IV. Chronology of Events

The following chronology was developed through a review of all DNR files, company files and interviews with department and company personnel.

Flambeau Paper Company located in Park Falls, Wisconsin, is a division of Pentair Inc. of St. Paul, Minnesota. It is an integrated paper mill which produces approximately 40,000 tons per year of calcium based bisulfite pulp and consequently about 110 tons of spent sulfite liquor solids per day or 40,000 tons per year. The company sells various grades of lignosulfonate concentrated liquor to end-use markets such as animal feed and road dust control and to other lignosulfonate producers. However, the market is such that additional means for spent sulfite liquor disposal are still necessary from time to time. Since 1950, the roadbinder program has been used as a bonafide disposal method during the summer months.

Another disposal method in place at that time was spraying diluted spent sulfite liquor on the island in the river adjacent to the mill. This liquor contained the wash water from the blow pits and had a solids content of 1-6%. It was hoped through anaerobic microbiological processes within the soil, that the BOD content of this liquor would be reduced. However, unconfirmed wells reportedly dug in the area were found to be contaminated with spent sulfite liquor. This method also produced strong odor problems. Data on this practice is limited.

According to company officials a third method of disposal involved trucks hauling liquor to land disposal sites away from the mill. The tankers would empty into wooden troughs which emptied onto the ground. Prior to 1956, 2 sites were used for land disposal of liquor. One was located at the intersection of Hwy E and Buckhorn Road and the second on West Maple Ridge Road. The extent and time frame of use of these sites is unknown.

Due to the necessity for a larger disposal site, parts of the 160 acre Town of Eisenstein site in question were also used for land disposal. The site which is along the Flambeau River was purchased in 1949. The exact time when the site was first used is unknown but it was prior to 1956. Liquor was allowed to flow out of tank trucks directly on the ground to be absorbed and treated by the soil before it entered the river. Similar land disposal practices were also used at other mills such as Rothschild and Niagara and was considered an acceptable way to keep the material out of rivers then.
In October of 1956, Walter Sherman of the Flambeau Paper Company toured the Town of Eisenstein disposal site with a state health engineer. The area in use had doubled. Mr. Sherman noticed that liquor was allowed to be discharged on open ground and was distributed over a larger area. It was also noticed that liquor was leaking into the river.

In September of 1959, a fish kill occurred in the Flambeau River. An oxygen deficiency was tested for and confirmed.

By October 1960, the following steps were taken to prevent further fish kills. 1) The total area for soil seepage had been doubled. 2) Total volume for spent sulfite liquor in the disposal areas had been increased about five times. 3) The construction of ridge and furrows along the side slopes had been completed. 4) New storage lagoons had been developed and began to be used sometime between September 1959 and October of 1960. By 1962 a total of 22 lagoons were being used with a total holding capacity of 44,000,000 gallons.

The lagoon system began with two shallow lagoons. Bulldozers were used to construct the lagoons and the dikes between lagoons. Piping and a trough system were constructed on the dikes to connect the lagoons, regulate the depth of liquor, and to prevent washout of the dikes.

In 1965, a six evaporator system called Evapex was installed at the mill to increase the concentration of spent liquor solids. On a rotating basis, one evaporator would be shut down for cleaning. Condensate was used as a wash to dissolve the scale in the evaporator. The condensate would then become contaminated with spent sulfite liquor and either be hauled as roadbinder or disposed of at the lagoon site. The evaporator concentrated material was sold. In 1969 some liquor was still hauled for roadbinder but most was evaporated. At that time wash water from the blow pits was still being sprayed on the island in the river during the summer. The sulfite liquor lagoons were only occasionally being used for liquor during this time when the evaporator was shut down for wash and repair. Evaporator condensate was tried on the roads with no success. Since it contains little or no spent liquor the binding qualities of the material are not present. Condensate continued to be hauled to the liquor lagoon site.
Apparently in response to questions, in August, 1971 a letter was written from Walter Sherman to Wm. Goetz, Chief Construction Operations Division of the Department of the Army concerning the disposal lagoons of Flambeau Paper Company. Mr. Sherman gave the following synopsis of the liquor lagoon storage facility.

"We have 120 acres of soil seepage disposal of condensate and any excess sulfite liquor which cannot be evaporated. It is on a granite sub-base which slopes toward the river and the maximum distance from the river bank is about 3/8 of a mile. The flows actually are somewhat longer than this, because of the contours which cause seepage to occur over 1/2 mile on its way toward the river. The seepage through the soil seems to destroy the BOD (Biological Oxygen Demand) and we can operate this total tract of disposal land without allowing the liquid applied to flow above ground into the river during non-freezing weather. We have checked the D.O. (Dissolved Oxygen) and BOD along the river bank and compared it with the opposite bank where there is no possibility of this material seeping into the water and can find no difference between the two sides. As far as we know the BOD is destroyed before it reaches the river.

We have arranged in some years to drain the storage which now has an available capacity of 35,000,000 gallons in the several ponds in the fall of the year when the river D.O. is high and not upset by this. The drainage is controlled by a valve on each pond which lets the liquid flow out into ditches or ponds at a lower level until at the bottom of each flow path the last valve would allow this material to flow above ground into the river.

Both of these disposal methods were approved by the Committee on Water Pollution many years ago and they had been a part of our order on disposal of BOD materials from our sulfite operations."

Beginning in 1974, concentrated liquor was burned in a loblolly burner. This took place for about a year and a half but was discontinued because of a fly ash problem.
In October of 1974, the Flambeau Paper Company was issued a Wisconsin Pollution Discharge Elimination System Permit No. 0003212 by the DNR for discharges into the North Fork of the Flambeau River. Flambeau Paper's application request for the permit described a total of nine discharge points throughout the entire mill complex. There were two discharge locations authorized in the permit at the lagoon site: outlet 010 as the north disposal discharge drain and outlet 011 as the south disposal discharge drain. The permit placed the following limitations on the discharges at the liquor lagoons. "These discharges shall be further limited by the permittee to periods of high river flow in the cold weather months of October through March and controlled to maintain a minimum of 3 mg/l of D.O. in the river at all times. The permittee should notify the department at least 48 hours ahead of a planned discharge."

In 1975 all evaporator condensate was disposed of at the liquor lagoon disposal site. In the summer of 1976, a condensate chemical recovery plant and wastewater treatment facilities consisting of a blow tank, counter current washer, trickling filter, and primary and secondary clarifiers were put on line. It was hoped that this would eliminate disposal of condensate at the lagoon site. Counter current washers eliminated diluted wash water spraying on the island in the river but the condensate recovery plant had problems and condensate was still hauled to the lagoons.

In the fall of 1976, low flow in the river prevented lagoon drainage and plans were made to empty them in the spring of 1977. Low flow also prevented a spring discharge.

In February of 1977, the Kansas City Star sold the Flambeau Paper Mill to Capitol Cities. This delayed plans for the activated sludge plant to become finalized at that time.

In May of 1977, a file memo stated that the use of the spent sulfite liquor lagoons would be ceased once the new activated sludge treatment plant facilities were completed and the site would be used for emergency standby only. The company's plan was to discontinue discharge from this site after June 30, 1977.

In September of 1977, the company discontinued adding material to the lagoons. Some of the ponds leached out completely while others remained full. On September 19, 1977, a discharge to the river was noted by Ted Smith and Larry Prell of the Department of Natural Resources while collecting river samples. Wastewaters were observed migrating down the bank and were entering the river at three distinct locations.

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Due to problems with excess lagoon contents and permit requirements prohibiting discharge, the contents of all lagoons were pumped to a few lagoons from which they were road spread in the fall of 1977. During this time the district DNR office recommended that the lagoons be emptied and the site permanently abandoned.

During the review of a planned solid waste project in the general lagoon vicinity, in January of 1978, the Bureau of Solid Waste Management and the Bureau of Environmental Impact evaluated data obtained from eight groundwater monitoring wells at distances ranging from 300' - 3000' from the lagoons and found significant groundwater contamination. The Bureau of Solid Waste also recommended that Flambeau Paper Company consider regrading and final abandonment of the inactive lagoons.

In June of 1978, the Flambeau Paper Company started burning spent sulfite liquor again in the boilers because of no storage facilities or sellable markets. Also in June, lagoon number 2 was lined with bentonite at the rate of 1 lb./sq. ft. The lining was complete in July. Lagoons 3 and 17, were also lined with bentonite. The ponds were full of liquor at the time the bentonite was layed down so it was difficult to get uniform coverage throughout the pond. These lagoons would be used for emergency storage of Evapex feed liquor as needed.

On November 7, 1978 the Flambeau Paper Company was sold to Pentair. It was Pentair's intent to increase production of the Flambeau Paper Mill so the plans for the secondary activated sludge treatment plant were modified to handle the increased production.

In January of 1979, plans for a synthetically lined five million gallon reservoir designed as a temporary storage terminal for sulfite liquor were submitted. When the hypalon lined lagoon was finished, liquor from the bentonite lined lagoons was to be transferred to the new lagoon or put on the roads.

On July 11, 1980, Flambeau Paper advised Northwest District personnel that a number of the lagoons had been emptied but had not been restored to their natural state.

By July 15, 1980 all old condensate lagoons at the disposal area had been emptied and by September, 1980 all the lagoons were leveled and the ground surface was restored.

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In May of 1981, DNR Solid Waste staff in Madison concluded that the past disposal of spent sulfite liquor in the site area had contaminated the groundwater and depleted the marginal attenuative capacity of the predominately on-site sandy soils. The contamination also made groundwater monitoring at the new landfill site difficult. It was noted that data from wells number 1-4, located east of the disposal site, suggested that the COD contributed by sulfite disposal had decreased significantly since 1977 though the values still remained at high levels.

In August of 1985, a DNR warden noticed seepage into the river near the old sulfite liquor lagoons. DNR personnel inspected the sight and confirmed the wardens findings. This inspection prompted a heightened interest in a study into the nature of the problem.