Clevite Elastomers
Route 424, Napoleon, Ohio 43545
(419) 592-2055

CLEVITE Elastomers

1400 E Riverview Ave

September 12, 1990

Roger L. Noblit
Director of Water & Waste Water
City of Napoleon, Ohio
P.O. Box 151
255 W. Riverview Avenue
Napoleon, Ohio 43545

Dear Mr. Noblit:

The following document contains information describing the manufacturing processes and their associated chemicals that affect the quality and volume of the industrial wastewater discharged by the CLEVITE facility.

Sincerely;

Dennis J. Stelzer Jr.

cc: Terry Dunn, City Manager

CLEVITE-Elastomers manufactures vibration isolators and suspension components. The primary products are rubber-metal bushings for the automotive industry. Manufacturing operations include metal cutting, forming, and heat treating. Acid and alkaline cleaning, zinc phosphate coating, assembling the metal and rubber bushings, water based dip coat painting and autophoretic painting. These operations result in the generation of excess free product and emulsified oils from parts alkaline cleaning, forming and assembly operations, and excess zinc and phosphorus loads from the acid cleaning and zinc phosphate coating operations.

The CLEVITE manufacturing facility has been designed such that all floor drains discharge to a collective stream designated as "industrial wastewaters". Several manufacturing operations have regular or uniform discharge of wastewaters; Those operations are described below in regards to the chemicals currently being used and the approximate discharge volumes. This document is not comprehensive in the coverage of CLEVITE processes and chemicals used in the plant, however it is believed to cover those processes and chemicals that affect the quality and volume of discharged industrial wastewaters.

The following processes and installations are described below:

1. Phosphating Operations. 5 Lines
2. Autophoretic Paint Line. Chem. Reaction
3. Boiler Room. Typical
4. Air Compressors. Typ.
5. Autoclave. Condensate — All adhesive applied in Mikan
6. Blakslee Parts Washer. Removed by Dec.
7. 4901/4902 Parts Washers. 13 self contained to replace 6
8. Water Deionizing Unit. For Paint Line
9. Floor Scrubbers.
10. Stoddard Still Cooling Water.
11. Draw and Tramp Oil collection Drain. — Scrap ducts

↑ Centrifuge possibility

PHOSPHATING OPERATIONS

Zinc Phosphating is a common industrial application of a technique known as conversion coating. In zinc phosphating, the surface layer of a metal part is chemically converted into a coating that contains crystals consisting of zinc, iron, and phosphate. The metal part (iron or steel), is treated with a dilute solution of phosphoric acid that contains zinc phosphate compounds. As iron in the surface of the metal is attacked by the acid, the pH rises at the metal/solution interface. This change in pH causes the zinc phosphate compounds to crystalize on the surface of the part.

The basic process of zinc phosphating employed at CLEVITE consists of a series of four operations:

1. Alkaline Cleaning
2. Rinse
3. Zinc Phosphate Conversion Coating
4. Rinse

Specific lines in CLEVITE's processes have two phosphating baths to allow the option of applying either a heavy or light coating. One line also has the capabilities to acid pickle parts between the cleaning and phosphating operations.

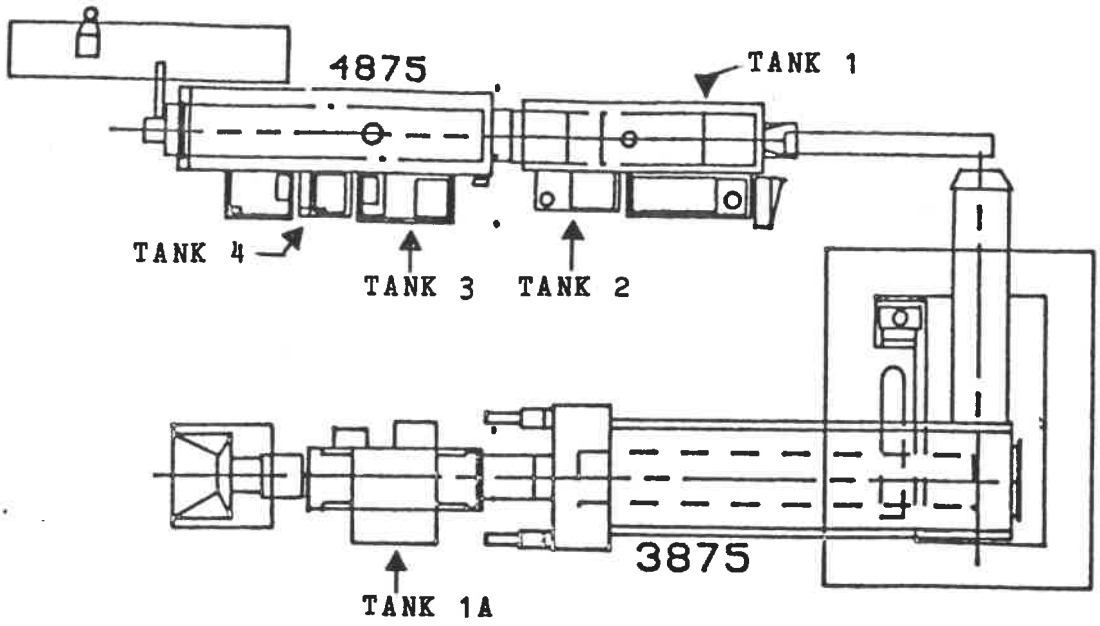
CLEVITE-Elastomers utilizes five zinc phosphating lines in the Napoleon manufacturing site:

1. 3875 Ransohoff Line
2. 4632 Ransohoff Line
3. 614 Ransohoff Line
4. 3406 Udylite Line
5. 196 Udylite Line

The following section describes the phosphating operations in detail.

3874 WASHER/3875 HEAT TREAT/4875 RANSOHOFF LINE

PHOSPHATING OPERATION

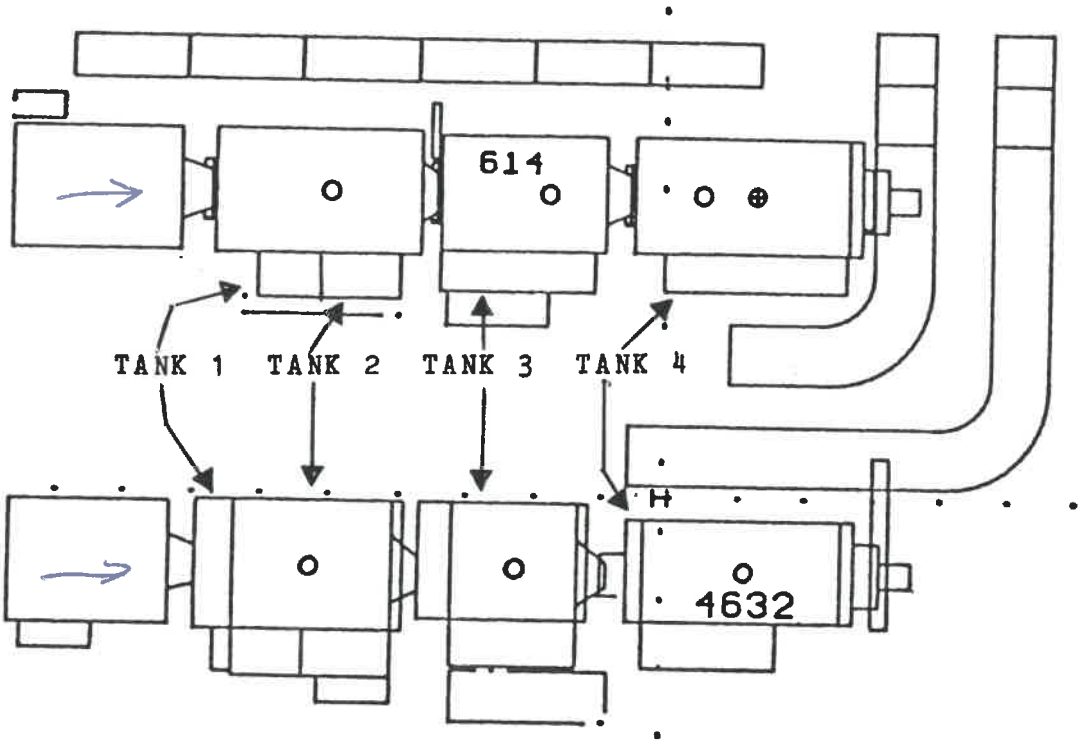


HEAT TREAT FURNACE

TANK	DESCRIPTION	CHEMICALS	TANK CAPACITY	DISCHARGE
1A	Alkaline Wash	Detrex HT-75-LC	500 Gal.	~2 GPM
1	Alkaline Wash	Detrex HT-75-LC	500 Gal.	~15 GPD
2	Overflow Rinse	City Water	300 Gal.	8 GPM
3	Phosphating Bath	Detrex 16-GN	700 Gal.	NONE
4.	Overflow Rinse	City Water	350 Gal.	8 GPM

The Heat Treat Furnace and 3875 Phosphating Line run continuously on three shifts, seven days a week. The Heat Treat Furnace utilizes a closed loop water recirculating cooling system. In the event of an electrical power loss or a recirculating pump failure, the cooling system switches over to once-through city water mode. The cooling water is discharged to the industrial wastewater pretreatment facility during this mode.

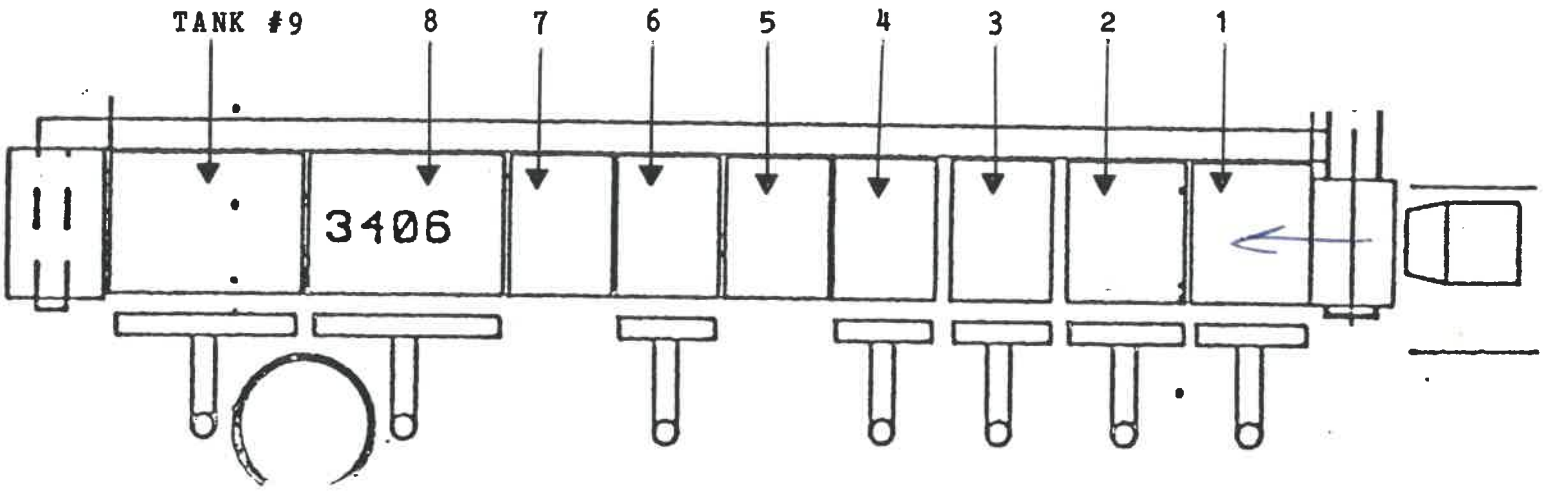
614 AND 4632 RANSOHOFF LINES



TANK	DESCRIPTION	CHEMICALS	CAPACITY	DISCHARGE
1	Alkaline Wash	Detrex 75-LR	750 Gal.	NONE
2	Overflow Rinse	City Water	500 Gal.	~8 GPM
3	Phosphating Bath	Detrex 16-GN	670 Gal.	NONE
4.	Overflow Rinse	City Water	260 Gal.	~8 GPM

The 4632 and 614 Phosphating Lines run continuously on three shifts, five days a week, and periodically on some weekend days.

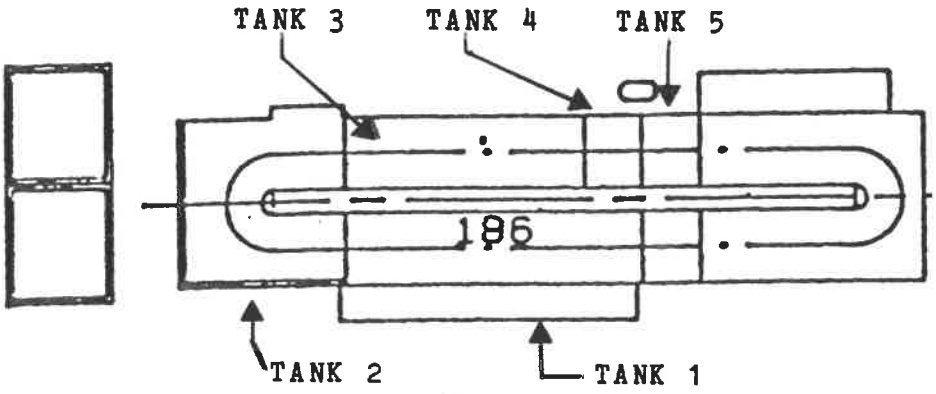
3406 UDYLITE LINE



TANK	DESCRIPTION	CHEMICALS	TANK CAPACITY	DISCHARGE
1	Alkaline Wash	Soak 100	550 Gal.	NONE
2	Overflow Rinse	City Water	550 Gal.	Variable
3	Overflow Rinse	City Water	550 Gal.	To Tank 5
4	Acid Pickle	Detrex 803	475 Gal.	NONE
5	Overflow Rinse	City Water	475 Gal.	Variable
6	Heated Rinse	City Water	475 Gal.	~1 GPM
7	Overflow Rinse	City Water	475 Gal.	To Tank 2
8	Phosphating Bath	Detrex 502MRCL	850 Gal.	NONE
9	Phosphating Bath	Detrex 16-GN	850 Gal.	NONE

The 3406 Udylite Phosphating Line runs continuously three shifts, five days a week, and on some weekend days.

196 UDYLITE LINE



TANK	DESCRIPTION	CHEMICALS	TANK CAPACITY	DISCHARGE
1	Alkaline Wash	Soak 100	800 Gal.	NONE
2	Overflow Rinse	City Water	900 Gal.	~8 GPM
3	Phosphating	Detrex 16-GN or Detrex 502MRCL	550 Gal.	NONE
4	Rinse	City Water	150 Gal.	
5	Heated Rinse	City Water	150 Gal.	

The 196 Udylite Phosphating Line is run on an as needed basis, (infrequently).

AUTOPHORETIC OPERATION

Autophoretic paint coating is an application of the general technique known as autodeposition. Autodeposition is a waterborne process where an organic (paint), coating is deposited on the surface of a metal part by means of a chemical reaction that does not rely on an electrical current.

38% Cap. Presently

CLEVITE's autophoretic line is described below:

TANK	DESCRIPTION	CHEMICALS	CAPACITY	DISCHARGE
1	Alkaline De-rusting	Amchem 1729	1900 Gal.	NONE
2	Overflow Rinse	City Water	1900 Gal.	~6 GPM
3	Acid Wash	Deoxidine 7006	1900 Gal.	NONE
4	Overflow Rinse	City Water	1900 Gal.	Variable
5	Alkaline Wash	Amchem 2732	1900 Gal.	NONE
6	Overflow Rinse	City Water	1900 Gal.	Variable
7	Spray Rinse	Deionized Water	1900 Gal.	Variable
8	Autophoretic Paint	Amchem 861/219 Amchem 23/24	2150 Gal.	NONE
9	Spray Rinse	Deionized Water	1900 Gal.	Variable
10	Overflow Rinse	City Water	1900 Gal.	Variable
11	Reaction Rinse	Amchem 2150	1900 Gal.	NONE

The overflow rinse of Tank 2 is fed by non-contact cooling water from the 647 Press and the William-Wright Press. — Controlled Discharge

MISCELLANEOUS MINOR DISCHARGE SOURCES:

BOILER ROOM:

Boiler room discharge consists of boiler blow down and water from the regeneration cycle of the softener unit. The following chemicals are used to treat the boiler water:

1. Mogul EG-5350
2. Mogul EG-5425
3. Mogul EG-5611
4. Mogul EG-5671
5. Mogul WS-162
6. Sodium Hydroxide, 50%

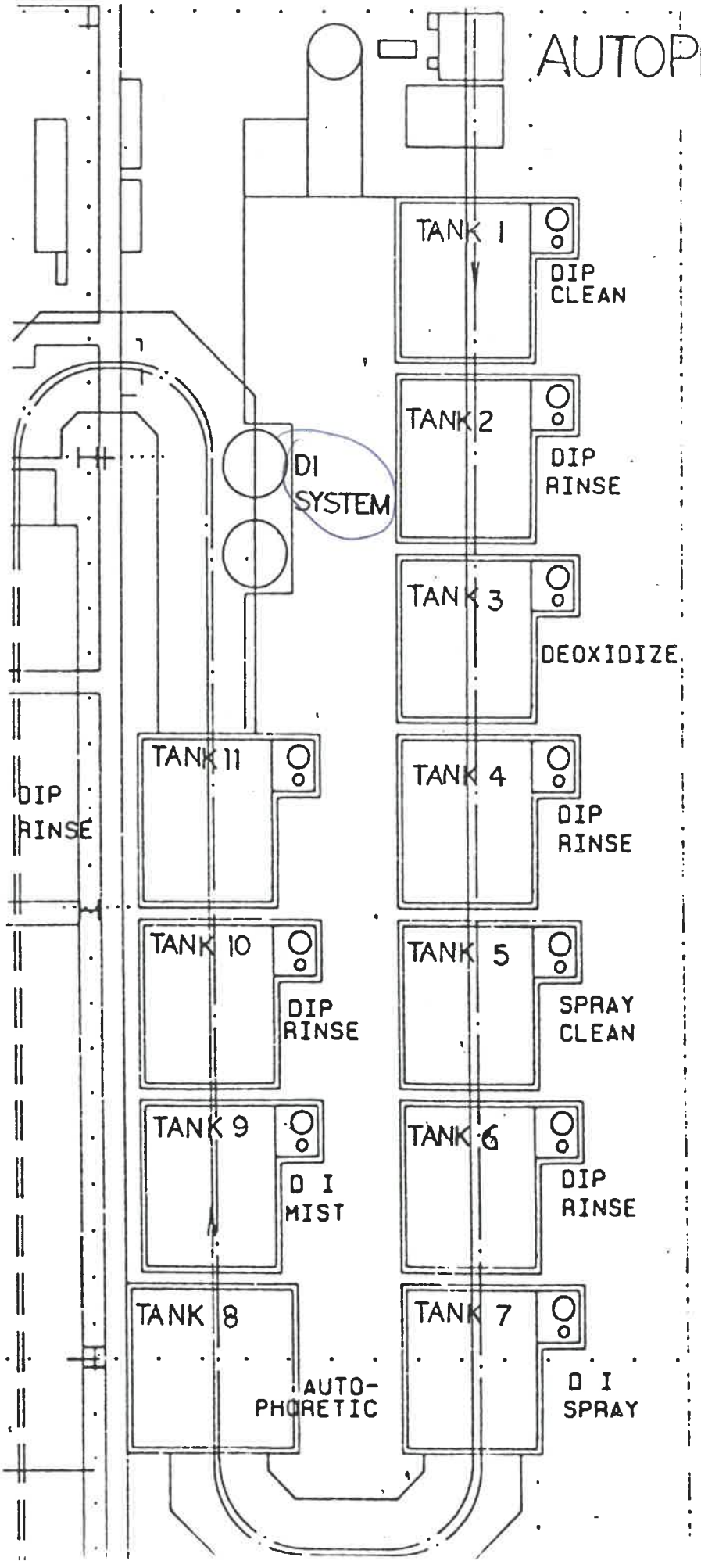
2 run @ once

2 - 75
1 - 100
1 - 125
1 - 200

AIR COMPRESSOR:

The plant's air compressors are blown down on continuous automated blow down cycles.

AUTOPHORETIC



AUTOCLAVE:

Condensate water from the steam heated autoclave discharges to the industrial waste line.

BLAKSLEE PARTS WASHER:

The Blakslee parts washer is an alkaline washer line that operates three shifts, five days a week, and some weekend days. The wash solution contains water and Detrex 37 BD detergent. The unit discharges approximately 1 GPM.

4901/4902 PARTS WASHERS:

The 4901 and 4902 units are dedicated parts washer that are connected to assembly machines. The washers run according to the production schedule. Wash baths consist of water and Detrex 75LC. The units each have a 40 GPD discharge.

DEIONIZING UNIT:

The water deionizing unit is regenerated as needed, approximately every two weeks, utilizing a sodium hydroxide solution, an hydrochloric acid solution, and approximately 5,000 gallons of water.

FLOOR SCRUBBERS:

The floor sweepers clean the manufacturing areas on first and second shift during week days. The scrubbers use a cleaning solution of water and J-SHOP 500. Approximately 300 gallons of liquid are discharged per day.

STODDARD STILL:

The stoddard still is utilized to reclaim stoddard solvent used in manufacturing. City water is used to condense the still distillates. The still is operated on an as needed basis depending on production.

DRAW AND TRAMP OIL COLLECTION DRAIN:

Scrap metal from various stages of the manufacturing process contain draw oils, cutting oils, and lubrication oils. The scraps are collected in luggars which are stored in a designated loading bay. The floor drains in the loading bay area collect run off oils that drip off the metal scraps. These drains discharge to the industrial wastewater stream.

CHEMICAL LISTING

The following list contains the chemicals used in the above described processes that may have an affect on the industrial wastewater quality:

PHOSPHATING OPERATIONS:	LISTED INGREDIENTS
1. Detrex HT-75-LC	sodium hydroxide
2. Detrex 75-LR	sodium hydroxide
3. Detrex 16-GN	zinc compounds/phosphoric acid
4. Detrex 502-MR	zinc compounds/phosphoric acid
5. Detrex 803	phosphoric acid/glycol ether category
6. Soak 100	sodium hydroxide/sodium carbonate tetrasodium pyrophosphate/sodium gluconate
AUTOPHORETIC PAINT LINE:	
1. Amchem 1729	tetrasodium pyrophosphate/sodium hydroxide
2. Deoxidine 7006	sulfuric acid/phosphoric acid
3. Amchem 2732	potassium hydroxide/tetrapotassium pyrophosphate
4. Amchem 861	None
5. Amchem 219	hydrofluoric acid/ferric fluoride
6. Amchem 23	hydrofluoric acid
7. Amchem 24	hydrogen peroxide
8. Amchem 2150	ammonium bicarbonate
BOILER ROOM:	
1. Mogul EG-5350	2-amino-2-methyl-1-propanol
2. Mogul EG-5425	sodium hydroxide
3. Mogul EG-5611	sodium hydroxide
4. Mogul EG-5671	2-phosphonobutane-1,2,4-tricarboxylic acid
5. Mogul WS-162 (cooling Tower Not a discharge chemical)	sodium dichromate dihydrate/sodium hydroxide & heat treatment
BLAKSLEE PARTS WASHER:	
1. Detrex 37-BD	sodium hydroxide
FLOOR SCRUBBERS:	
1. J-SHOP 500	potassium carbonate/sodium metasilicate nonylphenol polyethylene glycol ether

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255 W. Riverview Avenue
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Dear Mr. Noblit:

The following document contains information describing CLEVITE's industrial wastewater pretreatment facility as requested earlier.

We look forward to discussing the pretreatment facility and CLEVITE's operation at 1:00 pm on September 13, 1990.

Sincerely;

Dennis J. Stelzer Jr

cc: Terry Dunn, City Manager

CLEVITE-Elastomers
Industrial Wastewater Pretreatment Facility

The industrial wastewater treatment system was constructed at CLEVITE in 1974 for the purpose of meeting OEPA's direct discharge standards set in 1975. The system has continued to operate as a direct discharge facility up to the present time. Several modifications aimed at improving the facilities treatment capabilities and efficiency have been employed during the 1990 year. CLEVITE views their proposal to discharge to the City of Napoleon's wastewater collection system as a continuation of improvements.

The following descriptions refers to CLEVITE's existing system as a "pretreatment" facility.

Industrial wastewater from CLEVITE's manufacturing operations contains discharges from the following primary constituents:

1. Zinc phosphating operations.
2. Autodeposition paint coating line.
3. Boiler room discharges.
4. Floor scrubbing units.
5. Alkaline Parts Washer Units.
6. Floor Drains.

The pretreatment facility has been designed to treat wastewater that includes the following as major parameters: free and emulsified oils, phosphorus compounds, zinc compounds, solids, and biochemical oxygen demand. CLEVITE's pretreatment facility is capable of meeting the requirements as indicated by the City of Napoleon and summarized in Table 1.

Table 1.

City of Napoleon
Industrial Wastewater Discharge Limits

A. pH not less than 6.5 nor greater than 9.0.
B. Cyanide not greater than 0.02 ppm.
C. Cr (Hexavalent) not greater than 1.0 ppm.
D. Cr (Trivalent) not greater than 0.5 ppm.
E. Ni not greater than 5.0 ppm.
F. Zn not greater than 2.0 ppm.
G. Cu not greater than 0.50 ppm.
H. Cd not greater than 0.01 ppm.
I. Hg not greater than 0.3 ppb.
J. Pb not greater than 0.02 ppm.
K. P not greater than 7.0 ppm.
L. Suspended Solids not greater than 250 ppm.
M. BOD by Weight not greater than 200 ppm.
N. Chloroform extractable substances not greater than 50 ppm.

Pretreatment Facility Outline:

The CLEVITE pretreatment facility employs six basic operations:

1. Oil and Water Separation.
2. Chemical Coagulation.
3. Solids Settling in Stabilization Lagoons.
4. Final Chemical Treatment.
5. Pressure Filtration.
6. Final pH Adjustment.

Oil and Water Separation:

All process wastewaters are collected into two streams that discharge into the oil water separator for removal of free oils. The separator has a working capacity of approximately 5,000 gallons and utilizes a continuous drive belt skimmer. Effluent water is discharged through a submerged conduit, thus preventing the passage of surface liquid. The wastewater flows by gravity from the separator to the low pressure sump pit inside the wastewater treatment building.

Chemical Coagulation:

Chemical treatment occurs in the low pressure sump where 50 % sodium hydroxide is added to adjust the pH of the stream. Lime is added as a coagulant to precipitate the zinc and phosphorus. All the necessary plumbing and equipment is in to place to add alum and polymer as an alternate treatment. The feeding of caustic soda is regulated by a pH controller that continually samples water in the sump pit. A 300 gallon reservoir of the caustic soda insures minimum down time, and a low pH condition will trigger alarms in the facility and the plant. A lime solution is fed into the mixing zone of the low pressure sump from a constantly agitated storage tank. An alarm will trigger when the liquid level in the lime tank runs low.

Solids Settling in Stabilization Lagoons:

Chemically treated wastewater is pumped to a series of three stabilization lagoons that provide residence time for solids removal (including precipitated zinc and phosphorus), biological oxidation of residual organic matter (BOD removal), additional phosphorus removal through eutrophic activity (algal growth and respiration), and for the accumulation of residual free and emulsified oils in Lagoon #1. The approximate detention time in Lagoon 1 is 33 days, Lagoon 2 is 50 days, and Lagoon 3 is 74 days based on a flow of .130 MGD. The lagoons have a combined volume of approximately 19.9 million gallons.

The large volume capacity of the lagoons serve to provide equalization for both hydraulic flow and chemical upsets that may enter the treatment system. Water flows by gravity through the lagoon system and discharge may be restricted from each lagoon to prevent contamination or discharge of unacceptable waters. Flow

control gates are located between Lagoons 1 and 2 and Lagoons 2 and 3. The high pressure pumping station may be shut down to prevent discharge from Lagoon 3.

Final Chemical Treatment:
Wastewater from Lagoon #3 is then pumped back to the treatment building for final chemical treatment and filtration before discharge. Four chemical feed ports provide the option of chemical treatment using alum, sodium hydroxide, lime, polymer, or other chemicals as needed. A 5,000 gallon detention tank provides reaction time and acts as a simple clarifier. The tank utilizes a baffle in the center to prevent short circuiting and to aid in mixing. Solids can be bled off the bottom of each compartment in the tank and fed back to the low pressure sump. The treated water may be routed through the pressure filters, or back to the low pressure sump for recycling.

Pressure Filtration:
Wastewater is then passed through a depth filtration system for final solids removal. The system is a dual depth filter with multi-media beds and an automated control valve assembly. An automated and programmable regeneration sequence of purge, scrub, backwash, and rinse is employed to maintain filter efficiency. Backwash water and solids are discharged into the low pressure sump pit for recycling.

Final pH Adjustment:
The filtrate is pH adjusted with sulfuric acid and can be routed through the Badger flow meter for discharge to outfall 001, or back to the low pressure sump for recycling.

A schematic flow diagram of CLEVITE's industrial wastewater is presented in Figure 1.

PRETREATMENT FACILITY OPERATING DATA:

The data provided in this section covers wastewater discharges during May - August of 1990. The major facility improvements were made just prior to this period, thus the data represent the current pretreatment systems capabilities.

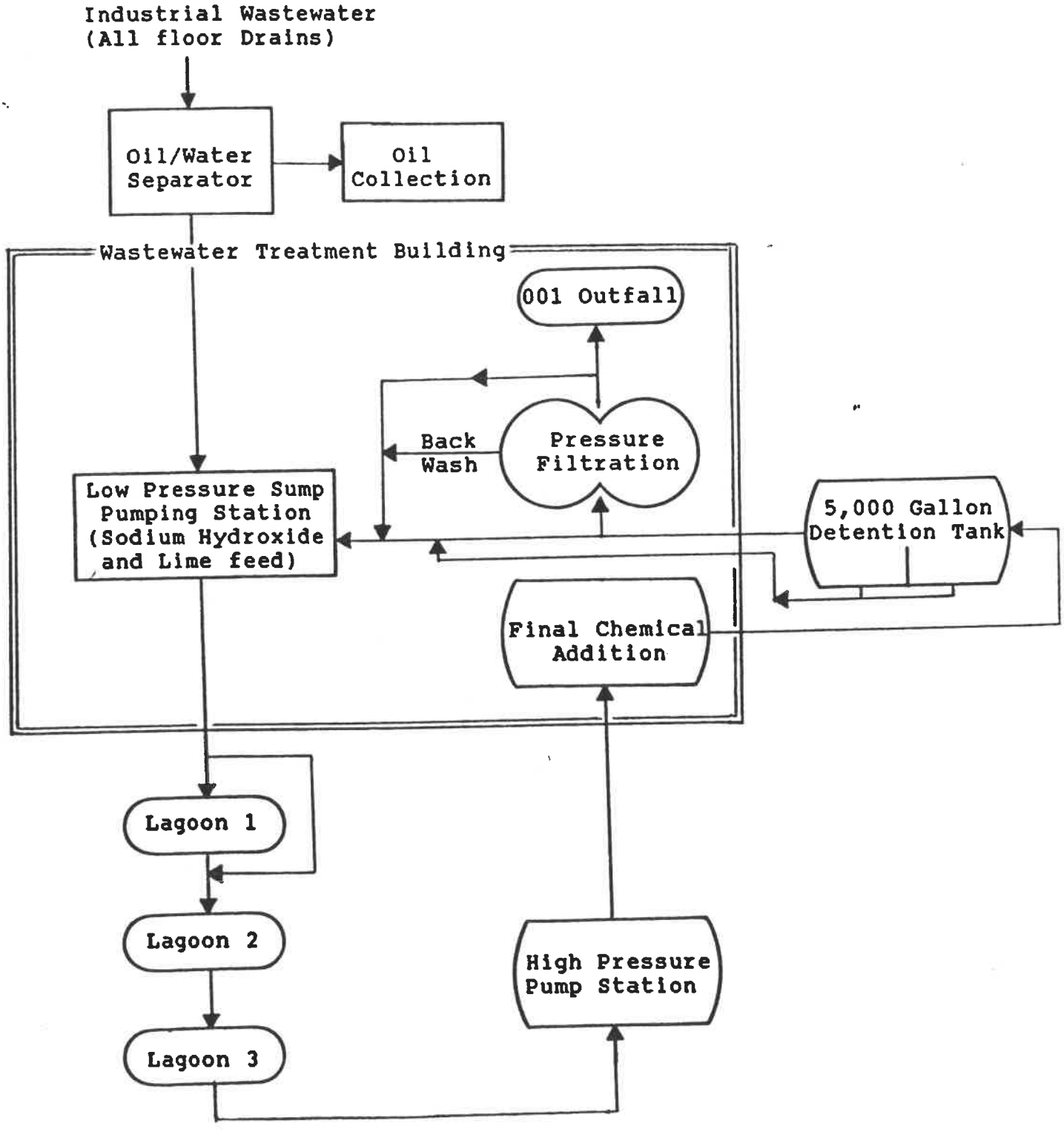
Average Discharge Flow Rates:

Lagoon 3 serves as a reservoir for the pumping station that transfers the wastewater through the final treatment and filtration stages leading to discharge. Hydraulic flow variations in the manufacturing plant's discharge are equalized, thus eliminating hydraulic surges in the pretreatment facility's discharge.

FIGURE 1

CLEVITE-Elastomers Industrial Wastewater
Pretreatment Facility

Schematic Flow Diagram



The pumping station at Lagoon 3 runs continuously during normal operation, thus discharge flow rates remain relatively constant. Factors that influence daily discharge flow rates include: Lagoon water level, Final treatment requirements (increased chemical treatment generates more solids and thus increases filter back pressure), Mechanical problems.

Average daily discharge flow rates are summarized in Table 2.

Table 2

CLEVITE Pretreatment Facility
Average Daily Discharge Rates

May 1990	103,400	GPD
June 1990	182,400	GPD
July 1990	119,000	GPD
August 1990	146,600	GPD

Avg for period May - August
140,000 GPD

Peak discharge during the period was 243,000 GPD which was a constant 169 GPM discharge.

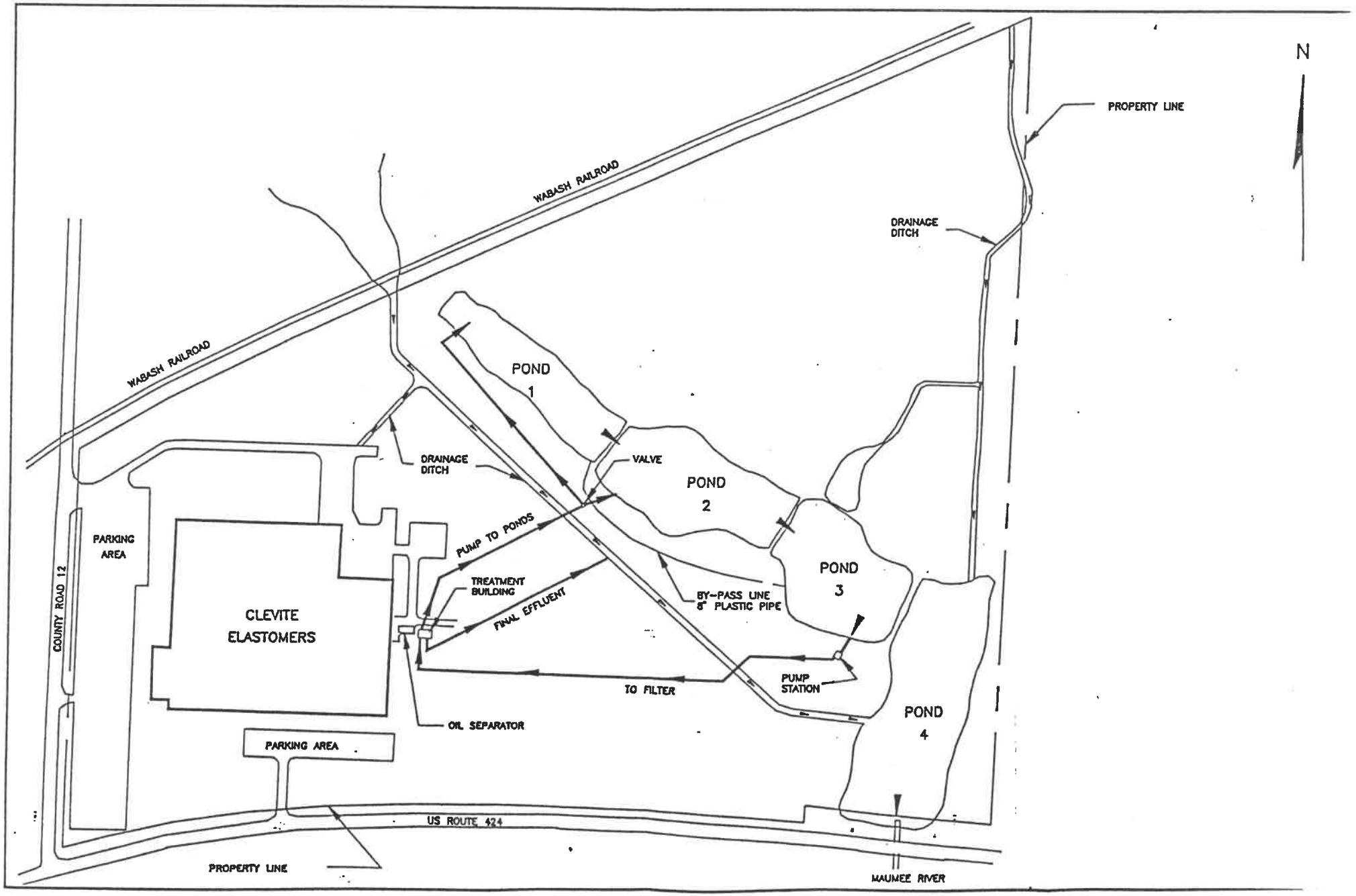
Average Discharge Water Quality:

Water quality data for wastewaters discharged by the CLEVITE pretreatment facility are derived from Monthly Operating Reports submitted to the OEPA. Water testing of grab samples was conducted by Wastewater Management Inc, Cleveland, Ohio. The monthly average values are summarized in Table 3.

Table 3

CLEVITE Pretreatment Facility
Average Water Quality Data

	Total P (mg/L)	Total Zn (ug/L)	Total Pb (ug/L)	BOD (mg/L)	Total O&G (mg/L)	Nonfilterable Residue Tot. (mg/L)
May 1990	2.0	192	<50	11	3	58
Jun 1990	0.8	48	<50	6	7	13
Jul 1990	1.8	126	50	4	4	43
Aug 1990	1.5	100	<50	11	7	30


N
PROPERTY LINE
WABASH RAILROAD
WABASH RAILROAD
DRAINAGE DITCH
POND 1
DRAINAGE DITCH
VALVE
POND 2
PUMP TO PONDS
PARKING AREA
POND 3
TREATMENT BUILDING
BY-PASS LINE 8" PLASTIC PIPE
FINAL EFFLUENT
COUNTY ROAD 12
CLEVITE ELASTOMERS
PUMP STATION
TO FILTER
POND 4
OIL SEPARATOR
PARKING AREA
US ROUTE 424
PROPERTY LINE
MAUMEE RIVER

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September 12, 1990

Roger L. Noblit
Director of Water & Waste Water
City of Napoleon, Ohio
P.O. Box 151
255 W. Riverwiew Avenue
Napoleon, Ohio 43545

Dear Mr. Noblit:

The CLEVITE-Elastomers manufacturing plant has been designed to safe guard against the losses of any materials through spills to the sanitary sewer. All floor drains in the manufacturing plant discharge to the industrial wastewater pretreatment facility. All wastewaters must pass through a series of three stabilization lagoons before being discharged. The large detention time in the lagoon system allows ample time for isolating any deleterious spill thus preventing discharge of contaminated wastewaters.

The CLEVITE stabilization lagoons have a combined volume of approximately 19.9 million gallons. The approximate detention time in Lagoon 1 is 21 days, Lagoon 2 is 32 days, and Lagoon 3 is 48 days based on a flow of .200 MGD. This large volume capacity serves to provide equalization for both hydraulic flow and chemical upsets that may enter the treatment system. In the event of a deleterious spill, Lagoons 1 and 2 may be isolated by closure of their flow control gates, and Lagoon 3 may be isolated by shutting down the high pressure pumping station.

Isolation of the lagoons in the event of a spill prevents the discharge of any contaminated wastewater by the pretreatment facility. The capacity of the lagoons also allows manufacturing operations to continue in limited cases while the contamination is attended to.

CLEVITE, Napoleon's Hazardous Material Contingency Plan, (Including the Spill Prevention Control Contingency Plan), is in draft form. A copy of the HMCP will be forwarded upon completion of the final draft.

Sincerely;

Dennis J. Stelzer Jr

cc: Terry Dunn, City Manager