ENVIRONMENTAL PROTECTION PROGRAM
RESPECTING CONSTRUCTION OF
GRAND GULF NUCLEAR STATION UNITS 1 AND 2

Preoperational Monitoring Report

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Mississippi Power & Light Co.

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I. BACKGROUND

On May 3, 1974, the ceremonial tree was downed to initiate construction operations. Clearing and grubbing work began on May 6, 1974, at which time the Environmental Protection Program (EPP) was implemented. Prior to May 6, 1974, procedures were written to assure that the requirements of the EPP would be met. In addition to detailed monitoring procedures, administrative controls were included to ensure immediate corrective action, if required, and a weekly review of monitoring activity by Grand Gulf management personnel.

A full-time site biologist was hired prior to the initiation of construction to conduct the monitoring programs outlined in the EPP. In addition, the biologist was given the responsibility for informing all new contractors and subcontractors of their obligations to the EPP at job orientation meetings. During these meetings, the biologist stressed special areas of concern to the contractor and answered questions concerning the program. The biologist was directed to monitor wildlife in the area surrounding the plant to check for adverse effects due to construction activities.

Clearing and grubbing operations on the plant site, railroad and 115 Kv transmission line right-of-ways were completed in July 1974. Clearing and grubbing of the additional areas needed for spoil disposal began and was completed in October 1974.

Beginning February 1, 1975, all communications with Bechtel on environmental problems were formally reported by letter, with a required answer. By April 1975, power block excavation, as well as major dirt moving over the remainder of the site, was completed; railroad and 115 Kv transmission lines were in use; and the Applicant began pouring the foundations for Unit 1. At the end of October 1975, construction was 10% complete. The majority of the base foundations for Unit 1 were poured, structural steel erection began, and work was started on three radial wells. In September 1975 the U. S. Corps of Engineers issued a permit to construct the barge slip and haul road. A work stoppage terminated construction activities during the period from July 7, 1975 through September 9, 1975.

At the end of April 1976, construction of Unit 1 was 23.8% complete. Structural steel erection had reached the third level in the auxiliary and control buildings. The fifteenth ring of the containment liner plate was set, and the equipment hatch was installed and welded. Excavation for the Unit 1 hyperbolic cooling tower had begun. In addition, the heavy haul road and barge slip were completed and several barge shipments were received. The three radial well caissons were completed. Piping installation was in progress.

I. BACKGROUND (Cont'd.)

At the end of October 1976, construction of Unit 1 was 34.5% complete. Work continued on elevated slabs and exterior and interior walls of all facilities. In the containment, liner plate erection and welding, concrete cylinder wall placement, and interior construction continued. Dome liner prefabrication and interior construction began in September 1976. Pile-driving operations were completed for the cooling tower structure, and cooling tower foundation work commenced. The reactor pressure vessel arrived by barge in May 1976 and was transported by truck on the heavy haul road and removed to a storage area south of Unit 1 containment. Installation of radial well lateral screens continued.

At the end of April 1977, construction of Units 1 and 2 was 43.9% and 1.7% complete, respectively. Unit 1 construction continued, with work on elevated slabs and exterior and interior wells of all facilities. The containment exterior walls were completed and the shield wall and reactor pressure vessel were set during February 1977. Installation of the 120-inch discharge pipe began east of the radwaste building. The grate beam for the Unit 1 hyperbolic cooling tower was poured, and work began on diagonal braces, lower ring basin, and the erection of jump forms.

At the end of October 1977, construction of Units 1 and 2 were 55% and 2% complete, respectively. Installation of bottom mat rebar for the Unit 2 containment base slab began in September 1977. Construction began on the plant service water lines and the switchgear house. The Unit 1 cooling tower reached over 360 feet in height.

At the end of April 1978, construction of Units 1 and 2 was 66% and 4% complete, respectively. Emphasis on Unit 1 construction was directed toward closing the auxiliary building, completing the containment building interior structures in preparation for dome set, erecting the turbine-generator, installing the reactor internals, and installing the bulk commodities (piping, raceways, cable). Unit 2 containment base mat concrete placement was completed in December 1977, and work was begun on the auxiliary building and turbine building slabs.

At the end of October 1978, construction of Units 1 and 2 was 76.8% and 6.9% complete, respectively. The entire construction project was 50.9% complete. The following items were completed for Unit 1: all exterior walls, the dome set, the first pour of the hip course, rebar placement on the dome and the PSW line. The Unit 2 reactor arrived on July 3, 1978, and was set on the temporary storage pad. The drywell liner and RPV slab were completed, and the containment liner concrete was completed to a height of 161 feet.

I. BACKGROUND (Cont'd.)

At the end of April 1979, construction on Units 1 and 2 was 79.5% and 10.1% complete, respectively. The entire construction project was 54.2% complete. The following items for Unit 1 received considerable attention: installation of ceramic tile in the heat sink and placement of structural steel for the enclosure building of the containment building. The entire site was officially posted and the new Administration Building was occupied. Ranney well work was nonexistent due to the high level of the Mississippi River. The Unit 2 structural steel erection was underway and the containment cylinder wall was poured to an elevation of 101 feet.

The relatively small increase in percent construction completion between October 1978 and April 1979 was due to a major re-evaluation in November 1978 of to-go work. This re-evaluation showed significant increases in total project scope and anticipated work remaining and a corresponding reduction in percent complete figures.

At the end of October 1979, construction on Units 1 and 2 was 91.9% and 15.6% complete, respectively. The entire construction project is 64.1% complete. The following items for Unit 1 received considerable attention: the generator rotor was repaired and in route back to the site, repair work was underway on the south cooling tower, Ranney well pump tests resumed on wells 3 and 5, and foundation work was begun on the north cooling tower. Also, the Unit 2 reactor was set in place.

At the end of April 1980, construction of Units 1 and 2 was 83.7% and 22.9% complete, respectively. The entire construction project was 61.7% complete. The following items in Unit 1 have received considerable attention: the repaired generator rotor was received on site, repair work was continuing on the south cooling tower, a decision was reached to replace the entire PSW line with a carbon steel pipeline and replace part of the discharge line with concrete pipe. Construction on Unit 2 was stopped.

The relative decrease in percent construction completion for Unit 1 and for the entire construction project between October 1979 and April 1980 was due to major re-evaluation in November 1979 of to-go work. This re-evaluation showed significant increases in total project score and anticipated work remaining and a corresponding reduction in percent complete figures.

II. ENVIRONMENTAL PROTECTION PROGRAM ELEMENTS

For the Environmental Protection Program, daily observations were made and the results recorded. Any problem identified was formally reported to the appropriate Bechtel authorities for remedial action and records were maintained of the actions taken.

A. Vehicular Movement

There are twenty-one instances of vehicular movement in "off-limits" areas from May 1974 to April 1980. In each case, measures were taken to restore affected areas. Each of these instances was considered to be minor in nature.

From May 1974 to October 1974 there were nine instances of vehicular movement in "off-limits" areas.

From November 1974 to October 1975 there were five instances of "off-limits" vehicular movement. Two were due to county road work. One was due to the cutting of a road along an old trail (without tree damage or removal) to allow access to the perimeter fence. The area was reseeded after access was no longer required. Another instance involved two employees who traveled into "off-limits" areas. The fifth instance involved an employee who was living in an old car on the site. The vehicles were removed and the employees were informed of the EPP violation.

From November 1975 to October 1976 there were six instances of vehicular movement in "off-limits" areas. Three of the violations involved hunters in "off-limits" areas. In one instance, several large pecan trees in different locations near the borrow pit were damaged by bulldozers. The damaged trees were repaired with asphalt base paint and the subcontractor was reprimanded for entering these areas. Another violation involved a tracked vehicle which proceeded down the recently reforrested north term of the haul road. Protective safety tape was installed to prevent further violations. Another violation involved four surveyors who drove through an "off-limits" area in a private vehicle at noon. The surveyors were informed of the EPP violation.

From November 1976 to April 1980 there was one "off-limits" violation which involved two fishermen who had an unauthorized vehicle and fire on the north side of Site Stream "A". The fishermen were requested to extinguish the fire and to leave the area.

II. ENVIRONMENTAL PROTECTION PROGRAM ELEMENTS (Cont'd.)

B. Dust

Excessive fugitive dust and cement dust was observed on approximately 16 and 8 occasions, respectively, from May 1974 to April 1980. The fugitive dust problem was immediately eliminated in each case by watering. The cement dust releases were corrected by appropriate action.

From May 1974 to October 1974 excessive dust was observed on numerous occasions on the access road adjacent to the site and on several occasions on the 115 Kv transmission line and railroad spur right-of-way. In each case, the dust problem was immediately eliminated by watering.

Excessive fugitive dust was observed on thirteen occasions and cement dust once from November 1974 to October 1975. In each case, the fugitive dust problem was immediately eliminated by watering. During this period, dust control inspection was suspended on Waterloo Road due to the road's being officially closed for county construction. Grand Gulf construction traffic was routed another way during this period. Dust control inspection resumed when Waterloo Road was reopened. One instance of excessive cement dust was observed at the concrete batch plant. A followup revealed a malfunction of the dust control equipment. The subcontractor was notified of the excessive release and the condition was corrected.

From November 1975 to October 1976 there was no excessive dust observed; however, there were three occasions of excessive cement dust. In one instance, the cement bag filters were replaced and a monthly maintenance check was initiated. The others involved excessive fly-ash releases from a storage silo at the concrete batch plant during August 1976. The dust collector bag filters were replaced and a weekly maintenance check was initiated.

No excessive dust was observed from November 1976 to October 1977; however, three excessive cement dust releases were observed. On November 23, 1976, the upper part of the cement silo at a portable batch plant near the switchyard ruptured, releasing approximately 8,000 pounds of bulk cement onto the ground. The vent atop the silo was clogged, which caused pressure to build up inside the silo. A different type of vent system was installed to maintain the safety of the operation, and the cement dust lost in this accident was cleaned up and removed from the area. One of the other two cement violations was by National Mobile Concrete. We recommended that Bechtel have them check and replace, if necessary, the dust bags on all their equipment as soon as possible. The other violation was from a batch plant which was supplying Zurn for its cooling tower construction. Appropriate action was taken in each case to correct the problem.

II. ENVIRONMENTAL PROTECTION PROGRAM ELEMENTS (Cont'd.)

B. Dust (Cont'd.)

From November 1977 to April 1980 there was only one dust control violation, which involved an excessive cement dust release during batching operations. The dust control bags were cleaned or replaced as necessary. Existing fugitive dust control measures for the site roads were modified by refilling the water wagon at the borrow pit, thereby considerably reducing the turnaround time. The constuction water system and Mississippi River water are used as different situations arise.

II. ENVIRONMENTAL PROTECTION PROGRAM ELEMENTS (Cont'd.)

C. Smoke

From May 1974 to April 1980 there were thirteen violations involving excessive smoke emissions observed. In each case the burning operations were extinguished and/or corrected.

There were five occasions of excessive smoke observation from May 1974 to October 1974. In each case, the problem was corrected.

From November 1974 to October 1975 there were two instances of excessive smoke emission. One violation involved a water wagon which was producing excessive exhaust emissions. The equipment was repaired. One unauthorized fire was observed on the railroad right-of-way. The fire was reported to the proper authorities and was later extinguished.

There were five occasions of excessive smoke observed from November 1975 to October 1976, three of which were unauthorized warm-up fires on the heavy haul road and one caused by a malfunctioning salamander heater. The other occasion involved an aggregate hauling truck which emitted excessive engine exhausts. The engine was replaced, the fires were extinguished, and the heater was removed from operation. The permanent burn pit was placed into operation in November 1975. Although the pit was observed to be burning properly, the extreme heat was discovered to be disintegrating the unprotected concrete walls. The pit was taken out of operation until appropriate repairs were made later that same month.

From November 1976 to October 1977 there were no excessive smoke violations observed.

There was one excessive smoke violation From November 1977 to April 1979. The violation involved a Bechtel pickup truck which was emitting an excessive amount of engine exhaust. The vehicle was taken out of service until necessary repairs could be made.

From April 1979 to April 1980 there were no excessive smoke violations observed. There was, however, a wildfire spotted burning out of control near the main parking lot in December 1979. There was no environmental damage and the fire was extinguished with minimum burnoff.

II. ENVIRONMENTAL PROTECTION PROGRAM ELEMENTS (Cont'd.)

D. Erosion

Approximately 465 acres of the 2,170 - acre Grand Gulf Nuclear Station site has been affected by construction; however, permanent structures and facilities will occupy only 124 acres. Since the station itself is located in the loessial bluff portion of the site, most site preparation and construction activities are concentrated in this area. Approximately 111 acres of the bluff area are occupied by permanent structures and facilities. As shown below, the area disturbed is showing a downward trend.

TOTAL ACRES DISTURBED BY CONSTRUCTION IN BLUFF PORTION SITE

1975	1977	1979	Complete
310	374	220	111

Most of the disturbed bottomland is occupied by the heavy haul road, pipelines, radial wells and a barge slip, none of which have significant erosion problems.

Rain was experienced on 555 days from May 1974 to April 1980, with an accumulated rainfall of 325.84+ inches.

From May 1974 to October 1974 rain was experienced on 35 days, with an accumulated rainfall of 16.61 inches. The onsite retention basins were only partially effective during the first four months of the reporting period. However, due to the lack of sustained rainfall, runoff was minimal during the period. Retention basins functioned properly during the latter two months of the period. All onsite and offsite construction areas that had an erosion potential were reseeded and mulched or sodded when final grade was reached.

Rain was experienced on 110 separate occasions from November 1974 to October 1975, with an accumulated rainfall of 74.01+ inches. Heavy rainfall was observed 33 times. Runoff samples were collected on 30 of these instances and returned to the laboratory for suspended solids analysis. No runoff samples were taken on the other three occasions because the 24-hour sampling time limitation had been exceeded over the weekend. Dredging proceeded as necessary to keep Sediment Basins "A" and "B" operational. (Note: Additional rainfall in August 1975 was not recorded due to an equipment malfunction.)

II. ENVIRONMENTAL PROTECTION PROGRAM ELEMENTS (Cont'd.)

D. Erosion (Cont'd.)

From November 1975 to October 1976 rain occurred on 84 separate occasions, with an accumulated rainfall of 42.27+ inches. Runoff samples were collected on 11 of these occasions and returned to the laboratory for suspended solids analysis. Additional rainfall and runoff were observed but not recorded because 24 hours of time had elapsed since rainfall ended and/or rainfall totals were not recorded due to an equipment malfunction. A redundant rain gauge system was installed in October 1976 to improve data recovery. Heavy runoff from 2.34 inches of rainfall on the night of August 31, 1976, clogged the stand pipes at Sediment Basins "A" and "B" and eroded an area near the paved ditch on the south side of the site. The stand pipes were cleaned and terrace clay was installed beneath the rip-rap in the eroded area. Considerable erosion was observed approximately twenty feet west of a privately owned stock pond adjacent to the site boundary on September 22, 1976. The area was repaired and reseeded on October 18, 1976. During late September the flushing operations for the new site water well caused severe erosion along the western bluff line. Remedial work was done in the area to correct the erosion problem.

Rainfall was recorded on 96 separate occasions from November 1976 to October 1976, with an accumulated rainfall of 45.92 inches. Runoff samples were collected on 18 of these instances and returned to the laboratory for suspended solids analysis. Additional runoff was observed on several occasions, but no samples were taken because 24 hours of time elapsed since the rainfall ended. Rainfall on January 13 and 14, 1977, totalling 1.01 inches, caused additional erosion on the entire site. On January 24, 1977, considerable erosion was observed in and around Sediment Basin "B" from a weekend rainfall. In February 1977 the energy breakers at the head of Sediment Basin "B" became completely filled from recent rains. Severe erosion over the entire site resulted from 6.69 inches of rainfall on March 3 and 4, 1977. All eroded areas were repaired and the energy breakers at Sediment Basin "B" were cleaned of silt. On March 21, 1977, a depression was observed on the ground surface above lateral B5 at Ranney W11 No. 5. The depression was apparently caused by the removal of large amounts of fine sized material (sand-silt) during installation of lateral B-5 and the withdrawal of the sand line from the lateral. Corrective actions were taken to prevent future occurrences. Eroded areas were observed adjacent to the haul road and in the north spoil area during September 1977. Repairs on these areas were made. Another erosion control violation was observed on the bank of the Mississippi River adjacent to

II. ENVIRONMENTAL PROTECTION PROGRAM ELEMENTS (Cont'd.)

D. Erosion (Cont'd.)

Ranney Well No. 5 on the morning of September 14, 1977. The erosion was caused when the discharge pipe used for pumping operations at the well became stuck in the sand and a relief hole was cut in the pipe. The escaping water caused the surrounding bank to collapse. Repairs were made when the Mississippi River reached lower water levels.

Rain occurred on 152 separate occasions from November 1977 to April 1979, with an accumulated rainfall of 84.27+ inches. An additional rainfall was observed in May 1978 but not recorded due to an equipment malfunction. Runoff samples were collected on 41 of these instances and returned to the laboratory for suspended solids analysis. Additional runoff was observed on three occasions, but no samples were taken because of the 24 hour weekend limitation.

Severe erosion was observed behind the Carpenter Shop adjacent to Sediment Basin "A" after a heavy rainfall on November 28, 1977. This area was repaired on December 16, 1977. Erosion was observed in March 1978 near the southeast side of the switchyard and also at a drain between the upper and lower northwest laydown areas. Repairs were completed in these areas. In addition to these erosion repairs, the feasibility of removing the energy breakers in Sediment Basin "B" was investigated because of the continuing siltation problem. Severe erosion was observed at the dam at Mr. Lee Hamilton Trimble's pond (an adjacent property), at the drainage ditch from the main laydown area to Sediment Basin "A", at the paved ditch from the lower northwest laydown area to Sediment Basin "A", at the valley from Grand Gulf Road to Sediment Basin "A" adjacent to the northwest laydown area, and at the redirected Site Stream "B" crossing beneath the county road. Repairs were completed in all areas except the county road crossing. A temporary repair at the county road enabled traffic to resume use of the road. Permanent repairs in this area were completed in 1979.

Rainfall was observed on 78 separate occasions from May 1979 to April 1980, with an accumulated rainfall of 62.76 inches. Runoff samples were collected on 20 of these instances and returned to the laboratory for suspended solids analysis. Minor instances of additional erosion were observed; however, the stability of the site has increased with an additional growing season. Most previously reported erosion areas were repaired, with the exception of the areas adjacent to the PSW line leading from the Mississippi River to the plant, and some scattered areas in the spoils area.

II. ENVIRONMENTAL PROTECTION PROGRAM ELEMENTS (Cont'd.)

E. Noise

Standard noise control devices on trucks and other equipment were required to be maintained in effective condition during the entire reporting period from May 3, 1974 to April 1980. There was only one noise control violation observed during the entire reporting period. The violation involved a concrete truck with an inadequate muffler in June 1976. The owner of the vehicle was informed that the truck would not be allowed on site until the muffler was repaired. The truck in question has not returned to the site.

Bi-monthly sound level surveys were conducted through the June 1975 survey, at which time the Applicant suspended the surveys. The results of periodic noise surveys made at the site boundary through February 1975 revealed that construction raised the overall daytime noise levels by only a few decibels. Three factors indicated that future noise surveys were unnecessary:

1) The slight increase in noise levels attributable to construction;
2) The lack of complaints from nearby residents; and
3) Completion of major dirt moving activities.

The Applicant notified the NRC of the suspension of the noise surveys on June 13, 1975, and supplied additional information at the request of the NRC on August 19, 1975. On January 18, 1976, the NRC approved the Applicant's discontinuation of the bi-monthly noise level surveys at the Grand Gulf site, as long as there were no periods of peak noise-producing activities. The Applicant has continued to observe noise levels and has found that construction activities have not reached such noise-producing levels as to warrant resumption of the noise level surveys.

II. ENVIRONMENTAL PROTECTION PROGRAM ELEMENTS (Cont'd.)

F. Chemical & Solid Waste

A total of 245 chemical and solid waste violations were observed from May 1974 to April 1980. One hundred fifty-nine of these violations involved minor oil spills, all of which were promptly cleaned up. Seventy-three violations involved chemical spills or solid waste which was cleaned up or properly disposed. Thirteen violations involved concrete trucks washing out in undesignated areas. All concrete carriers were informed of the EPP violations, and the areas affected were promptly cleaned up.

Eleven small oil spills were observed from May 1974 to October 1974. In each case, remedial action was taken immediately, thus preventing the oil from entering into streams.

A total of forty-four chemical and solid waste violations were observed from November 1974 to October 1975. Because chemical and solid waste violations were higher in June 1975 than in previous months, the site biologists met with the Applicant's Contractor and asked for special cooperation to try to curtail the number of violations in this area. Only ten violations occurred the following four months. Twelve violations involved concrete carriers washing out in undesignated areas. All concrete drivers were informed of their obligations to the EPP and of the proper area in which to wash out their trucks. Four violations involved solid waste. In each instance, the waste was picked up and disposed of at the solid waste collector area on site. On two days, chemicals, such as acid or concrete additive, were observed on the ground in the vicinity of the concrete batch plant. In both cases all the chemicals were quickly cleaned up, with none of the chemicals reaching site streams. With the approval of the Mississippi Air and Water Commission, diesel fuel was placed on stagnant pools of water throughout the site for mosquito control during the encephalitis outbreak. A few days later, rainfall allowed some of the diesel fuel to reach both basins and below the dams on Site Streams "A" and "B". The fuel was cleaned up before any could reach the lakes. The remaining twenty-five violations involved oil spills, three of which involved a small ditch on private property. In one other instance, oil was observed below one of the retention dams, but it was mopped up before it reached Hamilton Lake. All other oil spills were generally confined to the area of the spill, with a negligible amount reaching Sediment Basin "A". In each case, the spill was cleaned up immediately.

II. ENVIRONMENTAL PROTECTION PROGRAM ELEMENTS (Cont'd.)

F. Chemical & Solid Waste (Cont'd.)

A total of fifty-five chemical and solid waste violations were observed from November 1975 to October 1976. Thirty-nine of the violations involved minor oil spills which were promptly cleaned up. An oil boom has been installed at the entrance to the barge slip for use during unloading operations, to prevent possible oil spills from reaching the Mississippi River. All spills were contained on site, with no oil entering the lakes or the Mississippi River. One instance involved the leakage of oil into a small stream on private property adjacent to the site. The stream, barrels and old sump, which was the source of the oil, were promptly cleaned up. Twenty-one violations involving solid waste on the manual laborers' parking lot and other locations of solid waste were cleaned up and properly disposed of. A subcontractor supplying concrete for Unit 1 cooling tower was observed washing out his truck onto the ground near their batch plant. The Applicant required the subcontractor to construct a washout pit to control the quality of the effluent. Trucks were required to wash out in the spoil area until the washout pit was completed. Another violation involved the release of raw sewage by a portable toilet subcontractor along Grand Gulf Road during a thunderstorm. A close examination of a new weld on the tank in question substantiated the subcontractor's claim that the release was due to a rupture in the tank. Two other violations involved considerable chemical and solid waste in the concrete batch plant and Unit 1 cooling tower work compounds. Both areas were immediately cleaned up.

Sixty-four chemical and solid waste violations were observed from November 1976 to October 1977. Forty-nine of these violations involved minor spills or the improper storage of oil or chemicals. All oil spills were cleaned up immediately, with no oil reaching site streams, lakes or the Mississippi River. On the night of November 29, 1976, approximately 250 gallons of number 2 diesel fuel oil from a broken fuel line was released onto the ground in the northwest laydown area. Approximately 150 gallons of diesel fuel was discharged into the water in Sediment Basin "A" by way of a concrete spillway which connects the laydown area to the basin. Upon discovery of the oil spill the next day, containment and cleanup crews were immediately activated. The National Spill Response Center was notified shortly thereafter. A small amount of oil was released below the dam of Sediment Basin "A" to Hamilton Lake, a distance of about one mile.

II. ENVIRONMENTAL PROTECTION PROGRAM ELEMENTS (Cont'd.)

F. Chemical & Solid Waste (Cont'd.)

The immediate installation of oil booms prevented the oil from reaching Hamilton Lake and facilitated oil spill cleanup efforts. Cleanup of the spill was completed by December 1, 1976. Thirteen violations involved the improper disposal of solid waste. Appropriate cleanup actions were taken in all cases. In February 1977 approximately 75 shad were observed dead or dying in Sediment Basin "A" over a period of several days. No dead fish were observed in site streams or lakes. This incident paralleled the septic condition of one of the sewage treatment units which empties into Sediment Basin "A". The septic condition of the sewage facility and possibly the fish kill were attributed to the use of large quantities of a disinfectant to clean water barrels and restrooms. The sewage treatment unit was isolated from the system, cleaned out and placed back into service. Use of the suspect disinfectant was discontinued. Use of the sand borrow pit for disposal of spoil from pipe excavation in the bottomlands began in the spring of 1977. Disposal activities are being monitored closely to assure that high water or surface runoff will not transport sediments to the lakes or to the Mississippi River.

A total of fifty-seven chemical and solid waste violations were observed from November 1977 to April 1979. Forty-nine of these violations involved oil spills, six involved the improper disposal or storage of solid waste, and two involved chemical spills. With the exception of two spills in April 1978 which were reported to the U. S. Coast Guard National Spill Response Center, all substances were cleaned up immediately with no chemicals or oil reaching site streams, lakes or the Mississippi River. On the night of April 3, 1978, a bulk fuel tank which was being moved from the flood plain to higher ground developed a severe leak. Over 100 gallons of diesel fuel was released into the flood water at the northernmost end of Hamilton Lake. Containment and cleanup operations did not begin until the spill was discovered by MP&L on the morning of April 4, 1978. Cleanup of this spill was completed by April 5, 1978. A chemical spill of undetermined magnitude was observed the morning after tornadic winds hit the site on the night of April 17, 1978. The spill originated in the batch plant area and appeared to be a concrete additive spill. The material was released into the main drainage ditch, which forms the upper end of Sediment Basin "B" which is, in turn, connected to Site Stream "B". Due to the nature and timing of the spill, there were no containment or cleanup actions which could have been initiated. No adverse effects to aquatic life were detected.

II. ENVIRONMENTAL PROTECTION PROGRAM ELEMENTS (Cont'd.)

F. Chemical & Solid Waste (Cont'd.)

From May 1979 to April 1980 there were four chemical and solid waste violations observed. One spill, minor in nature, involved release of PCB's in a Bechtel warehouse from a leaking transformer. The affected area was cleaned up after consultation with State and Federal authorities. All contaminated material was disposed of according to Federal regulations.

II. ENVIRONMENTAL PROTECTION PROGRAM ELEMENTS (Cont'd.)

G. Dewatering

Dewatering surveys were performed twice monthly during the period from May 1974 through April 1980. There were twelve wells from which the surveys were made. Eight of the twelve wells showed some fluctuation during this period.

Water level changes in five of the test wells can be attributed to changes in the Mississippi River stage. Well OW-43 is located in permeable alluvial deposits which are hydraulically connected to the river. Relatively large rapid water level variations observed in OW-43 are directly related to fluctuations of the Mississippi River. This well was destroyed during road repair by the county in October 1975. Wells OW-69A, OW-4, OW-4A and P-4 also exhibited fluctuations which were correlated with river level. The fluctuations in well OW-29A appeared to be somewhat related to the river levels. However, these fluctuations were primarily due to construction usage of water from well TW-1, which is located 50 feet from well OW-29A.

Fluctuations in well OW-290B can be attributed to the disintegration of the well's impermeable seal. The fact that the water level rose suddenly and then remained fairly stable substantiated this assumption. Well P-209 was dry on March 3, 1976. The dryness of this well can be attributed to the fact that it was a dry spring that year and the trees surrounding the well absorbed the water during the spring growing season. The dry state of well OW-202 from September 30, 1977 to December 9, 1977 appears to be due to normal ground water fluctuations.

Water level readings for wells OW-4, OW-4A, P-4 and OW-69A were not obtained in May 1979 because of backwater flooding from the Mississippi River. Also in May 1979, wells OW-5 and P-5 were destroyed; efforts by Bechtel were successful, however, in reclaiming both wells.

During the period from November 1979 to April 1980, three wells exhibited significant increases in ground water readings: OW-10, OW-4 and OW-69A. During this time the Mississippi River was rising rapidly. Well P-290 had a wet reading for the first time since February 1976. The conditions during this time were extremely wet, which lead to an increase in available ground water.

II. ENVIRONMENTAL PROTECTION PROGRAM ELEMENTS (Cont'd.)

H. Vegetation

In October 1974 sample vegational plots were established to detect any long-term stresses or abnormalities attributable to construction activities. No abnormal growth patterns have been detected through April 1980.

During the period of September 1974 to April 1980 monthly vegetational surveys were made around the site periphery, as described above. There were six instances of construction-related stress sighted. In each incident the affected areas were repaired as quickly as possible.

The first instance of vegetational stress due to construction activities occurred in February 1975. In this episode a large magnolia tree on the south bank of Site Stream "A", adjacent to the plant access road, showed some visible signs of stress. The damage to the tree was repaired by applying more dirt around the tree.

The second instance was observed in March 1975. The biologist observed a damaged area in the spoil area. The damage was caused by excess dirt having been piled around a group of trees. Although the excess dirt was removed, the trees later died and had to be removed from the area.

The third and fourth incidents involving construction-related stress happened in November and December 1975. In each of these episodes a large pecan tree was damaged by heavy equipment. Both trees were quickly repaired by covering the wounds with asphalt base paint.

In June 1977 the fifth instance of stress was observed: a number of dead or dying trees were observed in the main spoil area. Most of the dead or dying trees had suffered irreparable damage during placement of spoils in the natural gullies which ran through this area prior to construction.

The final construction-related stress observation involved two pecan trees which belonged to an adjacent property owner. The trees were damaged by Bechtel in September 1979. The trees were repaired as soon as possible by the application of dressing material.

On April 17, 1978, tornadic winds severely damaged 390 acres of timber on the Grand Gulf Nuclear Station site. Two pulpwood crews were brought in to clear the debris from the downed area.

In September 1979 an extended site development program was proposed to the Applicant's management personnel and accepted for implementation at Grand Gulf. Clipping of overgrown areas was begun and fruit, pecan and sawtooth oak trees have been planted.

II. ENVIRONMENTAL PROTECTION PROGRAM ELEMENTS (Cont'd.)

I. Transmission Lines

Grand Gulf Nuclear Station is linked to load demand areas by a system of 500 Kv transmission lines. In addition, a 115 Kv transmission line to the Port Gibson substation provides construction power and an alternate source of emergency startup power.

A transmission line construction monitoring program has been conducted to identify potential environmental problem areas, to design and implement procedures to minimize impacts and to monitor the effectiveness of these measures or any remedial actions taken. The transmission line construction monitoring activities are generally implemented in three time phases: preconstruction, construction and postconstruction. During the preconstruction phase, transmission line corridors are inspected to identify potential problem areas. Prior to initiation of construction activities, coordination meetings are held with each contractor to identify the sensitive construction areas and to recommend remedial procedures. During transmission line construction, weekly visual observations are made to ensure that potential problem areas are protected and that proper construction practices are followed. Subsequent to the completion of transmission line construction activities, semi-annual inspections of these areas are conducted to determine the effectiveness of the procedures in minimizing impacts and to delineate areas where remedial action may be needed.

Construction of the 115 Kv Port Gibson line was completed on March 3, 1975. No EPP violations were observed during the construction period. Postconstruction monitoring began in September 1975 and has been conducted semi-annually. As of June 5, 1979, only two areas still require remedial action because of erosion. These are the slide areas north of the plant railroad line and the area between towers 34 and 41. Remedial actions are underway in both areas.

Construction of the 500 Kv Franklin line began on January 19, 1976. During the period of construction there were five EPP violations. Two of these violations involved unattended fires. In both cases the responsible people were reminded of their obligations to the Environmental Protection Program. Two other violations involved improper disposal of chemical and solid wastes. In these incidents the wastes were cleaned up immediately. Both contractors were told to keep wastes in transportable containers and to dispose of them properly. The final violation involved an unauthorized creek crossing. In this case the concerned individuals were reminded of their obligations to the EPP. The 500 Kv Franklin line was completed in April 1977. Postconstruction surveys began on May 13, 1977, and have been conducted semi-annually.

II. ENVIRONMENTAL PROTECTION PROGRAM ELEMENTS (Cont'd.)

I. Transmission Lines (Cont'd.)

In June 1979 an aerial survey revealed considerable erosion at tower 193 on the 500 KV Franklin transmission line and on the slide area on the 115 Kv Port Gibson line. Reclearing of the Franklin line was accomplished, and the Port Gibson line was recleared on an as-needed basis. The slide area continued to enlarge and some emergency repair work was necessary in this area. Permanent repairs, although scheduled, have not yet been made. In late 1979 the Baxter Wilson 500 Kv transmission line was completed. The preconstruction survey of the 500 Kv Ray Braswell line was completed in May 1979, and a cultural resources survey of the corridor was commissioned in April 1980. No EPP violations were noted from May 1979 to April 1980.

II. ENVIRONMENTAL PROTECTION PROGRAM ELEMENTS (Cont'd.)

J. Sediment Basins

Sediment Basins "A" and "B" received considerable attention during the early months of 1980. Both basins were showing advanced rates of siltation. Cleanout of Sediment Basin "B" was initiated during February 1980; cleanout of Sediment Basin "A" was begun during March. Heavy rainfall has hampered efforts in both basins. Sediment Basin "B" was 50% restored by the end of April 1980. Sediment Basin "A" had over 6,500 cubic yards of material removed by dragline since February 1980. A portable dredge was utilized in Sediment Basin "B" during this time period. The efficiency of the dredge was suspect, so a dragline was placed in the basin to speed up sediment removal. Efforts will continue until the required volume is attained in each basin.