### Description

The Cooling Pond Area (see ER Figure 2.1-1, provided as Figure 4) consists of the 880-acre cooling pond, the strips of land outside of the west and south pond dikes (about 90 acres), and the 148-acre Tittabawassee River floodplain east and northeast of the cooling pond. The narrow strips of land bordering the dike perimeter contain pond and dike ditches and the rerouted agricultural drains which formerly flowed through the cooling pond area. The floodplain area contains several transmission line towers and start-up line poles (see Section 4.E), the cooling pond dikes, the railroad bridge, the pond outlet structure (formerly, the superseded outlet structure, now NPDES Permit Outfall 003), and the emergency access road.

The railroad bridge crossing the Tittabawassee River, the widening of the River, and the construction of the cooling pond and associated structures were accomplished under Michigan Water Resources Commission and US Corps of Engineers permits issued in 1969. The River was widened to compensate for loss of floodplain resulting from Plant construction and the railroad bridge was constructed so as not to interfere with floodwater flow. (Environmental Report-OLS, Sections 2.1.1.2, 2.1.3.3.2, 2.2.1, 12.1, Q&R FPM 1)

##### Status

Following the July 1984 determination to halt construction of the Midland Nuclear Plant, Consumers Power Company obtained Michigan Department of Natural Resources (MDNR) approval of a Cooling Pond Dewatering Program. Dewatering of the cooling pond was necessary to allow for the demobilization of the temporary dewatering wells and the freezwall system associated with the auxiliary building underpinning activities during the caretaker/layup status of the project. The main objective of the program was to control the potential environmental impacts associated with the dewatering and the ongoing maintenance of the cooling pond and related site water runoff.

The major program elements included initial dewatering of the pond at discharge rates which were environmentally acceptable and that would not exceed State water quality standards for the Tittabawassee River, to the extent practicable relocating cooling pond fish to the river, and providing for the collection and appropriate disposal of organic materials from the pond.

Staff of the MDNR Environmental Enforcement, Surface Water Quality, Fisheries, Groundwater Quality, Wildlife and Air Quality Divisions, and a representative of the Michigan Department of Public Health were designated to review various aspects of the Company's dewatering proposal for approval. (Attachment 1)

The Company received, from the Michigan Water Resources Commission (MWRC), NPDES Permit modifications to completely dewater the cooling pond and to discharge stormwater runoff and site dewatering from the dewatered pond. Notice of the revised Permit was published in September 1984. The revised Permit was discussed before the Michigan Environmental Review Board in October and was issued by the MWRC on October 18, 1984. (Attachment 2)

The revised NPDES Permit authorizes pond dewatering and contains a number of special conditions designed to address environmental matters. The Cooling Pond Dewatering Program Summary Report (Attachment 3) describes the pond water discharge, water quality, fish relocation, residuals management and avifauna observations from the 1984 dewatering program. These activities were conducted in accordance with the requirements of NPDES Special Conditions 30, 31, 32 and 33.

Special Condition 29 of the Permit required the submittal and approval of a Cooling Pond Maintenance Program to control stormwater runoff and site dewatering discharges. The Company continues to implement this MDNR approved program. While the site remains in caretaker/layup status, the Cooling Pond Maintenance Program controls site stormwater drainage, site dewatering and pond area runoff. Attachment 4 includes a copy of the program including a sketch of the site showing the location of the water discharge. Following the initial dewatering, several small dams and a settling basin were built internally in the cooling pond and the banks of an internal drain were seeded with grass. The MDNR District Supervisor approved the Cooling Pond Maintenance Program and the Cooling Pond Dewatering Program Summary Report (Attachment 5). After a site visit in early September 1985, he found "the Maintenance Program to be satisfactorily implemented. In fact, the runoff control measures were very successful in controlling erosion and sediment discharges after approximately eight inches of rain in three days just prior to the visit" (Ibid). No additional federal, state or local approvals are necessary at this time for site layup.

The 880-acre cooling pond comprises over 70% of the 1235-acre plant site. Additionally, stormwater drainage from the power block area drains into the cooling pond. The Cooling Pond Maintenance Program continues to control erosion and sediment discharge from the cooling pond as storm water is discharged in accordance with the NPDES Permit. All measures of that program have been implemented. As of early fall 1986, the pond appears to have about an 85% vegetative cover.

There are no plans to remove or add any structures in the Cooling Pond Area. They will all be used in the gas-fired, combined-cycle power plant. There is an ongoing program to control vegetation along the security fence and to monitor dike integrity. Regrading was done on the north dike area just west of the access road where a large clay stock pile was removed. Some further work in this area will be required as a result of storm damage the week of September 7, 1986.

### Summary

Site stabilization work has been implemented under the Cooling Pond Maintenance Program. Stormwater releases from the dewatered cooling pond are regulated under the NPDES Permit. The pond dike embankments have a good vegetation cover. Perimeter ditch slopes are vegetated and kept maintained. Facilities currently in place will remain.

### E. Transmission Corridor

#### Description

##### 138 kV Start-Up Lines

Two lines are involved (Environmental Report-OLS, Section 3.9.4.2 and Figure 3.9-2))

One line terminates at one of the start-up transformers and extends approximately 950 feet to tap an existing circuit at a tower on the Plant site.

The other line terminates at the other start-up transformer and extends to a single circuit type TH tower utilizing intermediate wood poles. The remainder of this line adjacent to the dike to Gordonville Road utilizes single wood poles, davit arm structures. From there along Gordonville Road to the Tittabawassee substation the line is supported on steel towers. The area disturbed by construction (completed in 1980) for the 138 kV lines is minimal.

##### 345 kV Lines

Two 345 kV bus tie lines originate at the turbine building wall of the plant and extend across the north pond area with structures located adjacent to the dikes. The lines parallel an existing 138 kV tower line and go to the Tittabawassee Substation. The area disturbed by construction (completed in 1982) for these towers is approximately 0.05 acres. (Environmental Report-OLS, Section 3.9.4.3 and Figure 3.9-2)

The Tittabawassee to Kenowa/Thetford line is located in an existing corridor that was purchased prior to 1982. Double circuit towers were utilized. The corridor, excluding the wider, 1 mile long exit at Tittabawassee will accommodate two 345 kV tower lines. The first 8.0 miles south from the Tittabawassee exit also accommodates two 138 kV tower lines and the next 7.6 miles accommodates one 138 kV tower line. A 138 kV line was built in the north 8.0 miles of the corridor in 1972. The 345 kV line (construction completed in 1983) is located 100 feet east of the existing 138 kV line.

The length of the line is 27.3 miles. The average area disturbed for installation of each set of tower anchors is a 40-foot square. A total of 153 towers required for the entire line caused the

disturbance of 5.6 acres of land, exclusive of any compaction by construction vehicles along the tower centerline. (Environmental Report-OLS, Section 3.9.4.4 and Figures 3.9-2, 3.9-3A through 3.9-3H, and 3.9-9.)

#### Status

There is no current evidence of erosion or other adverse conditions in the transmission corridors. The 27.3 mile 345 kV double circuit line is now being utilized and CPGCo has filed with the MPSC, separately from Midland, to include these in the rate base. They are an integral permanent part of our overall transmission system.

Right-of-Way Maintenance (Environmental Report-OLS, Section 5.5.3) is an ongoing activity. Consumers Power Company's methods of maintenance comply with existing Federal and State guidelines pertaining to approved maintenance practices of transmission line rights-of-way. Tree and shrub screens established during construction clearing are preserved and maintained by selective manual trimming or removal. Only selected tree species are removed either manually or with herbicide.

All herbicide application is performed only as directed by Federal and State laws by commercial applicators licensed by the State of Michigan. Only those herbicides approved by the Environmental Protection Agency for utility right-of-way application are used and they are applied in strict compliance with manufacturer recommendations. Field operations are supervised by trained foresters certified by the State of Michigan to assure compliance with the Consumers Power Company Tree Clearing Specifications and Job Methods Manual.

#### Summary

Regardless of the final disposition of the Midland Plant, Consumers Power Company intends to keep the transmission line facilities from the plant to the Tittabawassee substation in the present configuration. They are necessary for the proposed gas conversion or other power plant project and enhance the value of the property's use as an industrial site. As noted above, the 345 kV lines to Kenowa/Thetford lines are currently in use. Their future use is in no way dependent on final disposition of the Midland site.

#### 4. CONCLUSION

The Midland Energy Center Site has been environmentally stabilized. Ongoing stabilization activities will be of a maintenance nature appropriate to any industrial facility and will be covered by State permits as necessary. Future activities on the site will be conducted in accordance with applicable regulation of the governmental agencies having jurisdiction over such activities.

TABLE 1  
CONSTRUCTION AND MISCELLANEOUS FACILITIES

POWER BLOCK AREA

Paint Storage Facilities

Tent Storage Area

Insulation Storage Buildings

Temporary Heater Boiler Structure

B&W Building

RC Pump Storage Building

Engraving Shed

Access Stairs

Underpinning Access Shed (NE Corner Turbine Building)

ACCESS ROAD AND PARKING AREA

Storage Shed

Mergentime Maintenance Shop

Huber's Maintenance Trailer

B&W Fabrication Shop

HVAC Fabrication Shop and Storage Building

Warehouse 2

Foundations for 2 Additional Support Service Buildings South of Current  
Support Service Building

LAYDOWN AREA

Environmental Trailer

Access Trailer

Miscellaneous Storage Facilities

1983  
AERIAL PHOTO  
MIDLAND SITE AREA

THE  
APERTURE  
CARD

8610200372-01

Figure 1



Figure 2

Figure 3

REFERENCE DRAWINGS

- C-1 SITE LOCATION PLAN (LATER)
- C-2 SITE PLAN
- C-3 STATION ARRANGEMENT-DETAIL PLAN AREA 2"
- C-4 ACCESS ROAD-PLAN & PROFILES, SHEET 1
- C-5 DOMESTIC WATER SYSTEM
- C-6 PLANT AREA FIRE PROTECTION SYSTEM
- C-7 PLANT AREA CONSTRUCTION ELEVATION
- C-8 CLASS FILL MATERIAL AREA
- C-9 PLANT AREA DRAINAGE PROFILES - SHEET 1
- C-10 PLANT AREA FINISH PLAN & DETAILS
- C-11 REGULATING WATER SYSTEM-PLAN & SECTIONS
- C-12 SANITARY WATER LINE, PLAN & SECTIONS, SHEET 1
- C-13 COOLING TOWER SASH, PLAN & SECTIONS, SHEET 1
- C-14 ELECTRIC MANHOLES
- C-15 MAKE-UP WATER SYSTEM-CON. ARRANGEMENT PLAN
- C-16 MAKE-UP WATER SYSTEM-CON. ARRANGEMENT, LOCATION PLAN & DETAILS
- C-17 TANK W/TE. SYS. BASE PLAN, W/TE. TANK & SECTIONS
- C-18 COOLING POND THERMOGRAPHIC MAP, SHEET 1
- C-19 COOLING POND PLAN, SHEET 1
- C-20 TRANSFORMER FOUNDATIONS, SHEET 1
- C-21 FOUND. LAYOUT & DETAILS, SHEET 1
- C-22 FOUND. STRUCTURES, SHEET 1
- C-23 FIELD ERECTED TANKS, SHEET 1
- C-24 WINDING PLAN & DETAILS
- C-25 UNDESIGNED PRIMS-SECTIONS & DETAILS
- C-26 TEMPORARY CONSTRUCTION LAYOUT AREA
- C-27 STATION ARRANGEMENT-SHEETS
- C-28 PROCESS STEAM TUNNEL GEN ARRANGEMENT-SECTIONS (PROFILES)
- C-29 CONCRETE STD. DETAILS AND GENERAL NOTES, SHEET 1
- C-30 OILY WASTE SYSTEM - PLAN & PROFILES
- C-31 PLANT AREA DRAINAGE PROFILES - SHEET 2
- C-1000H FLAMMABLE GAS - LIQUID STORAGE BLDG, PLAN/SHEETS

NOTE FOR GENERAL NOTES, SEE DRAWING C-4

ALL ELEVATIONS ARE REFERENCED TO U.S.S.S. DATUM TO THE ALL CO-ORDINATES AND GRIDS SHOWN ON THESE DRAWINGS TO THE NEW CHEMICAL COMPANY PLANT CO-ORDINATE SYSTEM. USE THE FOLLOWING CONVERSION: WESTERLY - EASTERLY - NO CHANGE; NORTHERLY - SOUTHERLY - ADD 240.59 FEET TO ALL SOUTHERLY CO-ORDINATES (I.E. 5,500 FEET ON THESE CONSTRUCTION DRAWINGS IS 5,740.59 FEET ON NEW CHEMICAL COMPANY PLANT CO-ORDINATE SYSTEM)

# TI APERTURE CARD

Also Available On Aperture Card

## 86/0200372-02

### CONSUMERS POWER COMPANY MIDLAND PLANT UNITS 1 & 2 FINAL SAFETY ANALYSIS REPORT

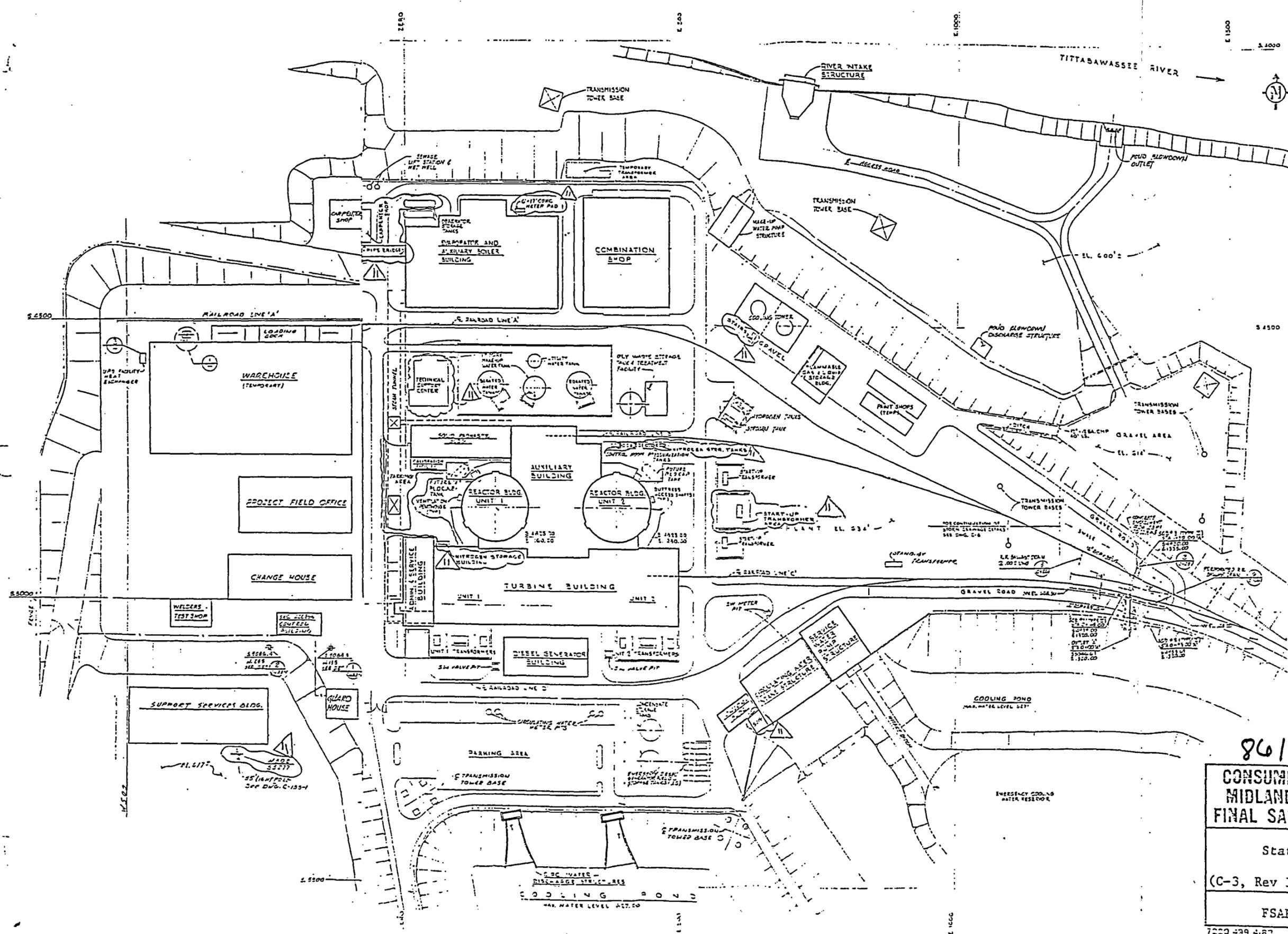
Station Arrangement

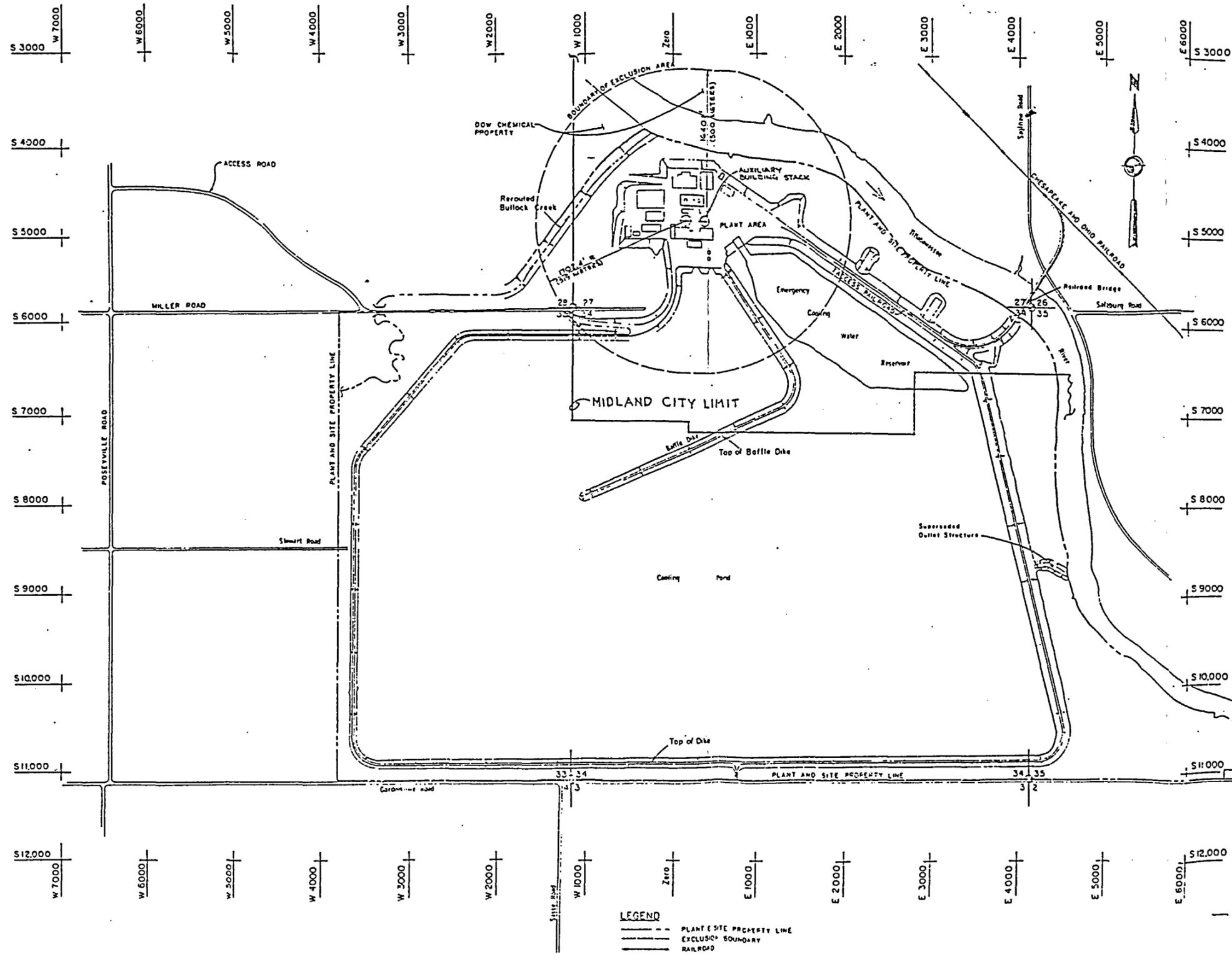
(C-3, Rev 11; C-133, Rev 10)

FSAR Figure 1.2-1

7220-499-4.83  
10/83

Revision 49





**TI  
APERTURE  
CARD**

Also Available On  
Aperture Card

FIGURE 2.1-1  
SITE PLAN

8010200372-03  
MIDLAND PLANT UNITS 1&2  
CONSUMERS POWER COMPANY



JAMES J. BLANCHARD, Governor

## DEPARTMENT OF NATURAL RESOURCES

STEVENS T. MASON BUILDING  
BOX 30028  
LANSING, MI 48909

RONALD O. SKOOG, Director

NATURAL RESOURCES COMMISSION  
THOMAS J. ANDERSON  
E. R. CAROLLO  
JACOB A. HOEFER  
STEPHEN F. MONSMA  
HILARY F. SNELL  
PAUL H. WENDLER  
HARRY H. WHITELEY

August 28, 1984

Mr. Paul C. Hittle  
Director of Environmental Activities  
Consumers Power Company  
212 West Michigan Avenue  
Jackson, Michigan 49201Re: Midland Cooling Pond  
Dewatering Program

Dear Mr. Hittle:

This is to provide the Department's response to two issues which were raised at our August 20, 1984 meeting and to identify staff contacts who are reviewing your proposal.

Prior to discharging, the NPDES permit needs to be modified to authorize the complete dewatering of the cooling pond. The company must up-date its permit application by formally requesting authorization to dewater the pond, including a request to discharge via the pond outlet structure. That request should be submitted in writing to Paul Zuger, Executive Secretary of the Water Resources Commission. The proposed modification will be processed and placed on public notice in accordance with Commission rules. We currently intend to schedule this for Commission action at the October 18, 1984 meeting. The current permit authorizes an intermittent discharge of cooling pond blowdown, hydrostatic test water, auxiliary boiler blowdown, system flush waters, site dewatering and stormwater runoff, and the dewatering discharge may be commenced pursuant to the terms of the permit. However, the intermittent discharge must cease on October 18, 1984, unless the Water Resources Commission grants authorization for the continued dewatering of the cooling pond.

The Groundwater Quality Division has determined that the organic material removed from the lagoon (dead fish and vegetation) is subject to the disposal regulations of the Solid Waste Management Act, 1978 PA 641, as amended. This means that the material must be disposed of at a licensed Type II landfill. Consumers' proposal to dispose of the material on-site is unacceptable, unless the Company obtains the necessary license.

Department staff who are reviewing and/or coordinating the review of the various aspects of the dewatering proposal are listed below.

Overall Coordination: Don Inman and Valerie Harris  
Environmental Enforcement  
517-373-3503

Flow Rate: Steve Casey  
Surface Water Quality  
517-373-8088

Water Quality: Steve Casey

Fish Discharge: Tom Doyle  
Fisheries Division  
517-373-1280

Collection and Disposal  
of Organic Material: Dave Dennis  
Groundwater Quality  
517-373-2794

Avifauna Monitoring: Stephen Schmitt  
Wildlife Division  
517-373-9358

Permanent Discharge: Chang Bek  
Surface Water  
517-373-8088

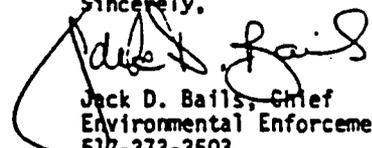
Potential Odor: Mark Reed  
Air Quality Division  
517-771-1731

Public Health: Roy Klaviter  
Division of Environmental  
Program Health Relations, MDPH  
517-373-8050

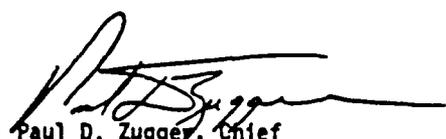
I would suggest that Department staff maintain direct contact with their counterparts at Consumers for an expeditious resolution of technical questions.

After we receive and review your "Appendix A", outlining the disposal of the organic material, a second meeting may be beneficial. In the meantime, please feel free to contact Don Inman or Valerie Harris if you have any questions.

Sincerely,



Jack D. Bails, Chief  
Environmental Enforcement Division  
517-373-3503



Paul D. Zuger, Chief  
Surface Water Quality Division  
517-373-1949

JDB:VSH:cf  
cc: Inman, Harris  
Casey, Doyle, Dennis  
Schmitt, Bek, Reed

STATE OF MICHIGAN



Attachment 2

URAL RESOURCES COMMISSION  
THOMAS J. ANDERSON  
E. R. CAROLLO  
MARLENE J. FLUHARTY  
STEPHEN F. MONSMA  
O. STEWART MYERS  
RAYMOND POUPORE  
HARRY H. WHITELEY

JAMES J. BLANCHARD, Governor

## DEPARTMENT OF NATURAL RESOURCES

STEVENS T. MASON BUILDING  
BOX 30028  
LANSING, MI 48909

RONALD O. SMOOG, Director

October 18, 1984

CERTIFIED MAIL

Mr. Paul Hittle  
Consumers Power Company  
212 West Michigan Avenue  
Jackson, Michigan 49201

Re: NPDES Permit No. MI 0042668  
Midland Nuclear Power Plant

Dear Mr. Hittle:

Your application for a National Pollutant Discharge Elimination System (NPDES) Permit has been processed in accordance with appropriate state and federal regulations.

Your NPDES Permit contains: 1) limitations which require you to monitor your effluent in accordance with Part I, Section A; and 2) a schedule of compliance for submittal of information concerning other permit requirements.

REVIEW THE PERMIT EFFLUENT LIMITS AND PERFORMANCE SCHEDULES CAREFULLY. These are subject to the criminal and civil enforcement provisions of both state and federal law. Permit violations are audited by the United States Environmental Protection Agency and will appear in a published quarterly noncompliance report made available to agencies and the public.

Your monitoring and reporting responsibilities shall be complied with in accordance with Part I, Section B of this permit. If applicable, monthly operating report forms will be transmitted to you in the near future. These reports are to be submitted monthly or otherwise as required by your NPDES permit.

Any reports, notifications, and questions regarding the attached permit or NPDES program should be addressed to the following address:

Terry Walkington, District Supervisor  
Saginaw State Office Building  
411-J East Genesee  
Saginaw, Michigan 48607  
Telephone: (517) 771-1731

Mr. Paul Hittle  
October 18, 1984  
Page 2

NOTE: All references within this permit made to the Water Quality Division or Chief of the Water Quality Division are to refer to the Surface Water Quality Division or Chief of the Surface Water Quality Division, respectively.

Sincerely,



William E. McCracken, P.E.  
Chief, Permits Section  
Surface Water Quality Division  
517-373-8088

Enclosure: Permit

cc: EPA-Region V (2), Data Center, Files,  
Water Quality Surveillance, Point Source Studies  
Compliance Section #2, Terry Walkington, Saginaw District,  
Land Application Unit, 208 Agency - East Central Michigan  
Planning and Development Region

Permit No. MI 0042668

MICHIGAN WATER RESOURCES COMMISSION  
AUTHORIZATION TO DISCHARGE UNDER THE  
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et. seq.; the "Act"), and the Michigan Water Resources Commission Act, as amended (Act 245, Public Acts of 1929, as amended, the "Michigan Act"),

Consumers Power Company  
212 West Michigan Avenue  
Jackson, Michigan 49201

is authorized to discharge from a facility located at

Midland Nuclear Power Plant Site  
3500 East Miller Road  
Midland, Michigan 48640

receiving water named the Tittabawassee River and Bullock Creek.

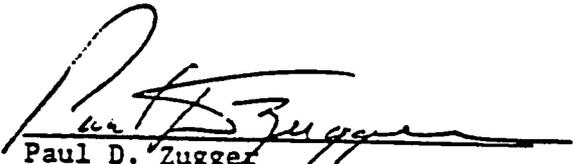
In accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I and II hereof.

This permit shall become effective on the date of issuance and shall be final in the absence of a request for a hearing filed within 15 days after receipt thereof.

This permit and the authorization to discharge shall expire at midnight, June 30, 1987. In order to receive authorization to discharge beyond the date of expiration, the permittee shall submit such information and forms as are required by the Michigan Water Resources Commission no later than 180 days prior to the date of expiration.

This permit is based on the Company's application dated February 28, 1978, as amended, and shall supersede any and all Orders of Determination, Stipulation, or Final Orders of Determination previously adopted by the Michigan Water Resources Commission.

Issued on November 2, 1982, and modified on this 18th day of October, 1984, for the Michigan Water Resources Commission, superseding State Permit No. M 00057, issued June 6, 1974 and Order of Determination No. 1426, issued October 15, 1970.

  
Paul D. Zugger  
Executive Secretary

## PART I

## EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

## 1. Interim Effluent Limitations - Complete Dewatering of the Cooling Pond

During the period beginning when special conditions 30, 31, 32 and 33 are approved by the Chief of the Surface Water Quality Division and ending when the Cooling Pond has been completely dewatered, \*\*\*\*the permittee is allowed to completely dewater the cooling pond of hydrostatic test water, auxiliary boiler blowdown, system flushwater, stormwater runoff, site dewatering and stored river water from outfall 003 into the Tittabawassee River. Such discharges shall be limited and monitored by the permittee as specified below:<sup>4</sup>

Effluent Characteristic	Discharge Limitations				Monitoring Requirements	
	kg/day (lbs/day)		Other Limitations		Measurement Frequency	Sample Type
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum		
Flow, M <sup>3</sup> /Day (MGD)*					Daily	Continuous
Total Suspended Solids			30 mg/l	100 mg/l	Daily <sup>1</sup>	24-Hr. Composite <sup>1</sup>
Net**Amonia (as N)						
October-May	260(573)	350(772)		6 mg/l	Daily <sup>1</sup>	24-Hr. Composite <sup>1</sup>
June-September	(No net discharge as a 30-day average)			6 mg/l	Daily <sup>1</sup>	24-Hr. Composite <sup>1</sup>
Net**BOD <sub>5</sub>						
September-May		1000(2205)			Daily <sup>1</sup>	24-Hr. Composite <sup>1</sup>
June-August		780(1720)***			Daily <sup>1</sup>	24-Hr. Composite <sup>1</sup>
System Flush Water		See "e" below				
Temperature					Daily <sup>1</sup>	Grab
Hydrogen Sulfide					Daily <sup>2</sup>	Grab
Undissociated Hydrogen Sulfide				25 ug/l	Daily <sup>2</sup>	Calculation
Outfall Observation <sup>3</sup>					Daily	Visual

\*The permittee shall observe the Tittabawassee River at outfall 003 daily. If the discharge is causing visible stream bank or stream bed erosion, the discharge must be immediately reduced until the visible bank or stream bed erosion has ceased. If flooding conditions (banks full or over-flowing) occur in the Tittabawassee River downstream of the discharge, the discharge must be stopped immediately.

\*\*The term net shall be defined as the difference between the intake and discharge quantities.

\*\*\*There shall be no discharge of cooling pond blowdown when the river flow at the Midland USGS gage station is less than 300 cfs.

\*\*\*\*The cooling pond shall be considered completely dewatered when the elevation of water first decreases to a level of 600 feet Mean Sea Level (MSL) in the emergency cooling water reservoir and to a level of 601 MSL at outfall 003.

This monitoring requirement shall be relaxed to twice weekly grab samples until the level of water in the cooling pond falls below 610 MSL at outfall 003.

## Part I-A-1 (continued)

This monitoring requirement shall be relaxed to twice grab samples until the level of water in the cooling pond falls below 610 MSL at outfall 003.

- 3 Any unusual characteristics of the discharge which would not be expected from hydrostatic test water, auxiliary boiler blowdown, system flushwater, stormwater runoff, site dewatering and stored river water (i.e., turbidity, discoloration, oil film, suspended solids, etc.) shall be reported immediately to the District Office of the Surface Water Quality Division followed by a written report within 5 days detailing the findings of the investigation and the steps taken to correct the condition.
- 4 Discharges from outfall 001 and outfall 003 during the same month are expressly prohibited unless the combined discharge from outfall 001 and outfall 003 is in compliance with the effluent limitations for outfall 003.

a. The discharge shall not cause excessive foam in the receiving waters. The discharge shall be essentially free of floating and settleable solids.

b. The discharge shall not contain oil or other substances in amounts sufficient to create a visible film or sheen on the receiving waters.

c. Samples taken in compliance with the monitoring requirements above shall be taken prior to discharge to the Tittabawassee River.

d. The pH shall not be less than 6.0 nor greater than 9.0. The pH shall be monitored as follows: Daily<sup>1</sup>; grab sample.

e. In the event the permittee shall require the use of water treatment additives in addition to or in greater quantities than those identified in the permittee's NPDES application (Revision 3) dated November 11, 1981 and approved by the Chief of the Surface Water Quality Division on March 11, 1982, the permittee shall notify the Division Chief. Written approval from the Chief of the Surface Water Quality Division to use such additives at specified levels shall be obtained prior to usage by the permittee. The permit will be modified in accordance with the requirements of Part II, Section B-4 if a constituent of the additive or additives requires limiting.

**Final Effluent Limitations - Discharge of Stormwater Runoff and Site Dewatering  
While the Plant is in Layup/Caretaker Status**

During the period beginning when the Cooling Pond is completely dewatered\*\*\*\* and ending when the Cooling Pond is refilled, the permittee is allowed to discharge stormwater runoff and site dewatering from outfall 003 to the Tittabawassee River. Such discharge shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristic</u>	<u>Discharge Limitations</u>				<u>Monitoring Requirements</u>	
	<u>kg/day (lbs/day)</u>		<u>Other Limitations</u>		<u>Measurement Frequency</u>	<u>Sample Type</u>
	<u>Monthly Average</u>	<u>Daily Maximum</u>	<u>Monthly Average</u>	<u>Daily Maximum</u>		
Outfall Observation*					Daily	Visual
Suspended Solids***			30 mg/l	100 mg/l	Daily**	24-Hr. Composite

\*Any unusual characteristics of the discharge which would not be expected from stormwater runoff and site dewatering (i.e., turbidity, discoloration, oil film, suspended solids, etc.) shall be reported immediately to the District Office of the Surface Water Quality Division followed by a written report within 5 days detailing the findings of the investigation and the steps taken to correct the condition.

\*\*When discharging.

This discharge limitation and monitoring requirement shall apply until the cooling pond maintenance program (special condition 29) has been fully implemented and approved by the Chief of the Surface Water Quality Division.

\*\*\*\*The cooling pond shall be considered completely dewatered when the elevation of water first decreases to a level of 600 feet Mean Sea Level (MSL) in the emergency cooling water reservoir and to a level of 601 feet MSL at outfall 003.

a. The discharge shall not cause excessive foam in the receiving waters. The discharge shall be essentially free of floating and settleable solids.

b. The discharge shall not contain oil or other substances in amounts sufficient to create a visible film or sheen on the receiving waters.

c. Samples taken in compliance with the monitoring requirements above shall be taken prior to discharge to the Tittabawassee River.

d. In the event the permittee shall require the discharge of water treatment additives, the permittee shall notify the Chief of the Surface Water Quality Division. The permittee shall obtain written approval from the Chief of the Surface Water Quality Division to discharge such additives at a specified level. The permit may be modified in accordance with the requirements of Part II, Section B-4 if a constituent of the additive or additives requires limiting.

3. Interim Effluent Limitations - Discharges During Construction and Preoperational Testing

During the period beginning with the date of issuance of this permit and ending when both Unit 1 and Unit 2 commence commercial operation, the permittee is allowed the intermittent discharge of cooling pond blowdown, hydrostatic test water, auxiliary boiler blowdown, system flush waters, site dewatering and stormwater runoff from outfall 001 into the Tittabawassee River. Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations				Monitoring Requirements	
	kg/day		(lbs/day)		Measurement Frequency	Sample Type
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum		
Flow, M <sup>3</sup> /day (MGD)					Daily*	
Total Suspended Solids			30 mg/l	100 mg/l	Daily/Weekly**	Grab
Ammonia (as N)					Daily/Weekly**	Calculation
October-May	260(573)	350(772)		6 mg/l	Daily/Weekly**	Calculation
June-September	(No net discharge as a 30-day average)			6 mg/l	Daily/Weekly**	Calculation
* BOD <sub>5</sub>					Daily/Weekly**	Calculation
September-May		1000(2205)			Daily/Weekly**	Calculation
June-August		780(1720)****			Daily/Weekly**	Calculation
System Flush Water			See "e" Below			

\* Per discharge occurrence.

\*\* Once daily when discharging less than seven consecutive days; once weekly when discharging more than seven consecutive days.

\*\*\* The term net shall be defined as the difference between the intake and discharge quantities.

\*\*\*\* There shall be no discharge of cooling pond blowdown when the river flow at the Midland USGS gage station is less than 300 cfs.

Interim Effluent Limitations (continued)

- a. The discharge shall not cause excessive foam in the receiving waters. The discharge shall be essentially free of floating and settleable solids.
- b. The discharge shall not contain oil or other substances in amounts sufficient to create a visible film or sheen on the receiving waters.
- c. Samples taken in compliance with the monitoring requirements above shall be taken prior to discharge to the Tittabawassee River.
- d. The pH shall not be less than 6.0 nor greater than 9.0. The pH shall be monitored as follows: Daily/Weekly\*\*, per discharge occurrence; grab sample.
- e. In the event the permittee shall require the use of water treatment additives in addition to or in greater quantities than those identified in the permittee's NPDES application (Revision 3) dated November 11, 1981 and approved by the Chief of the Water Quality Division on March 11, 1982, the permittee shall notify the Division Chief. Written approval from the Chief of the Water Quality Division to use such additives at specified levels shall be obtained prior to usage by the permittee. The permit will be modified in accordance with the requirements of Part II, Section A-1 if a constituent of the additive or additives requires limiting.

Interim Limitations - Makeup Demineralizer Regeneration Waste

During the period beginning with the date of issuance of this permit and ending when the cooling pond blowdown system to the river is placed in operation, but in no case, later than when both Unit 1 and Unit 2 commence commercial operation, the makeup demineralizer regeneration wastewater shall be discharged to the Dow Chemical Company treatment system.

5. Interim Limitations - Temporary Laboratory Trailer Wastewater

During the period beginning with the date of issuance of this permit and ending when the cooling pond blowdown system to the river is placed in operation, but in no case later than when both Unit 1 and Unit 2 commence commercial operation, all temporary laboratory trailer wastewater shall be collected and discharged to the Dow Chemical Company treatment system.

**Final Effluent Limitations - Outfall 001, Combined Plant Discharge**

During the period beginning with the commencement of discharge and lasting until the expiration date of this permit, the permittee is authorized to discharge up to a maximum of one hundred and forty-three million (143,000,000) gallons per day of wastewaters from cooling pond, oily waste treatment system, evaporator building neutralizing sump, Unit 1 and Unit 2 neutralizing sump, laundry waste treatment system, liquid radwaste system and forty three million four hundred thousand (43,400,000) gallons per day of radwaste dilution water from outfall 001 into the Tittabawassee River. Such discharge shall be limited and monitored by the permittee as specified below:

Effluent Characteristics	Discharge Limitations				Monitoring Requirements	
	kg/day	(lbs/day)	Other Limitations		Measurement Frequency	Sample Type
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum		
Flow, M <sup>3</sup> /day (MGD)					Daily	
Natural* River Temperature (Background), °F					Daily	Continuous Report daily average and daily maximum

The temperature of the discharge shall not increase the temperature of the river at the edge of the mixing zone on an average temperature basis greater than 5°F above the natural\* river temperature provided that at no time shall the temperature at the edge of the mixing zone be greater than the following monthly maximum:

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
41	40	50	63	76	84	85	85	79	68	55	43

\* For purposes of this permit, natural river temperature is defined as a point on the Tittabawassee River upstream of the Midland Plant Discharge but downstream of the confluence of the Chippewa and Tittabawassee River. The actual location is to be determined following a river temperature study conducted by the permittee.

**Mixing Zone:** The thermal mixing zone, for the purposes of evaluating compliance with water quality standards, is defined as the area enclosed within the right ½ of the Tittabawassee River starting from the point of discharge and extending 1,700 feet downstream from the discharge structure.

The above defined mixing zone may be modified upon demonstration by the permittee that said mixing zone is more stringent than necessary to protect the uses of the river downstream of the mixing zone as determined by a showing that the thermal component of the discharge does not adversely affect the minimum dissolved oxygen levels in the river or restrict the passage of fish and fish food organisms in such manner that their immediate and future populations are significantly affected. Such modification shall be made in accordance with Part II, Section B-4 herein.

3. Final Effluent Limitations (continued)

Effluent Characteristic	Discharge Limitations			Monitoring Requirements	
	kg/day	(lbs/day	Other Limitations	Measurement	Sample
	Monthly Average	Daily Maximum	Daily Maximum	Frequency	Type

Total Dissolved Solids (TDS): Report daily average and daily maximum (calculated from continuous conductivity reading).

Intake River Concentration (TDS)	Daily	Continuous
River Concentration at Freeland Bridge (TDS)	Daily	Continuous

The total dissolved solids concentration of the discharge shall not increase the river concentration at Freeland Bridge above 500 mg/l on a monthly average or more than 750 mg/l at any time.

Net**Ammonia (as N)					
October - May	260(573)	350(772)	6 mg/l	Daily	Calculation
June - September	No Net Discharge as a 30 day ave***		6 mg/l	Daily	Calculation
Net**BOD <sub>5</sub>					
September - May	---	1000(2205)	---	Daily	Calculation
June - August****	---	780(1720)	---	Daily	Calculation
Outfall					
Observation*****	All Year	---	---	Daily	Visual

The permittee may demonstrate to the Commission that higher BOD<sub>5</sub> and/or ammonia limits are acceptable.

The authorization for discharge of wastewater and limitations on the discharge set forth in this permit are based upon minimum seasonal design flows in the Tittabawassee River. To assure that the Commission's Water Quality Standards are met, the permittee shall not discharge wastewater from the cooling pond or Unit 1 and 2 neutralizing sumps\*\*\*\*\* when for 15 minute or more river flows downstream of Lingle Drain are less than those specified below:

When River Flow*(cfs) below Lingle Drain is Less Than:	Neurraizing Sumps	During
332	332	June 1 - August 31
341	332	September 1 - September 30
355	272	October 1 - April 30
603	500	May 1 - May 31

\*River flow monitoring to determine compliance with this requirement shall be performed pursuant to Special Condition 21, page 22 of 33 of this permit.

## 6. Final Effluent Limitations (continued)

\*Net discharge is defined as the difference between the intake and discharge pollutant ss.

\*\*\*Final ammonia discharge limitation to be determined by Michigan Water Resources (MWRC) based on results of a site specific study to establish the appropriate acute and chronic ammonia toxicity level in the Tittabawassee River. See Special Condition #28 for study requirements.

\*\*\*\*Final BOD<sub>5</sub> discharge limitation to be determined by MWRC based on results of the MDNR's Tittabawassee River investigation and the company's Short-Term Waste Characterization Study for BOD<sub>5</sub>. See Special Condition #26 for study requirements.

\*\*\*\*\*Any unusual characteristics of the discharge which would not be expected from the above authorized discharge (i.e., unusual turbidity, discoloration, oil film, suspended matter, etc.) shall be reported immediately to the District Office of the Water Quality Division, followed with a written report within five (5) days detailing the findings of the investigation and the steps taken to correct the condition.

\*\*\*\*\*This discharge prohibition may be modified by the Commission based upon the results of the ammonia toxicity study specified in Part I, Sec A.28 Special Condition.

a. The discharge shall not cause excessive foam on the receiving waters. The discharge shall be essentially free of floating and settleable solids.

b. Samples taken in compliance with the monitoring requirements above for fall 001 shall be taken at a point prior to discharge into the Tittabawassee River and BOD<sub>5</sub> without mixing with radwaste dilution water.

c. In the event the permittee shall require the use of water treatment additives in addition to or in greater quantities than those identified in the permittee's NPDES application (Revision 3) dated November 11, 1981 and approved by the Chief of the Water Quality Division on March 11, 1982, the permittee shall notify the Division Chief. Written approval from the Chief of the Water Quality Division to use such additives at specified levels shall be obtained prior to usage by the permittee. The permit will be modified in accordance with the requirements of Part II, Section A-1 if a constituent of the additive or additives requires limiting.

Final Effluent Limitations - Outfall 002, Condensate Return Pump House Drainage

During the period beginning with the commencement of discharge and lasting until the expiration date of this permit, the permittee is authorized to discharge up to a maximum of twelve thousand (12,000) gallons per day of condensate return pump house drainage on an intermittent basis to Bullock Creek from outfall 002. This drainage consists of minor pump seal leaks, groundwater seepage, and high quality condensate resulting from equipment repairs or maintenance. Such discharge shall be made consistent with the following restrictions:

- (1) Discharge of groundwater seepage and minor seal leaks; no effluent monitoring or sampling requirements.
- (2) Discharge of condensate resulting from drainage or failure of equipment.

<u>Effluent Characteristics</u>	<u>Discharge Limitations</u>				<u>Monitoring Requirements</u>	
	<u>kg/day</u>	<u>(lbs/day)</u>	<u>Other Limitations</u>		<u>Measurement Frequency</u>	<u>Sample Type</u>
	<u>Monthly Average</u>	<u>Daily Maximum</u>	<u>Monthly Average</u>	<u>Daily Maximum</u>		
low, M <sup>3</sup> /day (MGD)					Daily*	
outfall Observation**					Daily*	Visual

\* Per discharge occurrence.

Any unusual characteristics of the discharge which would not be expected from a above authorized discharge (i.e., turbidity, discoloration, oil film, suspended matter, etc.) shall be reported immediately to the District Office of the Water Quality Division, followed with a written report within five (5) days detailing the findings of the investigation and the steps taken to correct the condition.

a. The pH shall not be less than 6.0 nor greater than 9.0. The pH shall be monitored as follows: Daily\*; grab.

b. Samples taken in compliance with the monitoring requirements above shall be taken at outfall 002 prior to discharging to Bullock Creek.

c. All discharges under A. 7(2) shall be reported in writing to the District II Office of the Water Quality Division within ten (10) days of each occurrence. Said reports shall include the cause of the discharge, the volume of the discharge, and the results of the analysis and observations required in A. 7(2). a and b.

d. In the event the permittee shall require the use of water treatment additives in addition to or in greater quantities than those identified in the permittee's NPDES application (Revision 3) dated November 11, 1981 and approved by the Chief of the Water Quality Division on March 11, 1982, the permittee shall notify the Division Chief. Written approval from the Chief of the Water Quality Division to use such additives at specified levels shall be obtained prior to usage by the permittee. The permit will be modified in accordance with the requirements Part II, Section B-4 if a constituent of the additive or additives requires limiting.

Final Effluent Limitations - Cooling Pond Discharge (OOA) Prior to Outfall 001

During the period beginning with the commencement of discharge and lasting until the expiration date of this permit, the permittee is authorized to discharge up to a maximum of one hundred and forty-two million (142,000,000) gallons per day of cooling pond blowdown and miscellaneous low-volume wastes consisting in part of site storm drainage, site dewatering, Units 1 and 2 clean waste sump, Unit 1 and Unit 2 neutralizing sumps, evaporator building neutralizing sump, oily waste storage tank overflow, iron removal sump, condensate storage tank overflow and/or drain and service water cooling tower blowdown through outfall 001 into the Tittabawassee River. Such discharge shall be limited and monitored by the permittee as specified below:

Effluent Characteristics	Discharge Limitations				Monitoring Requirements	
	kg/day	(lbs/day)	Other Limitations		Measurement Frequency	Sample Type
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum		
Flow, M <sup>3</sup> /day (MGD)					Daily*	
Biochemical Oxygen Demand, 5-day					Once Weekly*	Grab
Ammonia (as N)					Once Weekly*	Grab
Total Dissolved Solids					Once Daily*	Grab
Total Residual Chlorine (TRC)**			0.2 mg/l	0.3 mg/l***	Once Daily*	Grab
Cooling Pond Blowdown Time***					Daily*	Report
Water Temperature, °F			See Table 1 "Allowable Discharge Temperature", p. 13 of 33		Daily*	Discharge Temperature Continuous Report daily average and daily maximum

\* When cooling pond is discharging. When the Tittabawassee River flows, downstream of Lingle Drain, are less than the minimum seasonal design flows specified for the cooling pond in Part I.A.6, the permittee shall report the discharge to outfall 001 at each 15 minute interval. If no discharge, the permittee shall report zero.

\*\* To be measured by the amperometric titration technique or other methods approved by the Chief of the Water Quality Division.

\*\*\* When the cooling pond blowdown time exceeds 160 minutes in any 24-hour period, the maximum concentration of TRC shall not exceed 0.083 mg/l.

The permittee may use dechlorination techniques to achieve the applicable limitations using sodium thiosulfate or sodium sulfite or other dechlorinating agents approved by the Chief of the Water Quality Division as dechlorination reagents. The quantity of reagent used shall be limited to 1.5 times the stoichiometric amount needed for dechlorination. The permittee shall report monthly the quantity of each dechlorination reagent used per day.

The permittee may demonstrate to the Commission that no chlorine limitations or monitoring is necessary.

§. Final Effluent Limitations (continued)

a. The pH shall not be less than 6.0 nor greater than 9.0. The pH shall be monitored as follows: Once daily\*; grab sample.

b. Samples taken in compliance with the monitoring requirements above shall be taken at a point prior to discharge through 001 and prior to mixing with any other wastewaters and/or the radwaste dilution water.

c. In the event the permittee shall require the use of water treatment additives in addition to or in greater quantities than those identified in the permittee's NPDES application (Revision 3) dated November 11, 1981, and approved by the Chief of the Water Quality Division on March 11, 1982, the permittee shall notify the Division Chief. Written approval from the Chief of the Water Quality Division to use such additives at specified levels shall be obtained prior to usage by the permittee. The permit will be modified in accordance with the requirements of Part II, Section A-1 if a constituent of the additive or additives requires limiting.

TABLE 1  
 ALLOWABLE DISCHARGE TEMPERATURES  
 MIDLAND PLANT  
 COOLING POND BLOWDOWN

<u>Month</u>	<u>Discharge Temperature (°F)</u>
December	75 (1)(2)
January	75 (1)(2)
February	75 (1)(2)
March	80 (1)(2)
April	85 (3)
May	95 (3)(4)
June	95 (3)(4)
July	95 (3)(4)
August	95 (3)(4)
September	95 (3)(4)
October	90 (3)
November	85 (3)

(1) Maximum weekly average temperature.

(2) In the event of a Plant shutdown, sudden termination of the discharge will not occur. Rather, the normal pond discharge criteria will be followed until the discharge reaches five (5) cfs at which time discharge may be terminated.

(3) Maximum temperature, except as provided in Footnote 4.

(4) Discharges of up to five (5) cfs are permitted when discharge temperatures are greater than 95°F but not greater than 100°F. No discharge is allowed when the cooling pond blowdown discharge temperature is greater than 100°F.

9. Final Effluent Limitations - Oily Waste Treatment System (OOB)

During the period beginning with the commencement of discharge and lasting until the expiration date of this permit, the permittee is authorized to discharge up to a maximum of two hundred eighty eight thousand (288,000) gallons per day of wastewater from the oily waste treatment system consisting of auxiliary boiler blowdown, floor drains and precipitation from the outdoor transformer area through outfall 001 into the Tittabawassee River. Such discharge shall be limited and monitored by the permittee as specified below:

Effluent Characteristics	Discharge Limitations				Monitoring Requirements	
	kg/day	(lbs/day)	Other Limitations		Measurement Frequency	Sample Type
	Monthly Average	Maximum*	Monthly Average	Maximum*		
Flow, M <sup>3</sup> /day (MGD)					Weekly	
Total Suspended Solids	33(72)	109(240)	30 mg/l	100 mg/l	Weekly	Grab
Oil and Grease**	16(36)	22(48)	15 mg/l	20 mg/l	2X Monthly	Grab

\* Weekly maximum for total suspended solids and monthly maximum for oil and grease.

\*\* The permittee may demonstrate that "No visible film" is more stringent than the above concentration limitation.

a. The pH shall not be less than 6.0 nor greater than 9.0. The pH shall be monitored as follows: Weekly; grab sample.

b. Samples taken in compliance with the monitoring requirements above shall be taken at a point prior to mixing with any other wastewaters and/or radwaste dilution water and prior to discharge to outfall 001.

c. In the event the permittee shall require the use of water treatment additives in addition to or in greater quantities than those identified in the permittee's NPDES application (Revision 3) dated November 11, 1981, and approved by the Chief of the Water Quality Division on March 11, 1982, the permittee shall notify the Division Chief. Written approval from the Chief of the Water Quality Division to use such additives at specified levels shall be obtained prior to usage by the permittee. The permit will be modified in accordance with the requirements of Part II, Section A-1 if a constituent of the additive or additives requires limiting.

7. Final Effluent Limitations - Evaporator Building Neutralizing Sump (00C)

During the period beginning with the commencement of discharge and lasting until the expiration date of this permit, the permittee is authorized to discharge up to a maximum of two hundred twenty thousand (220,000) gallons per day of wastewater from the evaporator building neutralizing sump, consisting of makeup demineralizer system regeneration waste, the evaporator building laboratory waste, chemical addition and storage area floor drains through outfall 001 into the Tittabawassee River. Such discharge shall be limited and monitored by the permittee as specified below:

Effluent Characteristics	Discharge Limitations				Monitoring Requirements		
	kg/day	(lbs/day)		Other Limitations		Measurement Frequency	Sample Type
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum			
Flow, M <sup>3</sup> /day (MGD)						Daily*	
Total Suspended Solids	25(55)	83(183)	30 mg/l	100 mg/l		Daily**	Grab
Total Phosphorus (as P)	0.8(1.8)		1 mg/l			Daily**	Grab

\* Per occurrence of each batch discharge.

\*\* Per occurrence of each batch discharge when discharging through outfall 001.

a. The pH shall not be less than 6.0 nor greater than 9.0. The pH shall be monitored as follows: Daily\*\*; grab sample.

b. Samples taken in compliance with the monitoring requirements above shall be taken at a point prior to mixing with any other wastewaters and/or radwaste dilution water and prior to discharge to outfall 001.

c. In the event the permittee shall require the use of water treatment additives in addition to or in greater quantities than those identified in the permittee's NPDES application (Revision 3) dated November 11, 1981, and approved by the Chief of the Water Quality Division on March 11, 1982, the permittee shall notify the Division Chief. Written approval from the Chief of the Water Quality Division to use such additives at specified levels shall be obtained prior to usage by the permittee. The permit will be modified in accordance with the requirements of Part II, Section A-1 if a constituent of the additive or additives requires limiting.

**Final Effluent Limitations - Unit 1 and Unit 2 Neutralizing Sump (OOD)**

During the period beginning with the commencement of discharge and lasting until the expiration date of this permit, the permittee is authorized to discharge up to a maximum of one hundred six thousand (106,000) gallons per day of Unit 1 and Unit 2 neutralizing sump wastewater, consisting of Unit 1 and Unit 2 condensate polisher regeneration waste and secondary plant laboratory wastewater, through outfall 001 into the Tittabawassee River. Such discharge shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristics</u>	<u>Discharge Limitations</u>				<u>Monitoring Requirements</u>	
	<u>kg/day</u>	<u>(lbs/day)</u>	<u>Other Limitations</u>		<u>Measurement Frequency</u>	<u>Sample Type</u>
	<u>Monthly Average</u>	<u>Daily Maximum</u>	<u>Monthly Average</u>	<u>Daily Maximum</u>		
Flow, M <sup>3</sup> /day (MGD)					Daily*	
Total Suspended Solids	12(27)	40(88)	30 mg/l	100 mg/l	Daily**	Grab
Ammonia (as N)					Daily**	Grab

\* Per occurrence of each batch discharge. When the Tittabawassee River flows, downstream of Lingle Drain, are less than the minimum seasonal design flows specified for the Unit 1 and 2 neutralizing sumps in Part I.A.6, the permittee shall report the discharge through outfall 001 at each 15 minute interval. If no discharge, the permittee shall report zero.

\*\* Per occurrence of each batch discharge when discharging through outfall 001.

a. The pH shall not be less than 6.0 nor greater than 9.0. The pH shall be monitored as follows: Daily\*\*; grab sample.

b. Samples taken in compliance with the monitoring requirements above shall be taken at a point prior to mixing with any other wastewaters and/or radwaste dilution water and prior to discharge to outfall 001.

c. In the event the permittee shall require the use of water treatment additives in addition to or in greater quantities than those specified in the permittee's NPDES application (Revision 3) dated November 11, 1981, and approved by the Chief of the Water Quality Division on March 11, 1982, the permittee shall notify the Division Chief. Written approval from the Chief of the Water Quality Division to use such additives at specified levels shall be obtained prior to usage by the permittee. The permit will be modified in accordance with the requirements of Part II, Section B-4 if a constituent of the additive or additives requires limiting.

2. Final Effluent Conditions - Laundry Waste Treatment System (OOE)

During the period beginning with the commencement of discharge and lasting until the expiration date of this permit, the permittee is authorized to discharge up to a maximum of eight thousand (8,000) gallons per day of laundry waste treatment system wastewater through outfall 001 into the Tittabawassee River. Such discharge shall be limited and monitored by the permittee as specified below:

Effluent Characteristics	Discharge Limitations				Monitoring Requirements	
	kg/day	(lbs/day)	Other Limitations		Measurement Frequency	Sample Type
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum		
Flow, M <sup>3</sup> /day (MGD)					Daily*	
Total Suspended Solids	0.9(2.0)	3.0(6.7)	30 mg/l	100 mg/l	Daily*	Grab

\* Per occurrence of each batch discharge.

a. The pH shall not be less than 6.0 nor greater than 9.0. The pH shall be monitored as follows: Daily\*; grab sample.

b. Samples taken in compliance with the monitoring requirements above shall be taken at a point prior to mixing with any other cooling or process wastewaters or radwaste dilution water and prior to discharge to outfall 001.

c. In the event the permittee shall require the use of water treatment additives in addition to or in greater quantities than those specified in the permittee's NPDES application (Revision 3) dated November 11, 1981, and approved by the Chief of the Water Quality Division on March 11, 1982, the permittee shall notify the Division Chief. Written approval from the Chief of the Water Quality Division to use such additives at specified levels shall be obtained prior to usage by the permittee. The permit will be modified in accordance with the requirements of Part II, Section A-1 if a constituent of the additive or additives requires limiting.

Final Effluent Conditions - Liquid Radwaste Treatment System (OOF)

During the period beginning with the commencement of discharge and lasting until the expiration date of this permit, the permittee is authorized to discharge up to a maximum of forty thousand (40,000) gallons per day of liquid radwaste treatment system wastewater through outfall 001 into the Tittabawassee River. Such discharge shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristics</u>	<u>Discharge Limitations</u>				<u>Monitoring Requirements</u>	
	<u>kg/day</u>	<u>(lbs/day)</u>	<u>Other Limitations</u>		<u>Measurement Frequency</u>	<u>Sample Type</u>
	<u>Monthly Average</u>	<u>Daily Maximum</u>	<u>Monthly Average</u>	<u>Daily Maximum</u>		
Flow, M <sup>3</sup> /day (MGD)					Daily*	
Total Suspended Solids	4.5(10)	15(33)	30 mg/l	100 mg/l	Daily*	Grab

\* Per occurrence of each batch discharge.

a. The pH shall not be less than 6.0 nor greater than 9.0. The pH shall be monitored as follows: Daily\*; grab sample.

b. Samples taken in compliance with the monitoring requirements above<sup>a</sup> shall be taken at a point prior to mixing with any other cooling or process wastewaters or radwaste dilution water and prior to discharge to outfall 001.

c. In the event the permittee shall require the use of water treatment additives in addition to or in greater quantities than those specified in the permittee's NPDES application (Revision 3) dated November 11, 1981, and approved by the Chief of the Water Quality Division on March 11, 1982, the permittee shall notify the Division Chief. Written approval from the Chief of the Water Quality Division to use such additives at specified levels shall be obtained prior to usage by the permittee. The permit will be modified in accordance with the requirements of Part II, Section A-1 if a constituent of the additive or additives requires limiting.

Final Effluent Limitations - Radwaste Dilution Water (OOG) through Outfall 001

During the period beginning with the date of issuance of this permit and lasting until the expiration date, the permittee is authorized to discharge a maximum of forty-three million, four hundred thousand (43,400,000) gallons per day of radwaste dilution water into the Tittabawassee River. Such discharge shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristics</u>	<u>Discharge Limitations</u>				<u>Monitoring Requirements</u>	
	<u>kg/day</u>	<u>(lbs/day)</u>	<u>Other Limitations</u>		<u>Measurement Frequency</u>	<u>Sample Type</u>
	<u>Monthly Average</u>	<u>Daily Maximum</u>	<u>Monthly Average</u>	<u>Daily Maximum</u>		
Flow, M <sup>3</sup> /day (MGD)					Daily per discharge occurrence	

a. The discharge shall not interfere with the monitoring requirements for A-6 through A-13 of this permit.

b. When the cooling pond blowdown is not being discharged or is insufficient for radwaste dilution, the permittee may use radwaste dilution as restricted above.

5. Final Effluent Limitations - Cooling Tower Blowdown (OOH), Temporary High Pressure and Auxiliary Boiler Blowdown and Drains (OOI)

Beginning with the commencement of discharge and lasting until the expiration date of this permit, the permittee is authorized the intermittent discharge of service water cooling tower blowdown into the cooling pond and the intermittent discharge of temporary high pressure and auxiliary boiler blowdown to the oily waste treatment system. Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristics	Discharge Limitations				Monitoring Requirements	
	kg/day	(lbs/day)	Other Limitations		Measurement Frequency	Sample Type
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum		

Cooling Tower Blowdown

Flow, M <sup>3</sup> /day (MGD)					Daily*
Materials Added for Corrosion Inhibition		See "c" below.			

Auxiliary Boiler Blowdown

Flow, M <sup>3</sup> /day (MGD)					Daily*
Per discharge occurrence.					

a. The pH shall not be less than 6.0 nor greater than 9.0. The pH shall be monitored as follows: Daily\*; grab sample.

b. Samples taken in compliance with the monitoring requirements above shall be taken:

- (1) For cooling tower blowdown: Prior to discharge to the cooling pond.
- (2) For auxiliary boiler blowdown: Prior to discharge to the oily waste treatment system.

c. In the event the permittee shall require the use of water treatment additives in addition to or in greater quantities than those specified in the permittee's NPDES application (Revision 3) dated November 11, 1981, and approved by the Chief of the Water Quality Division on March 11, 1982, the permittee shall notify the Division Chief. Written approval from the Chief of the Water Quality Division to use such additives at specified levels shall be obtained prior to usage by the permittee. The permit will be modified in accordance with the requirements of Part II, Section A-1 if a constituent of the additive or additives requires limiting.

. Final Limitations - Trash Bar Debris, Stationary and Travelling Screen Backwash and Debris

Beginning on the date of issuance of this permit and lasting until the expiration date, the permittee shall collect and remove debris collected on river intake trash bars and screens and dispose of such material by the manner specified in the application. River intake screen backwash water may be discharged back to the Tittabawassee River. Debris collected from the circulating water and pond blowdown screens and trash bars shall be disposed of by the manner specified in the application.

17. Final Limitations - Sanitary Sewage

Beginning with the commencement of discharge and lasting until the expiration date, all sanitary sewage from the Midland Plant and the Training and Visitor's Center shall be discharged to the Dow Chemical Company wastewater treatment system. If the permittee elects to dispose of the sanitary sewage by another manner, the permittee shall notify the Chief of the Water Quality Division of the intended disposal method and obtain his approval at least 30 days prior to the commencement of discharge.

18. Final Limitations - Evaporator Blowdown

Beginning with the commencement of discharge and lasting until the expiration date of this permit, evaporator blowdown from the process steam system shall be routinely discharged to the Dow Chemical Company treatment system.

19. Final Limitation - Polychlorinated Biphenyls

Effective on the date of issuance of this permit, the Company shall not discharge any polychlorinated biphenyls resulting from Plant operations to the waters of the State of Michigan.

20. Final Limitations - Wastewater Treatment Sludges or Residuals

The permittee shall not discharge sludges or residuals resulting from wastewater treatment facilities into the waters of the State.

Special Condition

The permittee shall monitor and report the Tittabawassee River flows at the U.S.G.S. Gaging Station and downstream of Lingle Drain and the permittee's intake flows as specified below. The purpose of this monitoring is to assess the impact of the permittee's facility operation on Tittabawassee River flows.

Tittabawassee River  
and Intake

Monitoring Requirements\*

At the U.S.G.S.  
Gaging Station

Report daily minimum and  
daily average flows

Downstream of  
Lingle Drain\*\*

Report calculated daily minimum and  
daily average river flows. When the  
Tittabawassee River flows are below  
the following minimum design flows those  
flows are to be recorded at 15 minute  
intervals and the results reported.

River Flow (cfs) Below

Lingle Drain

During

332

June 1 - August 31

341

September 1 - September 30

355

October 1 - April 30

603

May 1 - May 31

Intake

Report daily average and daily maximum intake  
flow

\*Chief of the Water Quality Division will review the information obtained from the above monitoring and if it is determined that this monitoring requirement should be modified, the permittee shall be so notified.

\*\*The flow downstream of Lingle Drain is defined as the sum of the instantaneous flow from the U.S.G.S. Gaging Station, the instantaneous flow from Consumers Power Company outfall 001, the instantaneous flow from Dow Chemical Company outfall 031, and the design flow of the Midland Wastewater Treatment Plant (equal to 13 cfs) minus the instantaneous water intake rate by Consumers Power Company.

**22. Special Condition - River Intake Monitoring Requirements**

The Michigan Water Resources Commission has tentatively determined that the location, design, construction and capacity of the Midland Plant intake structure reflects the best technology available for minimizing adverse environmental impact in accordance with Section 316(b) of Public Act 92-500, as amended (the Act).

During the period beginning 60 days following the start of commercial operation of the second unit and for a period of one year, the permittee shall conduct a study to measure the numbers and species of fish impinged and entrained at the river intake structure to determine if the intake structure does comply with the requirements of Section 316(b) of the Act. One hundred twenty (120) days following completion of such study, the permittee shall submit the findings of the study to the Chief of the Water Quality Division. Such study shall be conducted in accordance with an approved study plan and the Schedule of Compliance in Part I, Section C-4.

If on the basis of the study report and applicable standards established pursuant to Section 316(b) of the Act, the Commission determines that the intake structures do not reflect the best technology available for minimizing adverse environmental impact, it will so notify the Company, specifying the reason(s) for its determination, and the Company shall submit to the Chief of the Water Quality Division, within 90 days of such notification, its plan and construction time schedule for minimizing the environmental impact of the intake structure.

**23. Special Condition - Thermal Monitoring Requirement**

The permittee shall determine the extent of the 5<sup>o</sup>F temperature increase isotherm in the downstream vicinity of outfall 001 during the spring, summer, and fall seasons. Such study shall be carried out with the site operating at a minimum of 70 percent of total capacity following the start of commercial operation of the second unit.

One hundred twenty (120) days following completion of such study, the permittee shall submit the findings of the study to the Chief of the Water Quality Division. The purpose of the study will be to confirm the thermal discharge is consistent with temperature Water Quality Standards. Such study shall be conducted in accordance with an approved study plan and the Schedule of Compliance in Part I, Section C-5.

. Special Condition - Automatic Makeup and Blowdown System (AMBS) Verification Study Requirements

During the period beginning 60 days following the start of commercial operation of Units 1 and 2 and lasting for a period of one year, the permittee shall complete a postoperational verification study to confirm that the automatic feed forward monitoring system (AMBS) will provide the necessary controls such that the discharge from outfall 001 is consistent with total dissolved solids (TDS) and thermal Water Quality Standards. One hundred twenty (120) days following completion of such study, the permittee shall submit the findings of the study to the Chief of the Water Quality Division. Such study shall be conducted in accordance with an approved study plan and the Schedule of Compliance in Part I, Section C-6. Upon verification of the AMBS, the AMBS shall be used to demonstrate compliance with the thermal and TDS Water Quality Standards.

25. Special Condition - Toxics Limitations Provision

This permit may be modified, or, alternatively revoked and reissued to comply with any applicable standards or limitations promulgated under Sections 301(b)(2)(C)(D), 304(b)(2) and 307(a)(2) if the effluent standards or limitations so promulgated:

a. Is (are) different in conditions or more stringent than any effluent limitation in the permit; or

b. Controls any pollutant not limited in the permit.

Special Condition - Short Term Waste Characterization Study

As a condition of this permit, beginning upon commencement of Unit 1 and 2 operation, the permittee shall monitor effluents from laundry waste treatment system and oily waste treatment system for the constituents at the frequency and for the period specified below. This monitoring will be required to demonstrate that these constituents are not contained in significant quantities. The results of the analysis of such monitoring shall be submitted one year after the two units operation to the Chief of the Water Quality Division. If, upon review of the analysis, it is determined that any of the materials or constituents require limiting to protect the receiving waters in accordance with applicable Water Quality Standards, the permittee will be so informed. The permit will then be modified in accordance with Part II, B-4.

<u>Constituent</u>	<u>Sample Type</u>	<u>Sample Frequency</u>	<u>Sample Duration</u>
BOD <sub>5</sub>	Grab	Once Weekly	Six Months

27. Special Condition - Pre and Postoperational Ecological Monitoring Program

The permittee shall conduct a pre and postoperational ecological monitoring program to determine the impact of plant operation on the aquatic ecosystem of the Tittabawassee River. Such studies shall be conducted in accordance with approved study plans and the Schedule of Compliance in Part I, Section C-7.

If on the basis of the pre and postoperational ecological monitoring program report, the Commission determines that the operation of the plant is adversely impacting the aquatic ecosystem of the Tittabawassee River, the Commission will so notify the permittee. Such notification shall specify the reason(s) for the Commission determination. The permittee shall submit to the Chief of the Water Quality Division within 90 days of such notification, a plan and construction time schedule for reducing the adverse impacts to levels acceptable to the Commission.

28. Special Condition - Site Specific Investigation to Determine Acute and Chronic Ammonia Toxicity Levels

The permittee shall conduct a site specific study to determine the acute and chronic ammonia toxicity level for the Tittabawassee River commencing in the summer of 1983. Such study shall be conducted in accordance with the approved study plan and the Schedule of Compliance in Part I, Section C-8.

The Michigan Water Resources Commission will then use the results of the ammonia toxicity study to determine the Tittabawassee River's assimilative capacity and to establish appropriate ammonia discharge limitations to protect the receiving waters in accordance with applicable Water Quality Standards. Permit limits for ammonia discharges will then be modified in accordance with Part II, Section B-4.

29. Special Condition - Cooling Pond Maintenance Program

The permittee shall maintain the dewatered cooling pond to control the suspended solids concentration in the stormwater runoff and site dewatering discharged from the cooling pond. This cooling pond maintenance program shall be conducted in accordance with an approved plan and the Schedule of Compliance in Part I, Section C-12.

30. Special Condition - Tittabawassee River, Cooling Pond and Dewatering Discharge Water Quality Monitoring Program

The permittee shall monitor the water quality of the Tittabawassee River, the cooling pond and the dewatering discharge while the cooling pond is being dewatered. This monitoring shall be conducted in accordance with an approved plan and the Schedule of Compliance in Part I, Section C-13.

31. Special Condition - Release of Unharmed Fish to the Tittabawassee River

The permittee shall make a reasonable effort to transfer fish in the cooling pond unharmed to the Tittabawassee River. This program shall be conducted in accordance with an approved plan and the Schedule of Compliance in Part I, Section C-14.

32. Special Condition - Avifauna Disease Prevention and Control Program

The permittee shall make a reasonable effort to prevent and, if necessary, control the outbreak of avifauna disease in conjunction with the dewatering of the cooling pond. This program shall be conducted in accordance with an approved plan and the Schedule of Compliance in Part I, Section C-15.

## 33. Special Condition - Program for Effective Residuals Management (PERM)

In addition to the requirements in Part II, Section A-9 herein, the permittee shall provide for the effective management and/or disposal of residuals, i.e., solids, sludges, ash, grit, dead fish, aquatic plants and other substances removed from or resulting from treatment of the wastewater. Residuals disposal shall be accomplished in such manner and at such locations that the disposal practices shall not result in unlawful pollution of the air, surface waters or groundwaters of the state nor create nuisance conditions. Such management and/or disposal program shall be set forth in a "Program for Effective Residuals Management" prepared by the permittee. The program shall include but is not limited to the following:

- 1) a management plan (treatment, transportation, storage, disposal, contingency plans);
- 2) an inventory of residuals production, storage, and disposal for a period of at least one year;
- 3) an analysis of the residuals;
- 4) a monitoring program;
- 5) if land application is proposed, site maps, soil analysis, application rates, proposed vegetation, and other pertinent information; and,
- 6) if groundwater degradation potential exists, a hydrogeologic study.

The program shall be submitted to and receive the approval of the Saginaw District Supervisor of the Surface Water Quality Division in accordance with the Schedule of Compliance Part I, C-16 of this permit. Subsequent to approval, disposal of residuals resulting from treatment of wastewater shall be in accordance with the program. If the permittee desires to make any substantial changes in the program, such proposed changes shall be submitted to and be approved by the Saginaw District Supervisor of the Surface Water Quality Division prior to implementation. Substantial changes shall include but not be limited to: a change in disposal method or site; a change in treatment method; a change in storage method or site; a change in monitoring parameters or monitoring frequency; an increase in application rate; or a change in residuals quantity or characteristics. Any residual disposal inconsistent with the approved program shall be considered a violation of this permit.

PART I

B. MONITORING AND REPORTING

1. Representative Sampling

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge.

2. Reporting

All reports shall be postmarked no later than the 10th day of the month following each completed report period.

a. Existing Discharge - First Permit Issuance

The permittee shall submit monitoring reports containing results obtained during the previous month. The first report shall be submitted within 90 days of the date of issuance of this permit.

b. Proposed Discharge

The permittee shall submit monitoring reports containing results obtained during the previous month. Monitoring shall commence at the time discharge first occurs.

c. Existing Discharge - Permit Modified or Reissued With No New Parameters

The permittee shall continue to submit monitoring reports containing results obtained during the previous month.

d. Existing Discharge - Permit Modified or Reissued With New Parameters Previously Not Monitored

The permittee shall continue to submit monitoring reports containing results obtained during the previous month for parameters currently monitored. The first report for parameters specifically excluded in Part I-A shall be submitted within 90 days of the date of issuance of this permit.

## .. Definitions

a. The monthly average discharge is defined as the total discharge by weight, or concentration if specified, during the reporting month divided by the number of days in the reporting month that the discharge from the production or commercial facility occurred. When less than daily sampling occurs, the monthly average discharge shall be determined by the summation of the measured daily discharges by weight, or concentration if specified, divided by the number of days during the reporting month when the samples were collected, analyzed and reported.

b. The daily maximum discharge means the total discharge by weight, or concentration if specified during any calendar day.

c. The Regional Administrator is defined as the Region V Administrator, U.S. EPA, located at 230 South Dearborn, 13th Floor, Chicago, Illinois 60604.

d. The Michigan Water Resources Commission is located in the Stevens T. Mason Building. The mailing address is Box 30028, Lansing, Michigan 48909.

e. The term 24-hour composite means a combination of at least 8 sample aliquots of at least 100 milliliters, collected at periodic intervals during the operating hours of a facility over a 24-hour period. For volatile pollutants, the aliquots must be combined in the laboratory immediately before analysis. The composite must be flow proportional; either the time interval between each aliquot or the volume of each aliquot must be proportional to either the stream flow at the time of sampling or the total stream flow since the collection of the previous aliquot. Aliquots may be collected manually or automatically.

## 4. Test Procedures

Test procedures for the analysis of pollutants shall conform to regulations published pursuant to Section 304(h) of the Act, under which such procedures may be required.

## 5. Recording Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

- a. The exact place, date, and time of sampling;
- b. The dates the analyses were performed;
- c. The person(s) who performed the analyses;
- d. The analytical techniques or methods used; and
- e. The results of all required analyses.

## 6. Additional Monitoring by Permittee

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Monthly Operating Report. Such increased frequency shall also be indicated.

## 7. Records Retention

All records and information resulting from the monitoring activities required by this permit including all records of analyses performed and calibration and maintenance of instrumentation and recordings from continuous monitoring instrumentation shall be retained for a minimum of three (3) years, or longer if requested by the Regional Administrator or the Michigan Water Resources Commission.

## C. SCHEDULE OF COMPLIANCE

1. The permittee shall achieve compliance with the interim effluent limitations specified in Part I, A-1, 3, 4, 5 as follows:

- a. If permittee chooses to discharge through Outfall 001 or Outfall 003, compliance shall occur with the commencement of discharge.
- b. If permittee elects to discharge at a point other than Outfall 001, or Outfall 003, the permittee shall notify, in writing, the Chief of the Water Quality Division and obtain his approval of the alternate sites 30 days prior to commencement of discharge.
- c. Within thirty days of the date of issuance of this permit, the permittee shall notify the Chief of the Water Quality Division of their intent to use C-1, a or b above.

2. The permittee shall achieve compliance with the final effluent limitations in Part I, A-1 through A-20 as follows:

- a. For wastewater treatment systems and associated flow monitoring and effluent sampling schemes completed prior to the date of issuance of this permit, the permittee shall submit as built plans and specifications to the Chief of the Water Quality Division within 120 days following the date of issuance of this permit.
- b. For those wastewater treatment systems scheduled to be designed and/or constructed after the date of issuance of this permit, the permittee shall submit final plans and specifications to the Chief of the Water Quality Division within 120 days following the date of issuance of this permit.
- c. On July 1, 1982, and every six months thereafter until attaining commercial operation of both Unit 1 and Unit 2, the permittee shall submit a progress report to the Chief of the Water Quality Division. Such report shall include, but not be limited to, progress in design, construction and testing of wastewater treatment systems.

## Schedule of Compliance (continued)

3. The permittee shall comply with the requirements of Section 10, Part II-A in accordance with the following:
  - a. Submit plans for approval to the Chief of the Water Quality Division necessary to comply with the primary power provision of Section 10 in Part II on or before N/A.
  - b. The permittee shall comply with the requirements of items 10a or 10b contained in Part II on or before N/A. Notwithstanding the preceding sentence, the permittee shall at all times halt, reduce or otherwise control production in order to protect the waters of the State of Michigan upon the reduction or loss of the primary source of power.
4. The permittee shall achieve compliance with the provisions of the postoperational river intake monitoring requirements (Part I, A-22) in accordance with the following schedule. All submittals shall be to the Chief of the Water Quality Division of the Department of Natural Resources.
  - a. By no later than 90 days prior to the start of commercial operation of the second unit, the permittee shall submit the river intake monitoring study plan for approval.
  - b. The permittee shall notify, in writing, when the second unit reaches the status of commercial operation.
  - c. Within 120 days of the conclusion of the one-year postoperational intake study, the permittee shall submit a final report.
5. The permittee shall achieve compliance with the thermal monitoring requirement for Outfall 001 (Part I, Section A- 23) in accordance with the following schedule. All submittals shall be to the Chief of the Water Quality Division of the Department of Natural Resources.
  - a. By no later than 90 days prior to the start of commercial operation of the second unit, the permittee shall submit the thermal monitoring study plan for approval.
  - b. The permittee shall notify, in writing, when the second unit reaches the status of commercial operation.
  - c. One hundred twenty (120) days following completion of the thermal monitoring, the permittee shall submit a final report.

## Schedule of Compliance (continued)

6. The permittee shall achieve compliance with the AMBS verification study requirement for Outfall 001 (Part I, Section A-24) in accordance with the following schedule. All submittals shall be to the Chief of the Water Quality Division of the Department of Natural Resources.

- a. By no later than 90 days prior to the start of commercial operation of the second unit, the permittee shall submit the AMBS verification study plan for approval.
- b. The permittee shall notify, in writing, when the second unit reaches the status of commercial operation.
- c. Within 120 days of the conclusion of the one-year AMBS verification study, the permittee shall submit a final report.

7. The permittee shall achieve compliance with the pre and postoperational monitoring requirement (Part I, Section A-27) in accordance with the following schedule. All submittals shall be to the Chief of the Water Quality Division of the Department of Natural Resources.

- a. The permittee shall conduct the preoperational phase of the ecological monitoring program pursuant to the scope of study approved by the Chief of the Water Quality Division on March 16, 1982.
- b. The final preoperational report and the scope of study for the post-operational phase of the ecological monitoring program, including the schedules, shall be submitted to the Chief of the Water Quality Division for approval by July 30, 1983.
- c. One hundred twenty (120) days following completion of the postoperational phase of the ecological monitoring program, the permittee shall submit a final report.

8. The permittee shall achieve compliance with the acute and chronic ammonia toxicity study requirements (Part I, A-28) in accordance with the following schedule. All submittals shall be to the Chief of the Water Quality Division of the Department of Natural Resources:

- a. By no later than March 31, 1983, the permittee shall submit the ammonia toxicity study plan for approval.
- b. Within 120 days of the conclusion of the ammonia toxicity study, the permittee shall submit a final report.

9. If the Company elects to demonstrate to the Michigan Water Resources Commission that higher levels of chlorine, BOD<sub>5</sub> and/or ammonia are acceptable, it shall submit a study plan for determining safe levels of total residual chlorine, BOD<sub>5</sub>, and/or ammonia in its discharges and obtain approval thereof from the Chief of the Water Quality Division.

## Schedule of Compliance (continued)

10. The permittee may demonstrate to the Michigan Water Resources Commission that no chlorine limitations or monitoring is necessary.
11. No later than 14 calendar days following a date identified in the above schedule of compliance, the permittee shall submit either a report of progress or, in the case of specific actions being required by identified dates, a written notice of compliance or noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.
12. The permittee shall achieve compliance with the Cooling Pond Maintenance Program requirement (Part I, Section A-29) in accordance with the following schedule. All submittals shall be to the Chief of the Surface Water Quality Division of the Department of Natural Resources.
- a. Submit a final plan for approval for the Cooling Pond Maintenance Program on or before October 26, 1984.
13. The permittee shall achieve compliance with the Tittabawassee River, Cooling Pond and Dewatering Discharge Water Quality Monitoring Program requirement (Part I, Section A-30) in accordance with the following schedule. All submittals shall be to the Chief of the Surface Water Quality Division of the Department of Natural Resources.
- a. Submit a final plan for approval for the Tittabawassee River and Cooling Pond Water Quality Monitoring requirement on or before October 26, 1984.
14. The permittee shall achieve compliance with the Release of Unharmful Fish to the Tittabawassee River requirement (Part I, Section A-31) in accordance with the following schedule. All submittals shall be to the Chief of the Surface Water Quality Division of the Department of Natural Resources.
- a. Submit a final plan for approval for the Release of Unharmful Fish to the Tittabawassee River requirement on or before October 19, 1984.
15. The permittee shall achieve compliance with the Avifauna Disease Prevention and Control Program requirement (Part I, Section A-32) in accordance with the following schedule. All submittals shall be to the Chief of the Surface Water Quality Division of the Department of Natural Resources.
- a. Submit a final plan for approval for the Avifauna Disease Prevention and Control Program on or before October 26, 1984.
16. The permittee shall achieve compliance with the PERM requirements of Part I, A-33 of this permit in accordance with the following schedule. All submittals shall be to the Saginaw District Supervisor of the Surface Water Quality Division.
- a. On or before November 9, 1984, submit and receive approval of a "PERM".
  - b. On or before November 16, 1984, certify to the permittee that it

## PART II

## A. MANAGEMENT REQUIREMENTS

## 1. Change in Discharge

All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant identified in this permit more frequently than or at a level in excess of that authorized shall constitute a violation of the permit. Any anticipated facility expansions, production increases, or process modifications which will result in new, different, or increased discharges of pollutants must be reported by submission of a new NPDES application or, if such changes will not violate the effluent limitations specified in this permit, by notice to the permit issuing authority of such changes. Following such notice, the permit may be modified to specify and limit any pollutants not previously limited.

## 2. Containment Facilities

The permittee shall provide approved facilities for containment of any accidental losses of concentrated solutions, acids, alkalies, salts, oils, or other polluting materials in accordance with the requirements of the Michigan Water Resources Commission Rules, Part 5.

## 3. Operator Certification

The permittee shall have the waste treatment facilities under the direct supervision of an operator certified by the Michigan Water Resources Commission, as required by Section 6a of the Michigan Act.

## 4. Noncompliance Notification

If, for any reason, the permittee does not comply with or will be unable to comply with any daily maximum effluent limitation specified in this permit, the permittee shall provide the Regional Administrator and the State with the following information, in writing, within five (5) days of becoming aware of such condition:

- a. A description of the discharge and cause of noncompliance;  
and
- b. The period of noncompliance, including exact dates and times;  
or, if not corrected, the anticipated time the noncompliance is expected to continue, and the steps being taken to reduce, eliminate and prevent recurrence of the noncomplying discharge.

## 5. Spill Notification

The permittee shall immediately report any spill or loss of any product, by-product, intermediate product, oils, solvents, waste material, or any other polluting substance which occurs to the surface or groundwaters of the state by calling the Department of Natural Resources 24 hour Emergency Response telephone number 1-800-292-4706; and, the permittee shall within ten (10) days of the spill or loss provide the State with a full written explanation as to the cause and discovery of the spill or loss, clean up and recovery measures taken, preventative

## 6. Facilities Operation

The permittee shall at all times maintain in good working order and operate as efficiently as possible, all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit.

## 7. Adverse Impact

The permittee shall take all reasonable steps to minimize any adverse impact to navigable waters resulting from noncompliance with any effluent limitations specified in this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

## 8. By-passing

Any diversion from or by-pass of facilities necessary to maintain compliance with the terms and conditions of this permit is prohibited, except (i) where unavoidable to prevent loss of life or severe property damage, or (ii) where excessive storm drainage or runoff would damage any facilities necessary for compliance with the effluent limitations and prohibitions of this permit. The permittee shall promptly notify the Michigan Water Resources Commission and the Regional Administrator, in writing, of such diversion or by-pass.

## 9. Removed Substances

Solids, sludges, filter backwash, or other pollutants removed from or resulting from treatment or control of wastewaters shall be disposed of in a manner such as to prevent any pollutant from such materials from entering navigable waters, or the entry of toxic or harmful contaminants thereof onto the groundwaters in concentrations or amounts detrimental to the groundwater resource.

## 10. Power Failures

In order to maintain compliance with the effluent limitations and prohibitions of this permit, the permittee shall either:

- a. Provide an alternative power source sufficient to operate facilities utilized by permittee to maintain compliance with the effluent limitations and conditions of this permit which provision shall be indicated in this permit by inclusion of a specific compliance date in each appropriate "Schedule of Compliance for Effluent Limitations",  
or
- b. Upon the reduction, loss, or failure of one or more of the primary sources of power to facilities utilized by the permittee to maintain compliance with the effluent limitations and conditions of this permit, the permittee shall halt, reduce or otherwise control production and/or all discharge in order to maintain compliance with the effluent limitations and conditions of this permit.

### 3. RESPONSIBILITIES

#### 1. Right of Entry

The permittee shall allow the Executive Secretary of the Michigan Water Resources Commission, the Regional Administrator and/or their authorized representatives, upon the presentation of the credentials:

- a. To enter upon the permittee's premises where an effluent source is located or in which any records are required to be kept under the terms and conditions of this permit; and
- b. At reasonable times to have access to and copy any records required to be kept under the terms and conditions of this permit; to inspect any monitoring equipment or monitoring method required in this permit; and to sample any discharge of pollutants.

#### 2. Transfer of Ownership or Control

In the event of any change in control or ownership of facilities from which the authorized discharge emanate; the permittee shall notify the succeeding owner or controller of the existence of this permit by letter, a copy of which shall be forwarded to the Michigan Water Resources Commission and the Regional Administrator.

#### 3. Availability of Reports

Except for data determined to be confidential under Section 308 of the Act and Rule 2128 of the Water Resources Commission Rules, Part 21, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the State Water Pollution Control Agency and the Regional Administrator. As required by the Act, effluent data shall not be considered confidential. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the Act and Sections 7 and 10 of the Michigan Act.

#### 4. Permit Modification

After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:

- a. Violation of any terms or conditions of this permit;
- b. Obtaining this permit by misrepresentation or failure to disclose fully, all relevant facts; or
- c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

## 5. Toxic Pollutants

Notwithstanding Part II, B-4 above, if a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the Act for a toxic pollutant which is present in the discharge and such standard or prohibition is more stringent than any limitation for such pollutant in this permit, this permit shall be revised or modified in accordance with the toxic effluent standard or prohibition and the permittee so notified.

## 6. Civil and Criminal Liability

Except as provided in permit conditions on "By-passing" (Part II, A-3) and "Power Failures" (Part II, A-10), nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance, whether or not such noncompliance is due to factors beyond his control, such as accidents, equipment breakdowns, or labor disputes.

## 7. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee may be subject under Section 311 of the Act.

## 8. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Act.

## 9. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any Federal, State or local laws or regulations, nor does it obviate the necessity of obtaining such permits or approvals from other units of government as may be required by law.

## 10. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstances, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

## 11. Notice to Public Utilities

It is further made a condition of this permit that the applicant give notice to public utilities in accordance with Act 53 of the Public Acts of 1974, being section 460.701 to 460.718 of the Michigan Compiled Laws, and comply with each of the requirements of that Act.

CONSUMERS POWER COMPANY  
Midland Nuclear Power Plant  
Midland, Michigan

MI 0042668

The thermal mixing zone for outfall 001, for the purpose of evaluating compliance with the water quality standards, is defined as the area enclosed within the right 1/4 of the Tittabawassee River starting from the point of discharge and extending 1,700 feet downstream from the discharge.

The mixing zone for outfall 002, for the purpose of evaluating compliance with water quality standards, is defined as the area enclosed within the right 1/4 of the Bullock Creek from the point of discharge to the Tittabawassee River.

The mixing zone for outfall 003, for the purpose of evaluating compliance with water quality standards, is defined as the right 1/4 of the Tittabawassee River starting from the point of discharge and extending 300 feet downstream.



**Consumers  
Power  
Company**

General Offices: 212 West Michigan Avenue, Jackson, Michigan 49201 • Area Code 517 788-0550

COPY

June 12, 1985

PBL-0685-2  
80EP10.1

Mr Paul D Zugger, Chief  
Water Quality Division  
Department of Natural Resources  
PO Box 30028  
Lansing, MI 48909

Dear Mr Zugger

On October 4, 1984 you approved the study plans required by Special Conditions 30, 31 and 32 of the Midland Plant NPDES Permit No MI0042668. Implementation of the plans has been completed. The enclosed data report entitled "Midland Cooling Pond Dewatering Program Summary Report" summarizes the study results.

Yours very truly

A handwritten signature in cursive script that reads "P Bradley Latvaitis".

P Bradley Latvaitis  
Senior Aquatic Biologist

CC TLWalkington, DNR - Saginaw  
KZollner, Jr, DNR - Lansing

MIDLAND COOLING POND DEWATERING PROGRAM

SUMMARY REPORT

Prepared By

Consumers Power Company

June 1985

## INTRODUCTION

In July 1984, Consumers Power Company commenced the shutdown of the Midland Nuclear Plant. The orderly shutdown process placed the Plant in a caretaker/layup status. To allow demobilization of dewatering wells and a freezeway system required to support underpinning construction activities, the shutdown included dewatering of the Midland cooling pond. Pond dewatering also allowed the Company to efficiently maintain the integrity of auxiliary building excavations and to avoid potential safety hazard, soil stability and building monitoring equipment maintenance concerns.

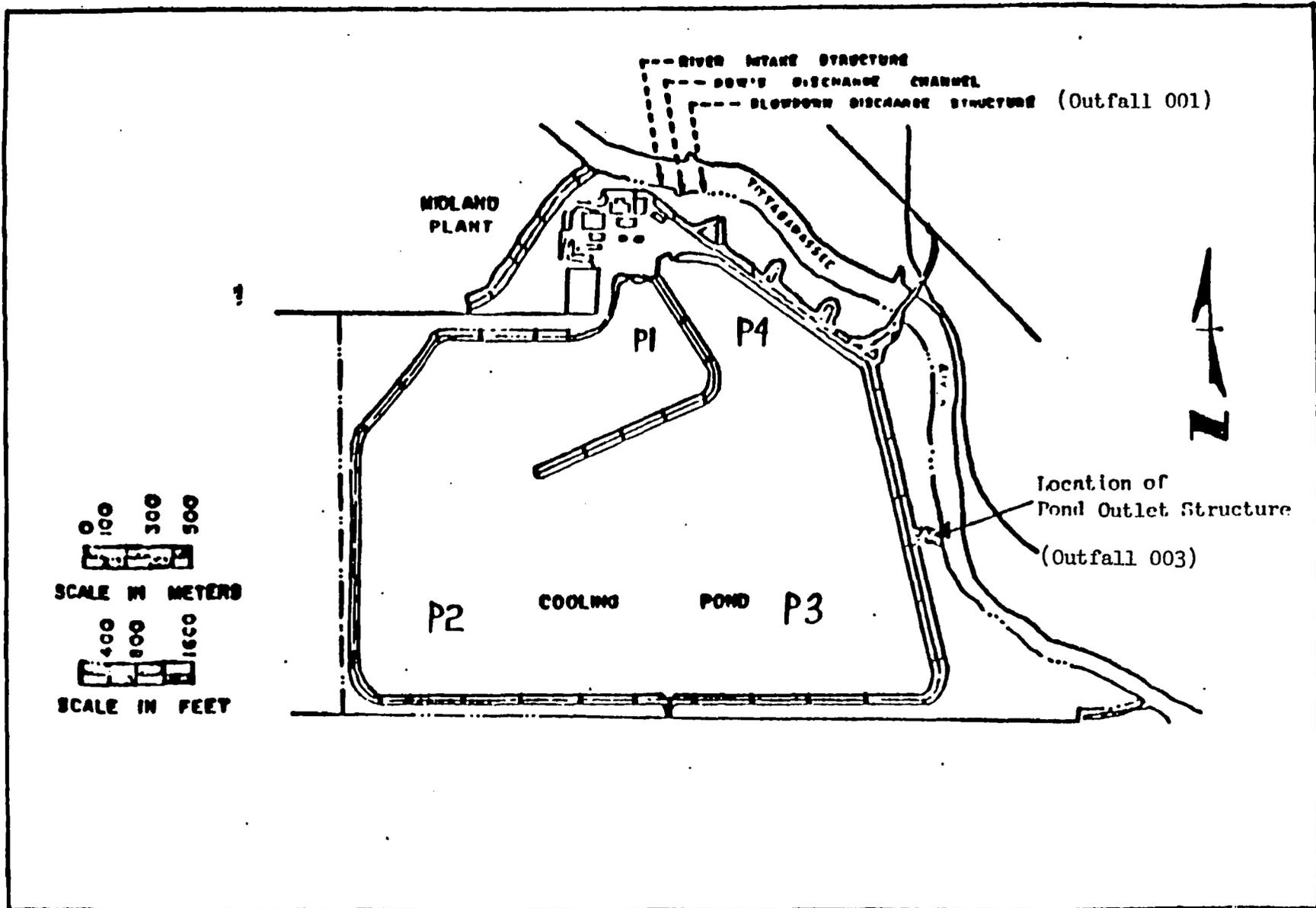
The Midland cooling pond was an artificially created water body with a surface area of 880 acres and a design volume of 12,600 acre feet (Figure 1). The main purpose of the cooling pond was to provide a closed loop to supply and receive cooling water from the circulating and service water systems of the Midland Plant. The pond was filled with water pumped from the Tittabawassee River during the spring of 1978 and winter of 1978-79. The top of the impervious cooling pond dikes are at elevation 632 feet Mean Sea Level (MSL). Water elevation at design full pond conditions is 627 feet MSL. On the average, pond bottom is at elevation 615 feet MSL. The lowest area of the pond is at elevation 601 feet MSL. The northeast corner of the Midland pond includes a 39 acre area with pond bottom elevation to 593 feet MSL. At elevation 604 feet MSL, the northeast pond corner contained 272 acre feet of water.

During Midland Plant operation, discharge from the Midland pond was to take place from outfall 001, the blowdown discharge structure (Figure 1). Using Outfall 001, the pond could be lowered to an elevation of about 618 feet MSL, the centerline of the pond discharge pipes. At elevation 618 feet MSL, the cooling pond contained approximately 4800 acre feet of water. Since this outfall was only useful for partial pond dewatering, use of the pond outlet structure (Outfall 003) to completely dewater the pond (Figure 1) was necessary. Therefore, on September 6, 1984 a request to modify NPDES Permit No MI 0042668 was submitted. On October 18, 1984, the Michigan Water Resources Commission (MWRC) issued a modified NPDES Permit which authorized complete dewatering of the Midland cooling pond through Outfall 003 and the continued discharge of stormwater runoff and site dewatering from the dewatered pond.

Pond dewatering was initiated on October 19, 1984 and completed on December 19, 1984. This report summarizes dewatering program activities and provides a tabulation of data collected as required in NPDES Permit Parts I.A.1, 30, 31, 32 and 33. The report consists of two sections, results and summary. The results section includes the following: pond water discharge, water quality, fish relocation, residuals management and avifauna observations. Data are provided in the report appendix.

FIGURE 1

MIDLAND POWER PLANT COOLING POND



## RESULTS

### Pond Water Discharge

Cooling pond discharge through Outfall 001 was conducted during the first 18 days of October 1984 in accordance with the effluent limitations and monitoring requirements of NPDES Permit MI 0042668 issued November 2, 1982. During this period, pond elevation dropped from 625.4 feet MSL to 619.3 feet MSL.

Cooling pond dewatering using Outfall 003 commenced at 0130 hours on October 19, 1984 in accordance with the effluent limitations and monitoring requirements of modified NPDES Permit MI 0042668 issued October 18, 1984. Appendix A summarizes pond discharge from Outfall 003.

By NPDES Permit definition, complete dewatering was achieved on December 19, 1984 when the elevation of water first decreased to a level of 600 feet MSL in the emergency cooling water reservoir and to a level of 601 feet MSL at Outfall 003. During the 62-day dewatering period (October 19 to December 19), pond water was discharged on 48 days with continuous discharge (24 consecutive hours) on 29 days. To meet NPDES effluent limitations, maintain dike stability and construct interior dikes and settling basins as required in the Cooling Pond Maintenance Program (NPDES Part I.A.29), discharge was limited on 19 days and terminated on 14 days of the 62-day dewatering period (Appendix A).

Pond water discharge flows ranged from 241.6 cfs (156 million gallons) on October 7 to 17.1 cfs (11 million gallons) on November 19. The outfalls were observed daily during discharge. Erosion of the discharge channel, Tittabawassee River banks or stream beds did not occur. Additionally, flood conditions did not occur in the Tittabawassee River during the cooling pond discharge period.

### Water Quality

A list of water quality parameters, methods and monitoring frequency required per Parts I.A.1 and I.A.30 of the modified NPDES Permit is provided in Table 1. Sampling was conducted in the pond prior to initiation of dewatering (Appendix B), and in the Tittabawassee River and discharge effluent during the dewatering period (Appendix C). River and effluent sample collection locations are illustrated in Figure 2. Tittabawassee River samples were collected at two locations immediately upstream (Locations 1 and 2), at four locations in a transect approximately 300 feet downstream (Locations 3, 4, 5 and 6), and at the effluent channel (Location 7).

As required, when the pond elevation fell below 610 feet MSL (October 31, 1984) effluent sampling was conducted with an ISCO Model 1680 composite sampler. Each composite sample was comprised of collections taken at three-hour intervals over the discharging period. During days when discharge was conducted for less than 24 hours (Appendix A) and an insufficient composite sample, by volume, was collected, a grab sample was collected and analyzed. Composite samples (or grab samples when substituted) were analyzed for dissolved oxygen, five-day biochemical oxygen demand, total suspended

TABLE 1 - Water Quality Parameters, Methods, and Monitoring Frequency

<u>PARAMETER</u>	<u>METHOD</u>	<u>FREQUENCY*</u>
Temperature	----	1,2,3
pH	US EPA 1979 <sup>a</sup> 150.1	1,2,3
BOD <sub>5</sub>	APHA 1976 <sup>b</sup> , p543	1,2,3
DO	APHA 1976, p440	1,2,3
Phosphorus (Total)	APHA 1976, p479	1,2,4
Ammonia as Nitrogen	US EPA 1979, 350.3	1,2,3
TDS	APHA 1976, p94	1,2,4
TSS	APHA 1976, p92	1,2,3
Oil and Grease	Observation	2,3
Fecal Coliform	APHA 1976, p801	2,4
Hydrogen Sulfide	APHA 1980 <sup>c</sup> , p448	2,3

\* Monitoring Frequency

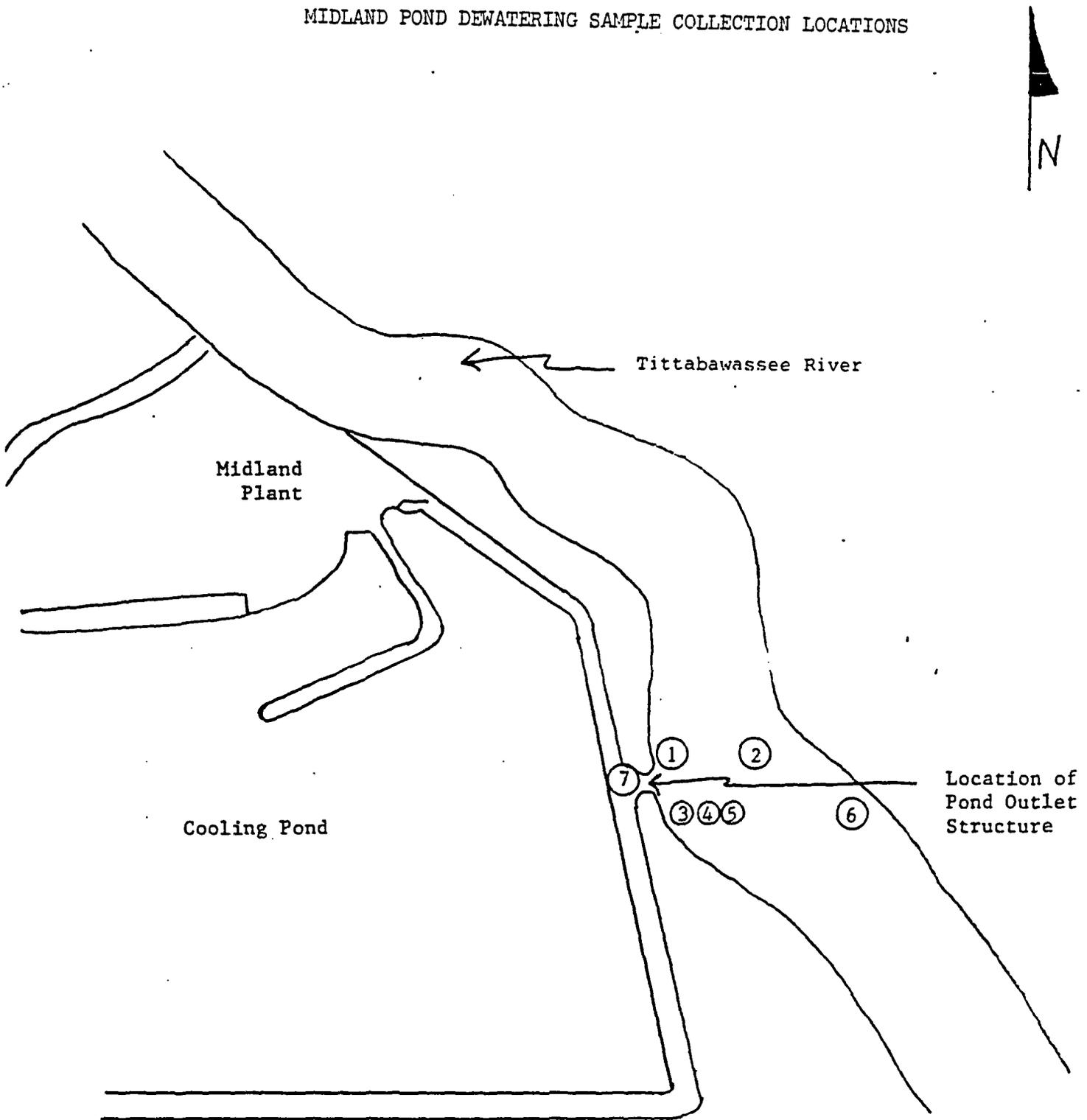
- 1 Once in the pond prior to dewatering.
- 2 Weekly in the river at pond elevations greater than 610 feet MSL. Twice weekly in the river at pond elevations less than 610 feet MSL.
- 3 Twice weekly in the effluent at pond elevations greater than 610 feet MSL. Daily in the effluent at pond elevations less than 610 feet MSL.
- 4 Twice weekly in the effluent at pond elevations less than 610 feet MSL.

<sup>a</sup> American Public Health Association (APHA), 1976. Standard Methods for the Examination of Water and Wastewater, 14th Edition American Public Health Association, American Water Works Association and Water Pollution Control Federation, Washington, DC.

<sup>b</sup> US Environmental Protection Agency (EPA), 1979. Methods for Chemical Analysis of Water and Wastes, EPA 600/4-79-020.

<sup>c</sup> As reference a except 15th edition, 1980.

MIDLAND POND DEWATERING SAMPLE COLLECTION LOCATIONS



1. Upstream of discharge, west side of river.
2. Upstream of discharge, east side of river.
3. Near edge of pond discharge mixing zone.
4. Middle of pond discharge mixing zone.
5. Far edge of pond discharge mixing zone.
6. Outside of the pond discharge mixing zone.
7. Cooling pond effluent.

solids and ammonia nitrogen. In addition, daily effluent grab samples were collected and analyzed for pH, temperature, oil and grease, sulfide and molecular hydrogen sulfide (Appendix C). On days when river samples were collected, effluent grab samples were also analyzed for total dissolved solids, total phosphorous and fecal coliform bacteria (Appendix C).

All NPDES permit water quality monitoring requirements were fulfilled except that one grab sample was not collected on November 28 and a composite sample was lost on December 12 due to sample line freezing. Also, mass loading limits for BOD<sub>5</sub> were apparently exceeded on October 26 and October 30 and documented in "NPDES Notification" Incident No MID-84-12-AD01 (see Appendix D).

Comparing results of effluent grab samples to upstream river grab samples (Appendix C), the effluent generally consisted of higher dissolved oxygen, total suspended solids, BOD<sub>5</sub> and slightly increased pH, as anticipated. Effluent temperatures and total phosphorous were lower, overall. Values for sulfide, molecular hydrogen sulfide, total dissolved solids and ammonia nitrogen were similar in the river and effluent. Fecal coliform values were also quite similar except when compared to the highest river values in October when effluent fecal coliform counts were much less. Water quality analysis laboratory control results are provided in Appendix E.

#### Fish Relocation

The Midland pond was filled with water pumped from the Tittabawassee River during the spring of 1978 and the winter of 1978-1979. During pond fill, small aquatic organisms such as fish eggs and larvae passed through the 3/8-inch traveling screens on the pond intake system and survived to inhabit the pond. Some juvenile fishes were also carried over the traveling screens and became pond inhabitants. Semiannual pond fish collections indicated a diverse and abundant fishery inhabited the pond. Part I.A.31 of the NPDES permit required an effort to release unharmed fish to the Tittabawassee River.

In compliance with this permit requirement, a fish relocation program was initiated on September 21, 1984. During the dewatering period four trap nets were set continuously and tended as necessary. In an attempt to reduce fish mortality due to crowding, following completion of pond dewatering in December, two trap nets were fished from January through March in the emergency cooling water reservoir.

The relocation program was very successful. A total of approximately 25,000 fish weighing about seven tons were released unharmed into the Tittabawassee River (Appendix F). In addition, an undetermined number of fish were discharged during the dewatering process. During the relocation program, only about 1350 pounds of fish were either selectively removed (600 pounds of carp) or injured and removed for disposal. Of the 1350 pounds, 1000 pounds were taken during January when weather conditions precluded transfer.

### Residuals Management

To minimize the potential for water quality deterioration, pollution of air and nuisance conditions due to oxidation of organic material, pond dewatering was conducted during cool water temperatures when the water was most saturated with oxygen and the process of organic deterioration was minimal. In addition, Part I.A.33 of the NPDES permit required a program for effective residuals management (PERM). Monthly PERM reports detailing residuals management were prepared and submitted to the MDNR from October through April.

Prior to initiation of dewatering, between September 20 and 27, 1984, mechanical harvesting of aquatic macrophytes (vegetation) was accomplished. Harvesting resulted in the removal and disposal of approximately 240 cubic yards of aquatic vegetation. This material was disposed of at the City of Midland landfill. Vegetation removal helped maintain discharge water quality, aided the collection of fish, and helped minimize avifauna disease and nuisance conditions.

Fish which were not collectable by trap net during the fish relocation effort were collected by commercial seine. At the completion of dewatering in late December and following ice-out when bottom conditions allowed (April), seines were used to collect fish in the deepest remaining pond water (the former emergency cooling pond). Approximately 32,000 pounds of fish were removed in December and 24,000 pounds in April. The vast majority of these fish (approximately 98%) were carp and gizzard shad. All were disposed of at the City of Midland landfill.

In addition, about 6,835 pounds of dead fish were hand-dipped, double bagged and disposed of at the City of Midland landfill. These fish were mainly gizzard shad and juvenile sunfish that experienced winterkill. Including seine collections (56,000 pounds), fish relocation program losses (1,350 pounds) and winterkill losses (6,835 pounds), approximately 64,185 pounds (80.3 cubic yards) of fish were disposed of at the City of Midland landfill.

Finally, daily pond perimeter observations were conducted to detect obnoxious odors. No odors were detected or citizen's complaints received. The PERM and fish relocation program proved highly successful.

### Avifauna Observations

Although the collection and disposal of organic material and cool weather helped to reduce the potential for avifauna disease, a program of field observations was conducted daily, beginning October 1, 1984, per NPDES Part I.A.32 requirements to monitor pond avifauna for disease symptoms and identify situations conducive to disease development. No evidence of disease potential or unusual disease incidence was observed. The avifauna monitoring log is provided in Appendix G. At the completion of logged observations on December 15, 1984, daily observations by Plant personnel continued through April 1985 with similar results.

SUMMARY

During Midland pond dewatering, close contact was maintained with the Michigan Department of Natural Resources regarding dewatering flow rate, water quality sampling, fish relocation, collection and disposal of organic material, odor observations and avifauna disease monitoring. Compliance was achieved with NPDES permit Parts I.A.1, 30, 31, 32 and 33. The objectives of the cooling pond dewatering program, to dewater the pond and to manage the potential environmental effects, were met in a timely and cost effective manner.

APPENDIX  
MIDLAND POND DEWATERING PROGRAM  
SUMMARY REPORT

CONTENTS

- A. Summary of 1984 pond dewatering discharge from Outfall 003, Midland Plant.
- B. Results of background pond water quality monitoring conducted at Midland Plant on September 21, 1984.
- C. Midland pond dewatering program water quality monitoring results.
- D. NPDES Notification Incident No. MID-84-10-AD01.
- E. Water quality analysis laboratory quality control results for the Midland Pond Dewatering Program, 1984.
- F. Approximate number and weight of fish collected in the Midland cooling pond and relocated in the Tittabawassee River September 1984 to March 1985.
- G. Midland Energy Center cooling pond dewatering avifauna disease contingency plan monitoring log - 1984.

APPENDIX A  
SUMMARY OF 1984 POND DEWATERING DISCHARGE FROM OUTFALL 003, MIDLAND PLANT

<u>Date</u>	<u>Discharge Rate (cfs/mgd)</u>	<u>Discharge Period (hrs)</u>	<u>Comment</u>
10/19	188.3/122	20.0	Start 0130-Discharge terminated to repair flow meter
10/20	158.9/103	16.6	Additional flow meter adjustments
10/21	128.9/81	14.3	Regulated in response to 10/15 BOD <sub>5</sub> data
10/22	128.4/83	15.0	
10/23	131.2/85	15.0	
10/24	187.3/121	21.8	Regulated in response to 10/19 BOD <sub>5</sub> data
10/25	231.5/149	24.0	
10/26	240.1/155	24.0	
10/27	241.6/156	24.0	
10/28	238.4/160	25.0	Time change resulted in 25-hour day
10/29	229.7/148	24.0	
10/30	199.1/129	23.8	
10/31	48.6/31	7.8	Regulated in response to 10/26 BOD <sub>5</sub> data and to maintain dike stability
11/01	71.1/46	13.2	Regulated in response to pond turbidity observations and to maintain dike stability
11/02	0	0	
11/03	0	0	
11/04	0	0	
11/05	49.1/32	14.8	Regulated in response to pond turbidity observations.
11/06	77.0/50	24.0	
11/07	27.6/18	9.6	Regulated in response to pond turbidity observations. Main pond reduced to channels.
11/08	30.4/20	9.6	Regulated in response to pond turbidity observations.
11/09	21.8/14	9.7	Regulated in response to pond turbidity observations.
11/10	0	0	
11/11	0	0	
11/12	0	0	
11/13	34.5/22	14.8	Regulated in response to water accumulation (drainage west to east) and turbidity observations.
11/14	52.4/34	24.0	
11/15	52.8/34	24.0	
11/16	30.6/20	14.0	Discharge terminated to allow water to accumulate.
11/17	0	0	

APPENDIX A  
SUMMARY OF 1984 POND DEWATERING DISCHARGE FROM OUTFALL 003, MIDLAND PLANT

<u>Date</u>	<u>Discharge Rate (cfs/mgd)</u>	<u>Discharge Period (hrs)</u>	<u>Comment</u>
11/18	0	0	
11/19	17.1/11	6.5	Discharge terminated in preparation for settling basin and dike construction.
11/20	0	0	
11/21	0	0	Initiate mechanical pumping from circulating water discharge area to emergency pond and emergency pond to settling basin.
11/22	0	0	Pumping emergency pond.
11/23	0	0	Pumping emergency pond (OFF 1220 hours).
11/24	0	0	
11/25	0	0	
11/26	36.6/24	15.3	Regulated in response to water accumulation and turbidity observations. Resume pumping.
11/27	24.1/16	10.8	Regulated in response to pond turbidity and water availability.
11/28	25.7/17	12.4	Regulated in response to turbidity observations. Resume pumping.
11/29	47.2/30	24.0	
11/30	45.4/29	24.0	
12/01	44.8/29	24.0	Regulated to maintain flow.
12/02	41.4/27	24.0	
12/03	37.1/24	24.0	0845 to 1525 hours, generator repair, flow record lost.
12/04	37.8/24	24.0	
12/05	37.9/25	24.0	Pumping circulating water discharge area to emergency cooling water reservoir.
12/06	49.1/32	24.0	
12/07	49.1/32	24.0	
12/08	49.1/32	24.0	Regulated to maintain flow.
12/09	49.1/32	24.0	
12/10	49.8/32	24.0	
12/11	50.9/33	24.0	
12/12	50.0/32	24.0	
12/13	52.4/34	24.0	1100 hours, add 16" pump to emergency cooling water reservoir. Regulated to maintain flow.
12/14	52.2/34	24.0	
12/15	49.2/32	24.0	
12/16	59.1/38	24.0	
12/17	55.6/36	24.0	
12/18	52.3/34	24.0	
12/19	40.0/26	18.0	Discharge terminated at 1800 hours; pond dewatering complete.

NDIX B

RESULTS OF BACKGROUND POND WATER QUALITY MONITORING  
 CONDUCTED AT MIDLAND PLANT ON SEPTEMBER 21, 1984

Quadrants and Stratification Zones\*

<u>Parameter</u>	<u>Units</u>	<u>P1-U</u>	<u>P1-M</u>	<u>P1-L</u>	<u>P2-U</u>	<u>P2-M</u>	<u>P2-L</u>	<u>P3-U</u>	<u>P3-M</u>	<u>P3-L</u>	<u>P4-U</u>	<u>P4-M</u>	<u>P4-L</u>
pH	SU	8.2	8.2	8.0	8.1	8.2	8.1	8.1	8.1	8.1	8.5	8.5	8.5
Temperature	°C	18	18	18	18	18	18	18	18	18	19	18	18
Dissolved Oxygen	mg/L	8.4	8.4	8.4	8.5	8.5	8.5	8.3	8.2	8.2	8.2	8.2	8.1
BOD (5)	mg/L	1.6	3.0	1.6	1.4	2.0	2.9	1.6	1.4	2.0	1.6	1.8	2.4
Total Phosphorus	mg/L as P	0.04	0.04	0.01	0.03	0.03	0.01	0.04	0.03	0.02	0.02	0.02	0.02
Ammonia, NH <sub>3</sub> as N	mg/L as N	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Dissolved Solids Dried at 180°C	mg/L	369	375	381	368	380	386	384	373	379	392	384	387
Total Suspended Solids Dried at 105°C	mg/L	8	8	29	6	8	43	6	8	20	4	8	17

\*Quadrant Locations

- P<sub>1</sub> - Northwest
- P<sub>2</sub> - Southwest
- P<sub>3</sub> - Southeast
- P<sub>4</sub> - Northeast

Stratification Zones

- U - Within one meter of the surface
- M - Mid-depth
- L - Within one meter of the bottom

MIDLAND POND DEWATERING PROGRAM  
WATER QUALITY MONITORING RESULTS

SAMPLE ID	Date Sampled	Time Sampled	pH (S.U.)	Temp (°C)	DO (mg/L)	BOD (mg/L)	Sulfide (ug/L)	Molecular H <sub>2</sub> S (ug/L)	TSS (mg/L)	TDS (mg/L)	NH <sub>3</sub> -N (mg/L)	Total-P (mg/L)	Fecal (1) Coliforms	Oil (2) & Grease
River 1	10-19-84	1030	8.0	19	9.2	2.4	61.5	5.9	10.6	498	0.15	0.05	66	-
River 2	"	1050	8.1	16	9.1	1.5	58.6	4.4	10.0	430	0.45	0.04	220	-
River 3	"	1105	8.3	16	9.4	1.4	55.8	3.0	31.2	376	<0.14	0.02	TNTC	-
River 4	"	1120	8.2	15	9.3	1.5	57.5	3.7	21.2	502	0.12	0.05	TNTC	-
River 5	"	1135	8.3	15	9.3	1.7	51.2	2.7	14.0	548	0.20	0.05	TNTC	-
River 6	"	1150	8.3	15	9.1	2.3	51.2	2.7	10.6	444	0.84	0.06	TNTC	-
Effluent Grab	"	1230	8.4	16	9.6	1.7	48.2	2.0	27.2	382	<0.14	0.02	14	-
River 1	10-23-84	0917	8.3	11.2	9.6	2.7	64.4	3.4	10.6	516	0.22	0.08	TNTC	-
River 2	"	1046	7.8	10.4	9.2	7.2	58.6	8.7	21.2	528	1.2	0.04	1000	-
River 3	"	1048	8.2	9.7	10.0	2.2	54.3	3.5	12.8	422	<0.14	0.01	450	-
River 4	"	1057	8.3	10.8	10.1	1.9	52.7	2.8	11.4	428	<0.14	0.05	750	-
River 5	"	1107	8.3	10.6	10.1	2.6	49.7	2.6	9.8	554	0.16	0.03	1375	-
River 6	"	1110	8.2	9.7	9.7	3.8	51.2	3.3	11.8	466	0.85	0.09	1145	-
Effluent Grab	"	1115	8.1	10.2	9.4	1.4	48.2	3.6	9.8	368	<0.14	0.05	55	-
Effluent Grab	10-26-84	1205	8.2	10.2	9.9	2.0	66.1	5.6	8	398	<0.14	0.04	-	-
River 1	10-30-84	1030	8.2	10.4	9.6	2.9	<10.2	<0.65	7	204	<0.14	0.06	20	-
River 2	"	1038	8.2	10.1	9.1	3.0	<10.2	<0.65	4	280	0.81	0.08	177	-
River 3	"	1045	8.3	10.6	9.9	2.4	10.2	0.54	13	480	<0.14	<0.01	130	-
River 4	"	1052	8.4	10.5	10.0	2.9	17.8	0.57	22	710	<0.14	<0.01	50	-
River 5	"	1100	8.3	10.4	9.6	2.3	10.2	0.54	6	400	<0.14	0.05	120	-
River 6	"	1105	8.3	10.5	9.5	2.2	11.9	0.63	6	164	0.30	0.15	0	-
Effluent Grab	"	1150	8.5	11.1	10.0	2.2	14.4	0.31	24	478	<0.14	<0.01	121	-





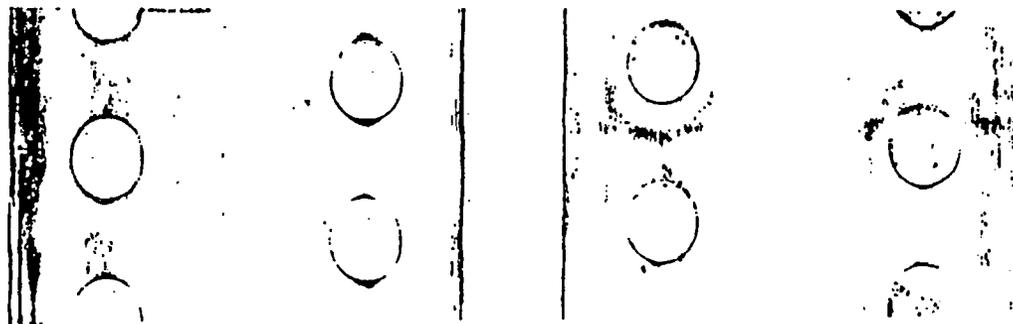
SAMPLE ID	Date Sampled	Time Sampled	pH (S.U.)	Temp (°C)	DO (mg/L)	BOD (mg/L)	Sulfide (ug/L)	Molecular H <sub>2</sub> S (ug/L)	TSS (mg/L)	TDS (mg/L)	NH <sub>3</sub> -N (mg/L)	Total-P (mg/L)	Fecal (1) Coliforms	Oil (2) & Grease
River 1	11-13-84	1422	8.5	3.4	11.5	2.3	< 11.5	< 0.31	7.5	352	< 0.14	0.06	40	-
River 2	"	1426	8.4	4.1	11.0	2.2	11.5	0.37	7.0	348	< 0.14	0.04	145	-
River 3	"	1429	8.4	3.0	11.4	2.2	18.1	0.58	9.0	374	< 0.14	0.07	0	-
River 4	"	1432	8.4	3.1	11.4	2.4	11.5	0.37	7.8	366	< 0.14	0.14	5	-
River 5	"	1435	8.4	3.3	11.2	2.0	14.8	0.47	7.6	380	< 0.14	0.08	10	-
River 6	"	1439	8.4	4.1	10.8	2.5	< 11.5	< 0.37	9.2	354	< 0.14	0.07	0	-
Effluent Grab	"	1532	8.5	3.0	11.6	3.4	13.7	0.37	7.4	378	< 0.14	0.07	3	-
Composite	11-13-84 11-14-84	1000 1000			11.0	1.8			2.0		< 0.14			
Effluent Grab	11-14-84	1000	8.2	2.9			< 11.5	< 0.74						-
Composite	11-14-84 11-15-84	1000 1000			11.7	2.9			5.5		< 0.14			
Effluent Grab	11-15-84	1000	8.0	3.8			< 11.0	< 1.1						-
River 1	11-16-84	0800	8.2	3.8	10.6	2.3	< 11.0	< 0.7	3.5	356	< 0.14	0.08	45	-
River 2	"	0805	8.2	4.0	10.2	2.8	< 11.0	< 0.7	3.5	352	1.2	0.07	0	-
River 3	"	0810	8.3	3.4	10.5	2.7	< 11.0	< 0.6	3.5	362	< 0.14	0.05	0	-
River 4	"	0815	8.3	3.6	10.6	3.7	< 11.0	< 0.6	5.5	368	< 0.14	0.06	0	-
River 5	"	0820	8.3	3.6	10.6	2.9	< 11.0	< 0.6	1.5	378	< 0.14	0.14	0	-
River 6	"	0825	8.3	3.9	10.4	3.3	< 11.0	< 0.6	4.0	360	0.57	0.04	45	-
Effluent Grab	"	0845	8.2	2.0	11.2	3.4	< 11.0	< 0.7	28.5	368	< 0.14	0.08	42	-
Composite	11-15-84 11-16-84	1000 0900			10.4	2.8			27.0		< 0.14			

MIDLAND AND DEWATERING PROGRAM  
WATER QUALITY MONITORING RESULTS

SAMPLE ID	Date Sampled	Time Sampled	pH (S.U.)	Temp (°C)	DO (mg/L)	BOD (mg/L)	Sulfide (ug/L)	Molecular H <sub>2</sub> S (ug/L)	TSS (mg/L)	TDS (mg/L)	NH <sub>3</sub> -N (mg/L)	Total-P (mg/L)	Fecal (1) Coliforms	Oil (2) & Grease
River 1	11-19-84	1005	8.0	1.6	12.3	0.8	<12.6	<1.2	1.6	414	0.16	0.19	145	-
River 2	11-19-84	1020	8.2	2.1	11.8	2.3	<12.6	<0.8	14.8	414	1.6	0.20	15	-
River 3	11-19-84	1030	8.3	0.9	12.1	1.8	<12.6	<0.7	11.2	416	<0.14	0.13	0	-
River 4	11-19-84	1033	8.3	1.4	11.9	1.4	<12.6	<0.7	6.4	422	<0.14	1.7	0	-
River 5	11-19-84	1036	8.4	1.5	12.1	1.1	<12.6	<0.4	1.4	434	<0.14	0.08	0	-
River 6	11-19-84	1015	8.1	1.8	11.9	0.8	<12.6	<0.9	3.4	426	1.1	0.06	200	-
Effluent Grab	11-19-84	1108	8.3	0.1	12.5	2.2	<12.6	<0.7	11.4	372	0.15	0.04	12	-
Effluent Grab	11-26-84	1010	8.3	9.0			29.7	1.6						-
River 1	11-27-84	1015	8.3	4.6	11.6	2.6	<11.2	<0.5	4.0	432	<0.14	0.06	5	-
River 2	11-27-84	1020	8.3	5.3	11.2	2.5	<11.2	<0.5	3.2	522	0.84	0.18	0	-
River 3	11-27-84	1035	8.3	4.8	11.4	2.3	12.9	0.5	4.4	740	<0.14	0.08	0	-
River 4	11-27-84	1040	8.3	4.7	11.2	2.6	<11.2	<0.5	4.4	704	<0.14	0.23	0	-
River 5	11-27-84	1050	8.3	4.7	11.2	2.1	28.5	1.2	3.2	556	0.32	0.10	0	-
River 6	11-27-84	1100	8.2	5.5	10.9	2.8	28.5	1.8	4.0	530	1.1	0.10	0	-
Effluent Grab	11-27-84	1110	7.8	4.7	11.0	4.2	12.9	1.9	95.2	398	<0.14	0.01	8	-
Composite	11-26-84 11-27-84	1010 1000			10.3	2.7			24.7		<0.14			



SAMPLE ID	Date Sampled	Time Sampled	pH (S.U.)	Temp (°C)	DO (mg/L)	BOD (mg/L)	Sulfide (ug/L)	Molecular H <sub>2</sub> S (ug/L)	TSS (mg/L)	TDS (mg/L)	NH <sub>3</sub> -N (mg/L)	Total-P (mg/L)	Fecal (1) Coliforms	Oil (2) & Grease
River 1	11-29-84	1530	8.5	3.9	12.0	3.0	<11.3	<0.3	4.8	330	<0.14	0.08	10	-
River 2	11-29-84	1535	8.0	4.0	11.9	3.0	<11.3	<1.1	3.6	332	<0.14	0.23	0	-
River 3	11-29-84	1540	8.0	4.0	12.2	3.3	<11.3	<1.1	5.2	334	<0.14	0.06	0	-
River 4	11-29-84	1545	8.1	3.9	10.8	2.1	<11.3	<0.9	3.2	334	<0.14	0.16	0	-
River 5	11-29-84	1550	8.1	3.9	11.4	2.4	<11.3	<0.9	2.8	324	<0.14	0.04	0	-
River 6	11-29-84	1555	8.2	3.8	11.6	2.5	15.3	1.0	3.6	342	<0.14	0.06	10	-
Effluent Grab	11-29-84	1215	8.0	4.0	12.2	5.0	12.8	1.2	26.8	372	0.18	0.07	4	-
Composite	11-29-84 11-29-84	1330 1210			11.1	3.8			28.8		0.22			
Composite	11-29-84 11-30-84	1210 1400			11.0	3.6			16.0		<0.14			
Effluent Grab	11-30-84	1400	8.8	5.0			<11.3	<0.1						-
Composite	11-30-84 12-01-84	1400 1100			11.0	4.6			25.6		<0.14			
Effluent Grab	12-01-84	1100	8.6	4.0			12.6	0.3						-
Composite	12-01-84 12-02-84	1100 1300			11.6	4.3			14.0		<0.14			
Effluent Grab	12/02/84	1300	8.2	2.7			13.8	0.9						-
Composite	12/02/84 12/03/84	1300 0930			11.4	4.0			26.5		<0.14			
Effluent Grab	12/03/84	0930	8.4	2.0			25.8	1.1						-
Composite	12/84/84	0938			11.6	5.5			8.4		<0.14			



SAMPLE ID	Date Sampled	Time Sampled	pH (S.U.)	Temp (°C)	DO (mg/L)	BOD (mg/L)	Sulfide (ug/L)	Molecular H <sub>2</sub> S (ug/L)	TSS (mg/L)	TDS (mg/L)	NH <sub>3</sub> -N (mg/L)	Total-P (mg/L)	Fecal (1) Coliforms	Oil (2) & Grease
River 1	12-04-84	1100	8.3	1.1	12.6	4.5	29.2	1.8	2.8	376	<0.14	0.22	20	-
River 2	12-04-84	1105	8.2	1.2	12.4	4.0	29.2	1.8	3.2	346	0.21	0.08	0	-
River 3	12-04-84	1110	8.3	0.7	12.8	4.3	29.2	1.6	4.0	378	0.17	0.04	0	-
River 4	12-04-84	1120	8.2	0.6	12.8	4.6	26.3	1.7	1.6	398	<0.14	0.03	0	-
River 5	12-04-84	1130	8.1	0.7	12.6	4.1	32.2	2.4	1.6	334	<0.14	0.03	0	-
River 6	12-04-84	1140	8.1	1.5	12.4	3.8	59.1	4.4	7.6	418	0.28	0.04	180	-
Effluent Grab	12-04-84	1200	8.7	0.1	13.4	5.7	<10.7	<0.9	22.4	366	<0.14	0.04	0	-
Composite	12-04-84 12-05-84	0930 0930			12.6	4.8			15.6		<0.14			
Effluent Grab	12/05/84	0930	8.5	0.7			<10.7	<0.3						-
Composite	12-05-84 12-06-84	0930 1000			12.6	1.8			10.4		<0.14			
Effluent Grab	12-06-84	1000	8.8	0.7			23.3	0.24						-
River 1	12-07-84	1015	8.9	0	12.8	4.0	<13.0	<0.07	4.4	632	0.14	0.05	20	-
River 2	12-07-84	1020	8.8	0.1	13.0	4.7	<13.0	<0.14	13.6	510	1.1	0.05	0	-
River 3	12-07-84	1030	8.6	0	13.6	5.1	<13.0	<0.41	5.6	670	0.32	0.04	0	-
River 4	12-07-84	1035	8.6	0	13.6	5.0	<13.0	<0.41	5.2	718	0.28	0.04	0	-
River 5	12-07-84	1040	8.7	0.1	13.6	5.3	<13.0	<0.28	7.2	700	0.18	0.05	0	-
River 6	12-07-84	1045	8.6	0.1	13.2	4.8	<13.0	<0.41	8.0	518	0.53	0.05	0	-
Effluent Grab	12-07-84	1100	8.7	0.1	13.6	6.3	<13.0	<0.28	14.0	392	0.19	0.05	0	-
Composite	12-06-84 12-07-84	1000 1100			11.6	5.5			8.4		1.2			

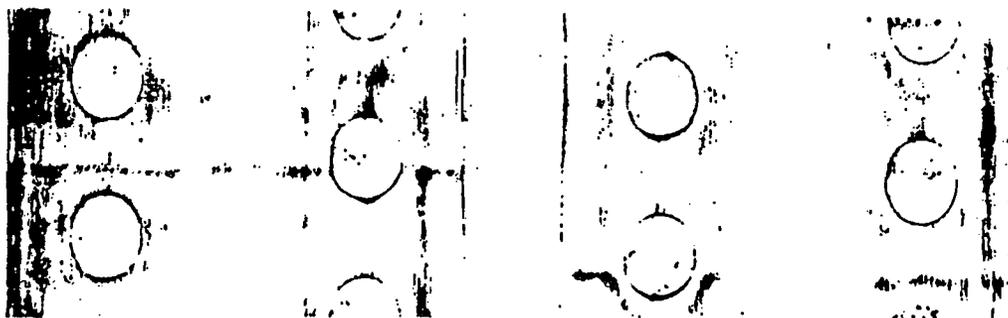
MIDLAND DRAINAGE AND DEWATERING PROGRAM  
WATER QUALITY MONITORING RESULTS

SAMPLE ID	Date Sampled	Time Sampled	pH (S.U.)	Temp (°C)	DO (mg/L)	BOD (mg/L)	Sulfide (ug/L)	Molecular H <sub>2</sub> S (ug/L)	TSS (mg/L)	TDS (mg/L)	NH <sub>3</sub> -N (mg/L)	Total-P (mg/L)	Fecal (1) Coliforms	Oil (2) & Grease
Composite	12-7-84 12-8-84	1100 1000			12.4	5.3			5.6		0.15			
Effluent Grab	12-8-84	1000	8.8	0.9			<13.0	<0.14						-
Composite	12-8-84 12-9-84	1000 1500			10.6	3.6			2.4		<0.14			
Effluent Grab	12-9-84	1500	8.2	1.3			<13.0	<0.93						-
Composite	12-9-84 12-10-84	1500 1300			11.6	3.6			6.0		<0.14			
Effluent Grab	12-10-84	1300	8.5	1.3			<13.0	<0.48						-
River 1	12-11-84	1430	8.4	0.8	12.4	2.0	<12.5	<0.53	2.0	536	<0.14	0.14	5	-
River 2	12-11-84	1440	8.3	0.9	12.3	3.2	<12.5	<0.66	2.0	444	<0.14	0.38	0	-
River 3	12-11-84	1450	8.3	0.7	12.2	1.8	<12.5	<0.66	5.2	538	<0.14	0.08	0	-
River 4	12-11-84	1500	8.4	0.6	12.2	2.2	<12.5	<0.53	2.8	554	<0.14	0.07	0	-
River 5	12-11-84	1510	8.4	0.7	13.2	3.9	16.0	0.68	2.0	536	<0.14	0.10	0	-
River 6	12-11-84	1520	8.3	0.9	12.4	3.2	<12.5	<0.66	1.6	456	<0.14	0.04	0	-
Effluent Grab	12-11-84	1530	8.6	1.5	12.0	3.7	<12.5	<0.27	9.6	366	<0.14	0.07	0	-
Composite	12-10-84 12-11-84	1300 1530			11.2	2.9			5.2		<0.14			
Composite	12-11-84 12-12-84	1530 1100			11.4	4.1			7.6		<0.14			
Effluent Grab	12-12-84	1100	8.5	1.5			<12.5	<0.33						-
Composite	12-12-84 12-13-84	1100 1100			9.9	2.6			27.2		0.19			
Effluent Grab	12-13-84	1200	8.4	1.2			17.2	0.73	23.2					-



MIDLAND POND DEWATERING PROGRAM  
WATER QUALITY MONITORING RESULTS

SAMPLE ID	Date Sampled	Time Sampled	pH (S.U.)	Temp (°C)	DO (mg/L)	BOD (mg/L)	Sulfide (ug/L)	Molecular H <sub>2</sub> S (ug/L)	TSS (mg/L)	TDS (mg/L)	NH <sub>3</sub> -N (mg/L)	Total-P (mg/L)	Fecal (1) Coliforms	Oil (2) & Grease
River 1	12-18-84	1025	8.6	2.9	12.1	3.0	11.7	0.25	6.0	468	<0.14	0.04	0	-
River 2	12-18-84	1030	8.4	2.6	12.0	3.2	<11.7	<0.50	6.0	388	0.71	0.04	0	-
River 3	12-18-84	1033	8.2	3.0	12.0	3.3	11.7	0.74	14.8	500	0.20	0.06	0	-
River 4	12-18-84	1036	8.2	3.0	12.0	3.0	<11.7	<0.74	6.4	498	<0.14	0.05	0	-
River 5	12-18-84	1039	8.2	3.0	11.4	2.7	11.7	0.74	7.4	488	<0.14	0.06	0	-
River 6	12-18-84	1042	8.2	2.5	12.5	3.7	<11.7	<0.74	6.6	394	0.20	0.02	10	-
Effluent Grab	12-18-84	1055	8.5	1.0	12.1	4.3	<11.7	<0.37	124	382	<0.14	<0.01	0	-
Composite	12-17-84 12-18-84	1100 1100			12.1	4.7			38.8		1.1			
River 1	12-19-84	1515	8.3	1.3	12.1	3.2	<12.2	<0.65	7.4	424	0.14	0.08	10	-
River 2	12-19-84	1520	8.3	1.3	11.9	3.3	<12.2	<0.65	7.6	362	0.27	0.06	0	-
River 3	12-19-84	1525	8.0	1.3	11.9	3.6	<12.2	<1.2	11.0	434	0.15	0.08	0	-
River 4	12-19-84	1530	8.1	1.3	12.2	4.2	<12.2	<0.97	10.0	446	0.15	0.04	0	-
River 5	12-19-84	1535	8.1	1.3	11.8	3.4	<12.2	<0.97	10.0	424	<0.14	0.07	0	-
River 6	12-19-84	1540	8.1	1.3	12.0	3.8	<12.2	<0.97	8.0	378	<0.14	0.08	0	-
Effluent Grab	12-19-84	1600	8.3	0.7	12.3	4.3	<12.2	<0.65	29.2	370	0.22	0.04	0	-
Composite	12-18-84 12-19-84	1100 1100			11.2	3.2			28.2		0.14			
Composite	12-19-84 12-19-84	1100 1800			11.2	3.6			64.2		0.31			
(1) TNTC -	Too Numerous To Count													
(2) Visual Oil and Grease -	(+)													



## APPENDIX D

File No P10.2.1

Incident No: MID-84-10-AD01

NPDES NOTIFICATION

Apparent Difference From Daily Average/Maximum Limitation  
November 7, 1984

Plant: Midland

Permit No: MI 0042668

Outfall Description: Cooling Pond Dewatering Outlet  
Structure (Outfall 003)

Outfall Code No: NK

Parameter: BOD<sub>5</sub>

Parameter Code No: 47023

1. Date of Incident: 10/26 & 30/84
2. Identification of specific effluent limitation or monitoring requirement affected:

Daily maximum BOD<sub>5</sub> mass load limit of 2205 lb/d.

3. Description of Incident:

The BOD<sub>5</sub> grab sample collected on 10/26/84 at 1130 hours measured 2.0 mg/l. The analytical results were received 10/31/84 at 1600 hours. The daily average discharge flow rate on 10/26/84 measured 240.1 cfs. Therefore, the calculated BOD<sub>5</sub> load for 10/26/84 was 2593 lbs/d. The BOD<sub>5</sub> grab sample collected on 10/30/84 at 1150 hours measured 2.2 mg/l. The analytical results were received 11/5/84 at 1230 hours. The daily average discharge flow rate on 10/30/84 measured 199.6 cfs. Therefore, the calculated BOD<sub>5</sub> load for 10/30/84 was 2371 lbs/d. Although samples were neither required nor taken during the period 10/27/84 to 10/29/84 it is possible that the daily maximum BOD<sub>5</sub> load limit may have been exceeded during this interim period.

4. Apparent Cause:

The combination of discharge flow rate and BOD<sub>5</sub> concentration resulted in the apparent exceedances of the daily maximum BOD<sub>5</sub> load limit. Also due to the nature of the BOD<sub>5</sub> analysis, the results are not received until five days after the sample was taken by which time the incident had already occurred.

5. If not immediately corrected, the anticipated time the condition is expected to continue:

NA

6. Corrective Action - The following corrective action was taken or will be taken to reduce, eliminate and prevent recurrence:

Nothing could be done about the lag time in receiving the BOD<sub>5</sub> analytical results. However, when the BOD<sub>5</sub> results of the 10/26/84 sample were received on 10/31/84, the daily average discharge flow on 10/31/84 was reduced to 48.6 cfs.

## APPENDIX D

File No P10.2.1  
Incident No: MID-84-10-AD01

## 7. Additional Comments:

Although there were no observable adverse impacts to the Tittabawassee River water quality or the aquatic biota in the river as a result of the elevated BOD<sub>5</sub> discharge, the pond discharge flow rate was greatly reduced.

Additionally, the discharge was terminated about 1320 hours on 11/01/84 because of increasing pond turbidity, resulting from heavy rainfall on exposed pond bottom.

8. Signed: R L Fobes *RLF*

APPENDIX E

WATER QUALITY ANALYSIS LABORATORY QUALITY CONTROL RESULTS FOR  
THE MIDLAND POND DEWATERING PROGRAM, 1984

Quality Control

Concurrent analyses of quality control standards (known reference standards) were limited to ammonia and total phosphorus measurements. Similar standards were either not applicable or not available for the remaining parameters.

AMMONIA - N

<u>Analysis Data</u>	<u>Quality Control Standard ID</u>	<u>Certified Concentration</u> (mg/L as N)	<u>Measured Concentration</u> (mg/L as N)
10-31	EPA Concentrate #3	0.28±0.05	0.27
11- 2	EPA Concentrate #3	0.28±0.05	0.29
11-16	EPA Concentrate #4	1.90±0.11	1.98
11-28	EPA Concentrate #3	0.28±0.05	0.26
11-30	EPA Concentrate #4	1.90±0.11	1.88
12-14	EPA Concentrate #4	1.90±0.11	1.90
12-26	ERA 9901	8.3 ±0.7	7.9

TOTAL PHOSPHORUS

<u>Analysis Data</u>	<u>Quality Control Standard ID</u>	<u>Certified Concentration</u> (mg/L as N)	<u>Measured Concentration</u> (mg/L as N)
11-16	EPA Concentrate #4	0.35±0.02	0.35
11-27	EPA Concentrate #4	0.35±0.02	0.34
11-30	EPA Concentrate #4	0.35±0.02	0.36
12-14	EPA Concentrate #4	0.35±0.02	0.35
12-26	ERA 9901	5.2 ±0.7	5.5

Note: Laboratory quality control activities were followed at recommended frequencies for all parameters per analysis methods (see text, Table 1). Documentation is available from individual data sheets which will be retained by Consumers Power Company for one year.

APPENDIX F  
 APPROXIMATE NUMBER AND WEIGHT OF FISH  
 COLLECTED IN THE MIDLAND COOLING POND AND  
 RELOCATED IN THE TITTABAWASSEE RIVER  
 September 1984 to March 1985

<u>Species</u>	<u>Approximate Number</u>	<u>Approximate Wt(Lbs)</u>	<u>Percent Composition</u>	
			<u>Number</u>	<u>Weight(Lbs)</u>
Alewife	113	19	0.54	0.16
Gizzard Shad	2,815	2,291	13.44	19.26
Carp	687	967	3.28	8.13
White Sucker	39	65	0.19	0.55
Crappie Sp	12,931	6,380	61.73	53.63
Bass Sp	475	405	2.27	3.40
Rock Bass	145	97	0.69	0.82
Sunfish Sp	1,153	253	5.50	2.13
Yellow Perch	1,344	524	6.42	4.40
Walleye	65	388	0.31	3.26
Bullhead Sp	405	105	1.93	0.88
White Bass	775	403	3.70	3.39
<b>TOTAL</b>	<b>20,947</b>	<b>11,897</b>		
February Collection	Not Estimated*	1,275		
March Collection	Not Estimated*	790		
<b>GRAND TOTAL</b>	<b>≈25,000</b>	<b>13,962</b>		

Similar to September through December collections, but dominated by juvenile fish.

NOTE: Fish collected during January were not successfully relocated.

S & R ENVIRONMENTAL CONSULTING  
 CONTRACT NO. CP11-2144

## APPENDIX G

MIDLAND ENERGY CENTER  
 COOLING POND DEWATERING  
 AVIFAUNA DISEASE CONTINGENCY PLAN

## MONITORING LOG - 1984

DATE	TIME		EVIDENCE OF DISEASE/POTENTIAL	OBSERVATIONS/ACTIVITIES
	In	Out		
10-1	8:45 am	11:15 am	None	65 Canada geese
10-2	9:00 am	11:00 am	None	65 Canada geese
10-3	8:50 am	10:50 am	None	65 Canada geese
10-4	9:10 am	11:20 am	None	132 Canada geese
10-5	8:50 am	10:50 am	None	85 Canada geese
10-6	8:30 am	10:30 am	None	350 gulls resting on pond and shore
10-7	4:00 pm	6:00 pm	None	45 redheads and scaup

*Patrick J. Quigley*

S & R ENVIRONMENTAL CONSULTING  
 CONTRACT NO. CP11-2144

## APPENDIX G

MIDLAND ENERGY CENTER  
 COOLING POND DEWATERING  
 AVIFAUNA DISEASE CONTINGENCY PLAN

## MONITORING LOG - 1984

DATE	TIME		EVIDENCE OF DISEASE/POTENTIAL	OBSERVATIONS/ACTIVITIES
	In	Out		
10/8	<del>8</del> :10 am	11:20 am	None	26 scaup and redheads
10/9	9:00 am	11:00 am	None	26 scaup and redheads
10/10	9:10 am	11:10 am	None	51 scaup and redheads
10/11	8:45 am	10:45 am	None	68 scaup and redheads
10/12	9:00 am	11:00 am	None	11 great blue herons (largest number of this species ever seen at cooling pond)
10/13	9:30 am	11:30 am	None	96 geese
10/14	5:20 pm	7:30 pm	None	183 scaup and redheads, 109 geese, 575 gulls at dusk

*Patrick J. Russ*

S & R ENVIRONMENTAL CONSULTING  
CONTRACT NO. CP11-2144

APPENDIX G  
MIDLAND ENERGY CENTER  
COOLING POND DEWATERING  
AVIFAUNA DISEASE CONTINGENCY PLAN



MONITORING LOG - 1984

DATE	TIME		EVIDENCE OF DISEASE/POTENTIAL	OBSERVATIONS/ACTIVITIES
	In	Out		
10/15	10:00 am	12:00 am	None	29 scaup and redheads
10/16	9:00 am	11:00 am	None	59 scaup and redheads
10/17	9:00 am	11:00 am	None	197 scaup and redheads, 96 geese 9 great blue herons
10/18	9:10 am	11:10 am	None	120 scaup and redheads 105 geese
10/19	9:20 am	11:50 am	None	237 scaup and redheads 376 Canada geese
10/20	9:30 am	11:30 am	None	385 Canada geese on muddy flats
10/21	9:30 am	11:30 am	None	380 Canada geese 87 coot #32 gadwall

For period 10/1/84 - 10/21/84, the following numbers of dead or injured birds have been found along the dikes: 19 ring-billed gull, 3 herring gull, 5 Canada geese, 1 double-crested cormorant (caught in fish net). All fresh carcasses (and injured birds) showed evidence of trauma; at least three exhibited gunshot wounds.

S & R ENVIRONMENTAL CONSULTING  
 CONTRACT NO. CP11-2144

APPENDIX G  
 MIDLAND ENERGY CENTER  
 COOLING POND DEWATERING  
 AVIFAUNA DISEASE CONTINGENCY PLAN

MONITORING LOG - 1984

DATE	TIME		EVIDENCE OF DISEASE/POTENTIAL	OBSERVATIONS/ACTIVITIES
	In	Out		
10/29	9:30 am	11:30 am	None	2400 gulls 435 Canada geese
10/30	9:20 am	11:30 am	None	1300 gulls 470 Canada geese
10/31	9:10 am	11:10 am	None	1400 gulls 462 Canada geese
11/1	7:45 am	9:55 am	None	506 gulls 41 Canada geese 33 Swans 95 mergansers
11/2	9:30 am	12:00 am	None	788 gulls 21 Canada geese [some frozen water on cooling pond]
11/3	3:20 pm	5:20 pm	None	1120 gulls 109 Canada geese 41 mergansers
11/4	3:30 pm	5:30 pm	None	1750 gulls 283 Canada geese 41 mergansers

*Patrick J. Busz*

S & R ENVIRONMENTAL CONSULTING  
 CONTRACT NO. CP11-2144

APPENDIX G  
 MIDLAND ENERGY CENTER  
 COOLING POND DEWATERING  
 AVIFAUNA DISEASE CONTINGENCY PLAN

MONITORING LOG - 1984

DATE	TIME		EVIDENCE OF DISEASE/POTENTIAL	OBSERVATIONS/ACTIVITIES
	In	Out		
11/5	8:50am	10:50am	None	376 Canada geese 2,300 gulls
11/6	9:20am	11:20am	None	365 Canada geese 2,200 gulls
11/7	9:00am	11:00am	None	310 Canada geese 2,600 gulls
11/8	9:00am	11:00am	None	285 Canada geese 2,400 gulls
11/9	<del>          </del> 10:00am	<del>          </del> 12:00am	None	263 Canada geese 2,300 gulls
11/10	8:00am	10:00am	None	277 Canada geese 2,150 gulls
11/11	3:00pm	5:00pm	None	305 Canada geese 3,500 gulls

*Patrick J. Ruy*

S & R ENVIRONMENTAL CONSULTING  
CONTRACT NO. CP11-2144

APPENDIX G  
MIDLAND ENERGY CENTER  
COOLING POND DEWATERING  
AVIFAUNA DISEASE CONTINGENCY PLAN

MONITORING LOG - 1984

DATE	TIME		EVIDENCE OF DISEASE/POTENTIAL	OBSERVATIONS/ACTIVITIES
	In	Out		
11/12	8:00am	10:00am	None	3,400 gulls 217 Canada geese 107 mergansers
11/13	8:30am	10:30am	None	3,200 gulls 246 Canada geese 117 mergansers
11/14	7:00am	9:00am	None	3,500 gulls 281 Canada geese 127 mergansers
11/15	12:00am	2:00pm	None	4,000 gulls 285 Canada geese 140 mergansers
11/16	1:30pm	3:30pm	None	5,000+ gulls 208 Canada geese 156 mergansers
11/17	9:30am	11:30am	None	3,000+ gulls 177 Canada geese 156 mergansers
11/18	2:30pm	4:30pm	None (one dead herring gull under wires - broken wing)	6,000+ gulls 384 Canada geese 72 mergansers

*Patrick J. Ruz*

S & R ENVIRONMENTAL CONSULTING  
 CONTRACT NO. CP11-2144

APPENDIX G  
 MIDLAND ENERGY CENTER  
 COOLING POND DEWATERING  
 AVIFAUNA DISEASE CONTINGENCY PLAN

MONITORING LOG - 1984

DATE	TIME		EVIDENCE OF DISEASE/POTENTIAL	OBSERVATIONS/ACTIVITIES
	In	Out		
11/19	9:30 am	11:30 am	None	4,000 gulls 65 Canada geese 141 mallards 209 mergansers
11/20	9:30 am	11:30 am	None	3,800 gulls 228 Canada geese
11/21	9:30 am	11:30 am	None	4,100 gulls 426 Canada geese
11/22	9:00 am	11:00 am	None	2,800 gulls 381 Canada geese
11/23	8:15 am	10:15 am	None	3,000 gulls 408 Canada geese
11/24	8:00 am	10:00 am	None	2,500 gulls 366 Canada geese 64 mallards
11/25	3:00 pm	5:00 pm	None	3,000 gulls 438 Canada geese

*Patrick J. Ruz*

S & R ENVIRONMENTAL CONSULTING  
CONTRACT NO. CP11-2144

APPENDIX G  
MIDLAND ENERGY CENTER  
COOLING POND DEWATERING  
AVIFAUNA DISEASE CONTINGENCY PLAN

MONITORING LOG - 1984

DATE	TIME		EVIDENCE OF DISEASE/POTENTIAL	OBSERVATIONS/ACTIVITY
	In	Out		
11/26	7:00 am	9:00 am	None [Dead Canada goose found - evidence of trauma (broken wing)]	1600 gulls 416 Canada geese
11/27	8:30 am	10:30 am	None [Saw Canada geese with broken wing - alive; there may be up to 6 injured geese on the cooling pond]	550 gulls 208 Canada geese
11/28	8:00 am	10:00 am	None	300 gulls 263 mallards
11/29	8:00 am	10:00 am	None	200 gulls 319 Canada geese
11/30	9:00 am	11:00 am	None	145 gulls 134 Canada geese 61 mallards
12/1	11:00 am	1:00 pm	None	650 gulls 379 Canada geese 72 mallards
12/2	8:00 am	10:00 am	None [Gull with broken wing capture (euthanisia performed)]	200 gulls 332 Canada geese

S & R ENVIRONMENTAL CONSULTING  
 CONTRACT NO. CP11-2144

## APPENDIX G

MIDLAND ENERGY CENTER  
 COOLING POND DEWATERING  
 AVIFAUNA DISEASE CONTINGENCY PLAN

## MONITORING LOG - 1984

DATE	TIME		EVIDENCE OF DISEASE/POTENTIAL	OBSERVATIONS/ACTIVITY
	In	Out		
12/3	9:45 am	11:45 am	None	160 gulls
12/4	8:30 am	10:30 am	None	250 gulls 228 Canada geese
12/5	10:00 am	12:00 am	None	320 gulls 421 Canada geese
12/6	12:00 am	2:00 pm	None	620 gulls 167 Canada geese
12/7	8:30 am	10:30 am	None	160 gulls on pond for only about 10 minutes, nothing rest of observation period
12/8	3:30 pm	5:30 pm	None	No birds on pond, but gulls, geese, and mallards on river (one flock of 75 mallards)
12/9	3:30 pm	5:30 pm	None	No birds on pond, but gulls, geese, and mallards on river (one flock of 100+ mallards)

*Patrick J. Ruz*

S & R ENVIRONMENTAL CONSULTING  
 CONTRACT NO. CP11-2144

## APPENDIX G

MIDLAND ENERGY CENTER  
 COOLING POND DEWATERING  
 AVIFAUNA DISEASE CONTINGENCY PLAN

## MONITORING LOG - 1984

DATE	TIME		EVIDENCE OF DISEASE/POTENTIAL	OBSERVATIONS/ACTIVITIES
	In	Out		
12/10	8:30am	10:30am	None	65 gulls
12/11	9:00am	11:00am	None	12 gulls
12/12	9:30am	11:30am	None	37 gulls
12/13	12:00am	2:00am	None	63 gulls
12/14	9:00am	11:00am	None	14 gulls
12/15	9:30am	11:30am	None [saw turkey collide with chain-linked fence, but apparently not injured]	37 gulls
END OF MONITORING				

*Patrick J. Rusz*



**Consumers  
Power  
Company**

Paul C Hittle  
Director, Environmental Department

General Offices: 212 West Michigan Avenue, Jackson, MI 49201 • (517) 788-1930

December 17, 1984

Hitt 114-84

Mr Paul D Zugger, Chief  
Water Quality Division  
Department of Natural Resources  
PO Box 30028  
Lansing, MI 48909

Dear Mr Zugger

My letter of September 28, 1984, transmitted the Midland Cooling Pond Maintenance Program in accordance with Part I.A.29 and Part I.C.12 of the NPDES Permit 0042668. Attached is a copy of the revised program. This revision is based on the comments provided by Terry L Walkington in his November 20, 1984 letter and during his site visit on December 12, 1984.

All components of the program have been implemented, except those described below, which will be implemented shortly. Pond dewatering discharges (Permit Part I.A.1) will be completed in December 1984. The dam on the former Stewart Road culvert and the dam on the trench to the Service Water Intake will be installed during December 1984 or as soon as freezing conditions allow. Pumps will be used during non-freezing weather and removed during freezing weather. Grass seeding of the banks of the former Waite-Debolt Drain will occur in the spring of 1985.

We would appreciate your approval of this program. If you have any questions about the program, please call P B Latvaitis at (517) 788-1975.

Yours very truly

PCH/RFG/fmh

CC JDBails, DNR  
BWMarguglio, JSC-220A  
TWalkington, DNR

## COOLING POND MAINTENANCE PROGRAM

After complete dewatering of the cooling pond, the Cooling Pond Maintenance Program is conducted to control the suspended solids concentration in storm-water runoff and site dewatering discharged from the cooling pond. The program is designed to collect and discharge stormwater and associated dewatering well discharge. There are three primary areas of water accumulation; the emergency cooling water reservoir (ECWR), the circulating water discharge (CWD) structure area and the area near Outfall 003.

Site storm drainage (as identified in the NPDES Application, Revision 3, submitted November 11, 1981) and water from rainfall and associated site dewatering well discharges accumulates in the ECWR and CWD areas. The area near Outfall 003 contains water pumped from the ECWR and CWD, rainfall and pond area runoff. Most of the 880 acre cooling pond either slopes toward Outfall 003 or is drained to the former Waite-Debolt Drain which conveys water to the area near Outfall 003. Discharge will be conducted from Outfall 003 in compliance with Part I.A.2 of NPDES Permit 0042668.

The attached sketch of the cooling pond shows the location of the former Waite-Debolt Drain on the pond bottom and the location of a drainage ditch from the ECWR to the area near Outfall 003. Also shown are the pump locations, the settling basin for ECWR pumped discharge, the backwater areas along the drainage ditch from the ECWR to the outfall, the aggregate dam above the former Stewart Road culvert, the backwater area behind this dam, and the pooled area near Outfall 003. Water accumulating near the CWD structures is pumped over the baffle dike into the emergency cooling water reservoir. Water

accumulating in the ECWR is pumped to a settling basin and then flows to the backwater on the ditch leading to Outfall 003. This backwater area formed by high points on the ditch slows velocities and reduces suspended solids concentrations. Outfall 003 is normally closed. The discharge gates are opened when visual inspection of accumulated water indicates the effluent will be acceptable.

Several additional features maintain low total suspended solids concentrations in the collected stormwater discharged from Outfall 003. The inner slopes of the cooling pond dike and the baffle dike are protected with riprap. The riprap extends from the dike crest (632 ft MSL) to the toe of the dike or to elevation 615 ft MSL, whichever is higher. The 18 in thick riprap layer rests on a 12 in thick crushed rock bedding layer. Where the dike slope extends below elevation 615 ft MSL it is protected by a 12 in layer of crushed rock to the toe of the dike. Therefore, rainfall and runoff are not expected to cause erosion of these dike slopes. Water pumped from the CWD structures area is released directly onto the riprapped east slope of the baffle dike, using this surface as a controlled spillway into the ECWR. A small dam across the trench connecting the ECWR with the Service Water Intake (SWI) prevents water accumulating in the ECWR from seeping into the plant area. The small pool between this dam and the SWI is pumped as needed, onto aggregate into the ECWR. In the emergency cooling water reservoir the water depth is maintained at a minimum of about 2 ft by pumping. This depth minimizes the possibility of pumping water with high suspended solids concentrations. Localized sumps for the pumps maintain desired pumping levels while minimizing suspended solids releases. Water pumped from the ECWR is released to a 75 ft diameter, 4 ft

deep, riprap lined settling basin adjacent to the ECWR and about 1550 ft from the Outfall 003 structure. The suction points of pumps in the ponded areas are in cages off the bottom of the sump to minimize suspended solids concentrations in the pump discharge.

An aggregate dam just above the former Waite-Debolt Drain culvert under the former Stewart Road forms a backwater along the lower portion of the former drain to slow water velocity and reduce any suspended solids concentrations. Additionally, with the discharge gates on Outfall 003 normally closed, a backwater pool forms to about elevation 602-603 ft MSL at the outlet. Again, this pool reduces velocities from all contributing sources and allows any suspended solids to settle.

The cooling pond bottom is expected to revegetate naturally. Additionally, grass seeding of the banks of the former Waite-Debolt Drain will also form a sediment filter and help to stabilize the banks.

The discharge gate at Outfall 003 will be opened periodically (after suspended solids have settled) to allow discharge of the stormwater to the river.

12/17/84

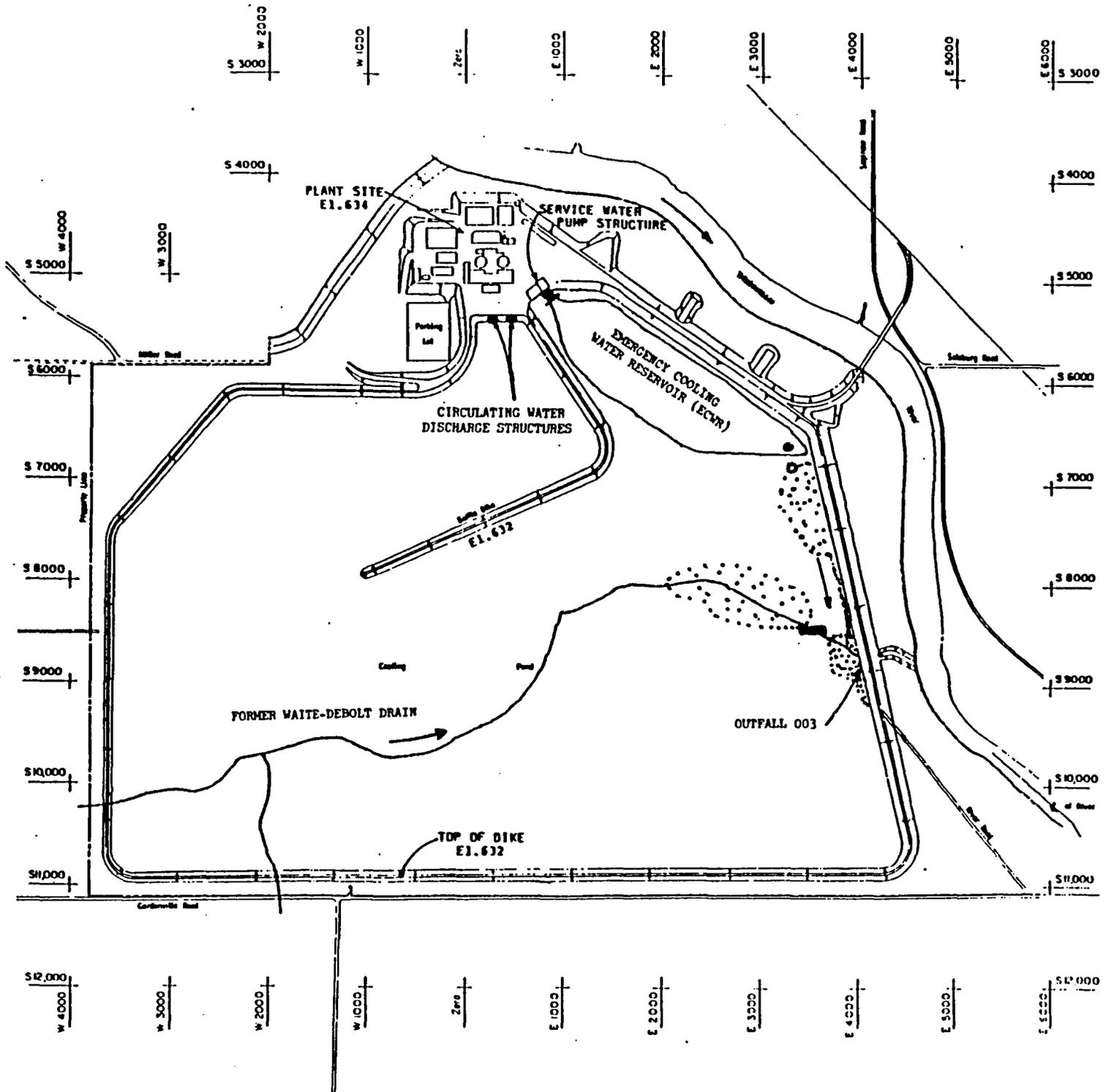
MI0984-6867A-EN02



SCALE = 1000 FT GRID

**LEGEND**

-  Settling Basin
-  Pump
-  Backwater Area
-  SWI Dam
-  Aggregate Dam



State Office Building  
411-J East Genesee  
Saginaw, Michigan 48607  
September 26, 1985

Mr. Paul C. Hittle  
Consumers Power Company  
212 W. Michigan Avenue.  
Jackson, Michigan 49201

Re: Midland Cooling Pond  
Maintenance Program and  
Midland Cooling Pond  
Dewatering Report

Dear Mr. Hittle:

This documents approval of the Midland Cooling Pond Maintenance Program submitted to the Chief of our Division on December 17, 1984, and the Midland Cooling Pond Dewatering Program Summary Report submitted June 12, 1985.

The December 1984 submittal included revisions we requested in November 20, 1984, correspondence and a December 12, 1984, site visit. All prior review comments were satisfied in the revised Program. This approval has been delayed because of questions regarding the operators' certification which were discussed extensively with Mr. Ron Fobes during the period December 1984 through February 1985. Part II.A.3. of NPDES Permit No. MI-0042668 requires, "The permittee shall have the waste treatment facilities under the direct supervision of an operator certified by the Michigan Water Resources Commission, as required by Section 6a of the Michigan Act." The facilities are classified A1d and A2f.

Another site visit was made by the writer on September 6, 1985, whereby a tour was provided of the pond by company representatives. We found the Maintenance Program to be satisfactorily implemented. In fact, the runoff control measures were very successful in controlling erosion and sediment discharges after approximately eight inches of rain in three days just prior to the visit.

We understand that the issue of operator certification will be resolved by sufficient numbers of operators taking the Industrial Certification Exam this November to have qualified certified personnel on site at Midland in the future. We request your response at a later date to list the personnel so certified who are designated responsible for the Cooling Pond Maintenance Program.

The Dewatering Summary Report was complete and very satisfactory and satisfies Special Conditions 30, 31, and 32 of the NPDES Permit.

We will be making routine inspections of the Cooling Pond in the future as with other permitted discharges. Let us know if there are any concerns or questions regarding this facility for which we may assist your staff.

Sincerely,

Terry L. Walkington, P.E.  
Saginaw District Supervisor  
Surface Water Quality Division  
517/771-1731

TLW:slu

cc: P. Bradley Latvaitus, C.P.C., Jackson  
K. Zollner, Jr., CAD

FORM 8-K

SECURITIES AND EXCHANGE COMMISSION  
Washington, DC 20549

CURRENT REPORT

Pursuant to Section 13 or 15(d) of  
the Securities Exchange Act of 1934

Date of Report: September 17, 1986

CONSUMERS POWER COMPANY  
(Exact name of registrant as specified in charter)

Michigan                      1-5611                      38-0442310  
State of Incorporation      Commission File No.      IRS Employer Identification No.

212 West Michigan Avenue  
Jackson, MI 49201  
(Address of principal executive offices)

Registrant's telephone number, including area code: (517) 788-1030

Item 5. Other Events.

On September 17, 1986, the Dow Chemical Company and Consumers Power Company (the "Company") announced that they had reached an agreement in principle to work together to convert the Company's Midland plant into a natural gas-fueled combined-cycle cogeneration plant, and issued the following press release.

**DOW CHEMICAL, CONSUMERS POWER TO JOIN  
IN EFFORT TO CONVERT MIDLAND PLANT**

LANSING, Mich., September 17, 1986 — The Dow Chemical Company and Consumers Power Company today announced that they have reached an agreement in principle to work together to convert the idled Midland nuclear plant into a natural gas combined-cycle cogeneration plant.

Under terms of the agreement, Dow would become an equity participant in the project and would receive the steam and electrical needs of its Michigan Division Midland Plant from the new facility. Dow and Consumers Power have also agreed to seek a recess of their current legal proceedings concerning the Midland nuclear plant while the two companies complete a final agreement. Such an agreement would resolve all differences between the two companies.

The natural gas combined-cycle project is expected to qualify under the federal Public Utilities Regulatory Policy Act (PURPA) as a cogeneration facility. PURPA was enacted by Congress to encourage development of electrical generating plants that could produce steam as well as electricity. The Dow plant uses large amounts of steam, thus making the proposed generating plant more efficient and leading to conservation of natural gas.

SIGNATURE

Pursuant to the requirements of the Securities Exchange Act of 1934,  
the Registrant has duly caused this report to be signed on its behalf by the  
undersigned hereunto duly authorized.

CONSUMERS POWER COMPANY

Dated: September 19, 1986

By: J. F. Paquette, Jr.  
J. F. Paquette, Jr.  
Executive Vice President  
and Principal Financial Officer