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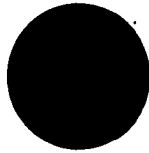
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CONCEPTUAL DESIGN REPORT

- **SURFACE WATER DRAINAGE OPERABLE UNIT**

**Stauffer Management Company
Niagara Falls Site**

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**N.Y.S. DEPT. OF
ENVIRONMENTAL CONSERVATION
REGION 9**

CONCEPTUAL DESIGN REPORT

- **SURFACE WATER DRAINAGE OPERABLE
UNIT**

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Niagara Falls Site**

FEBRUARY 1994

REF. NO. 5072 (4)

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CONESTOGA-ROVERS & ASSOCIATES

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1.0 INTRODUCTION

The former Stauffer Chemical Company Niagara Falls Plant (Site) is located in the Town of Lewiston, New York, immediately north of the Forebay for the Robert Moses Power Plant and east of the Niagara River. The Site location is presented on Figure 1.1.

The former plant Site occupies an area of approximately 20 acres. A schematic Site plan is presented on Figure 1.2. The plant was dismantled in 1980; however, foundations, roadways and rail lines remain. The Site is bounded to the north by the Riverdale Cemetery; to the south by the Forebay for the Robert Moses Power Plant; to the west by the Robert Moses Expressway and the Niagara Gorge; and to the east by properties owned by the New York Power Authority (NYPA) and Niagara Mohawk.

An investigation of the Site was conducted between August 1989 and March 1991, pursuant to an Order on Consent executed by Stauffer Management Co. (Stauffer) and the New York State Department of Environmental Conservation (NYSDEC) in December 1988.

The report entitled "Final Site Investigation Report, Stauffer Management Company, Niagara Falls Site" (Final Site Investigation Report) and dated April 1991, presents information obtained during field activities at the Site and an evaluation of environmental Site conditions. A Risk Assessment (Endangerment Assessment) is included in Section 7.0 of the Final Site Investigation Report.

Following review of the Final Site Investigation Report, NYSDEC requested installation and monitoring of soil gas wells northwest of the Site. The report entitled, "Supplemental Site Investigation Report, Stauffer Management Company, Niagara Falls Site" and dated August 1991 presents the data for an ongoing soil gas monitoring program northwest of the Site.

Following NYSDEC approval of the Final Site Investigation Report, a Feasibility Study (FS) was conducted to define

remedial objectives for the Site and to evaluate potential remedial alternatives. The results of this study are presented in the document entitled "Feasibility Study, Stauffer Management Company, Niagara Falls Site", dated September 1991.

Upon review of the FS, NYSDEC requested that additional remedial alternatives be examined other than those presented in the FS. Three additional remedial alternatives were evaluated in the report entitled "Description and Evaluation of Supplemental Remedial Alternatives", dated February 1992.

The selected remedial alternative is identified in the Record of Decision for the Site (Site Number 932053) issued by the New York State Department of Environmental Conservation (NYSDEC), dated July 1992, and includes:

- In situ vacuum extraction of contaminated soils;
- Bedrock groundwater extraction with on-Site treatment;
- Surface water drainage controls over the Plant Site; and
- DNAPL extraction from bedrock with on-Site or off-Site treatment.

Upon selection of the remedial alternative, the report entitled "Remedial Design Work Plan, Stauffer Management Company, Niagara Falls Site" (RD Work Plan) was prepared to detail the various activities to be performed under the remedial program for the Site.

The purpose of the RD Work Plan is to provide a framework for implementation of the remedial design and remedial action. The RD Work Plan was incorporated into an Order on Consent (Order) for the Site executed by Stauffer and the New York State Department of Environmental Conservation (NYSDEC). The effective date of the Order is July 19, 1993.

As stated in the RD Work Plan, the remedial program will be implemented in four phases:

- i) Design Data Collection;
- ii) Remedial Design;
- iii) Implementation and Construction; and
- iv) Operation, Maintenance, Monitoring and Reporting.

This report entitled "Conceptual Design Report, Surface Water Drainage Operable Unit, Stauffer Management Company, Niagara Falls Site" was prepared by Conestoga-Rovers & Associates (CRA) to describe various activities performed under the Design Data Collection phase of the remedial program and to present the Conceptual Design for this remedial component for the Site. The Design Data Collection activities and the Conceptual Design presented herein were performed in accordance with the RD Work Plan.

The Conceptual Designs for the Groundwater Operable Unit, the DNAPL Operable Unit and the Soils Operable Unit are being submitted under separate covers.

The Design Data Collection activities performed by CRA include:

- i) an aquifer pumping test;
- ii) an on-Site stormwater drainage system investigation;
- iii) additional monitoring well installation and sampling; and
- iv) well gas sampling and
- v) sanitary sewer investigation

The Surface Drainage Operable Unit at the Site involves the control and discharge of all surface waters at the Site. The proposed remedial action will involve the implementation of various controls to divert surface drainage from the Site.

At present, stormwater flow at the Site is collected by an on-Site stormwater drainage system. As specified in the RD Work Plan, an investigation of the drainage system was performed to evaluate the condition of the system in order to determine appropriate abandonment procedures.

Details of the on-Site stormwater drainage system investigation and a conceptual design for the proposed remedy of the Surface Drainage Operable Unit, are outlined in the following Report.

2.0 ON-SITE STORMWATER DRAINAGE SYSTEM INVESTIGATION

Between December 7 and 9, 1993, CRA personnel investigated the on-site stormwater drainage sewer system at the Site. The investigation was conducted pursuant to Appendix G of the RD Work Plan. The results of the investigation are summarized below.

In total, 21 manhole/catchbasin structures were identified at the Site. The location of these manholes/catchbasins are shown on Plan 1. Each of these structures were located using the following procedure:

- i) visually inspect area for signs of existing catchbasins/manholes;
- ii) determine an approximate location using ties based on scale measurements from existing drawings; or
- iii) use a metal detector to locate rim, grate or other metal remnants.

The 21 catchbasins located include the five catchbasins that were to be identified as part of the Storm Sewer Investigation presented in Appendix G of the RD Work Plan (see Plan G.1).

In an effort to locate additional manholes/catchbasins, CRA contracted Severson Environmental Services of Niagara Falls, New York to perform test pit excavations. Test pits were excavated in select locations where catchbasins were suspect to be located based on reference drawings. No additional catchbasins/manholes were identified by the test pit excavations.

A description of each of the identified catchbasins including size, condition and pipe diameters is presented in Table 2.1.

On December 21, 1993, Niagara Boundary and Mapping Services of Niagara Falls, New York surveyed each of the 21 identified catchbasins for location and invert elevations. Invert elevations for each catchbasin are also provided in Table 2.1.

Sample 15 + 18
for Full Scan.

Four catchbasins at the east end of the Site (CB 15, CB 16, CB 17 and CB 18) exhibited strong organic chemical odors. Further inspection indicated an oily sheen on the standing water inside each of the catchbasins and a dark oily substance within the sediments present in each catchbasin.

The investigation described above has provided sufficient data to design an appropriate remedial action for the Surface Drainage Operable Unit at the Site.

3.0 CONCEPTUAL DESIGN

Based on the results of the on-Site stormwater drainage system investigation presented above and a review of existing Site surface characteristics, the proposed conceptual design for the Surface Drainage Operable Unit at the Site includes:

- blockage of the existing storm sewer system;
- grading of the entire Site, with the exception of the existing building foundations, to promote surface water runoff;
- provision of sheet runoff to the south and west of the plant; and
- placement six inches of topsoil over graded areas and revegetating.

Details of the proposed conceptual design for the Surface Drainage Operable Unit are presented in the following subsections.

3.1 ABANDONMENT OF EXISTING ON-SITE STORMWATER DRAINAGE SYSTEM

The following remedy for the existing on-Site stormwater drainage system has been selected after review of the on-Site stormwater drainage system investigation data. The measures to be implemented are discussed below ^{and} are illustrated on Plan 2.

- i) The four catchbasins at the east end of the Site (CB 15, CB 16, CB 17 and CB 18) that exhibited elevated chemical presence will be grouted to the ground surface. The pipes entering the catchbasins will be plugged prior to grouting the catchbasins. *Sample first possibility clean*
- ii) The remaining catchbasins and manhole 4 will be filled with compacted imported fill to eliminate infiltration to the stormwater drainage system. *complete a flow line to w. of MH = 4 use clay*
- iii) Off-Site flow will be eliminated at the manhole in the fenced-in enclosure where the two main pipes from the Site drainage system

(18-inch diameter and 24-inch diameter) enter the manhole from the southeast as shown on Plan 2. The two inlet pipes will be excavated upstream of the manhole and flow from both the pipes and the sewer bedding will be blocked with a clay plug.

[^]
compacted

- iv) The existing tile drains entering the drainage ditch along the southern boundary of the Site will be abandoned in place by plugging the outlets into the drainage ditch with a mortar plug. The tile drains will then be buried during Site grading.

This remedy will prevent stormwater from entering the stormwater drainage system, will prevent any groundwater that infiltrates into the abandoned sewer pipes from leaving the Site and will prevent groundwater from flowing off Site along the bedding of the abandoned sewer pipes.

3.2 SITE GRADING PLAN

The Site will be regraded to promote sheet flow surface water runoff. A conceptual site grading plan is presented on Plan 3. This grading plan was designed to promote runoff toward the south and west to take advantage of existing ground surface conditions. Grading will also be conducted in the soil remediation areas to promote surface water runoff from this area. Slopes were designed to be greater than 0.5 percent to promote runoff and less than 5 percent to reduce soil erosion. Soil cuts were reduced as much as possible.

Four areas of the Site will require placement of fill. The area near the east Site boundary requires fill to eliminate low areas where surface water can accumulate. Fill will also be required to eliminate the low area south of catchbasin CB 13. The proposed ground elevation in this area is three to four feet higher than the existing ground surface. A third area will be along the railroad tracks that parallel the twin stormwater drainage sewers. The proposed grading will also require the placement of fill to eliminate the

drainage ditch south of the Site and to promote southward sheetflow runoff in this area.

Grading will also be conducted in the proposed soil remediation areas prior to installation of the soil vapor extraction systems, to promote surface water runoff and minimize infiltration.



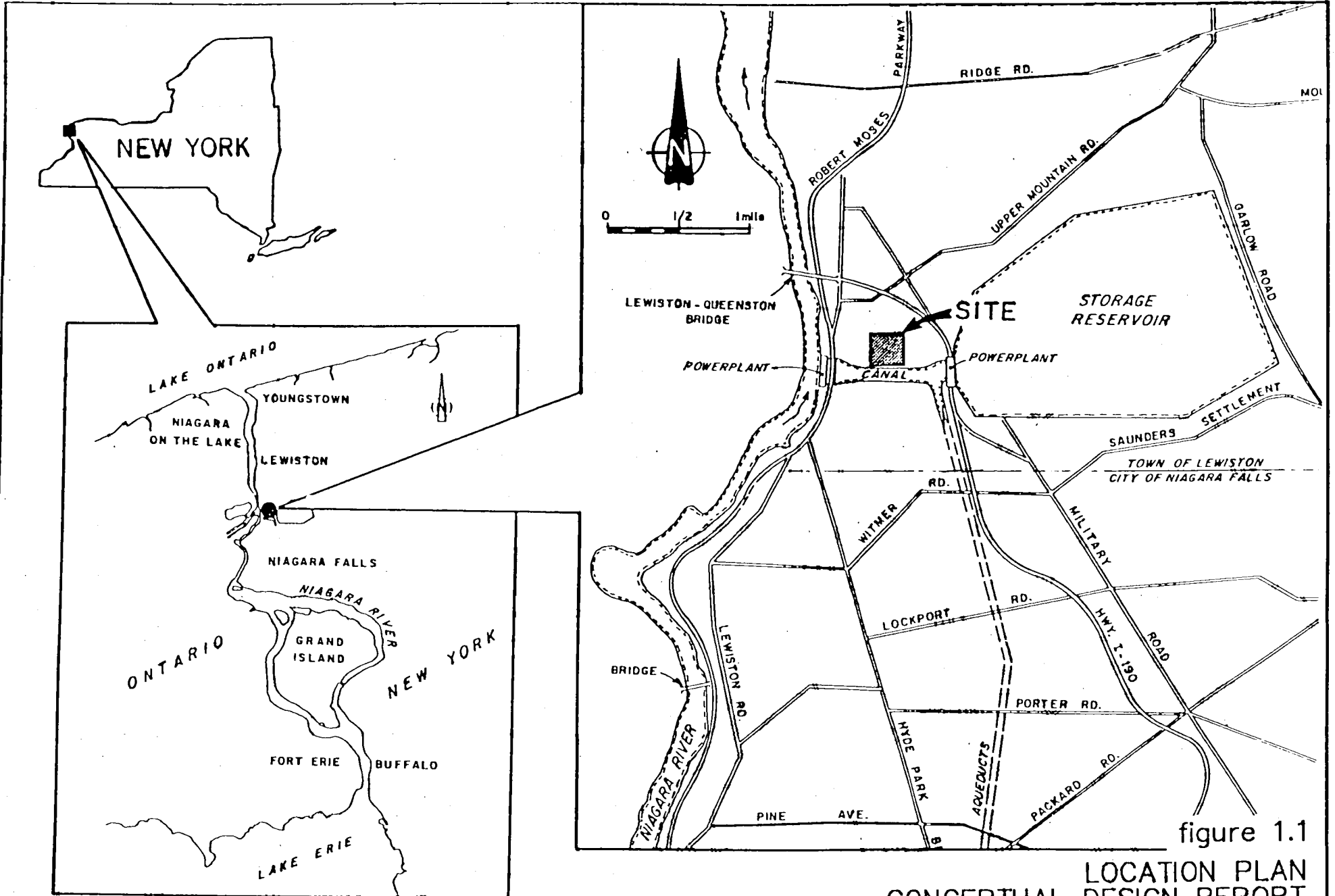


figure 1.1
 LOCATION PLAN
 CONCEPTUAL DESIGN REPORT
 Stauffer Management Co.

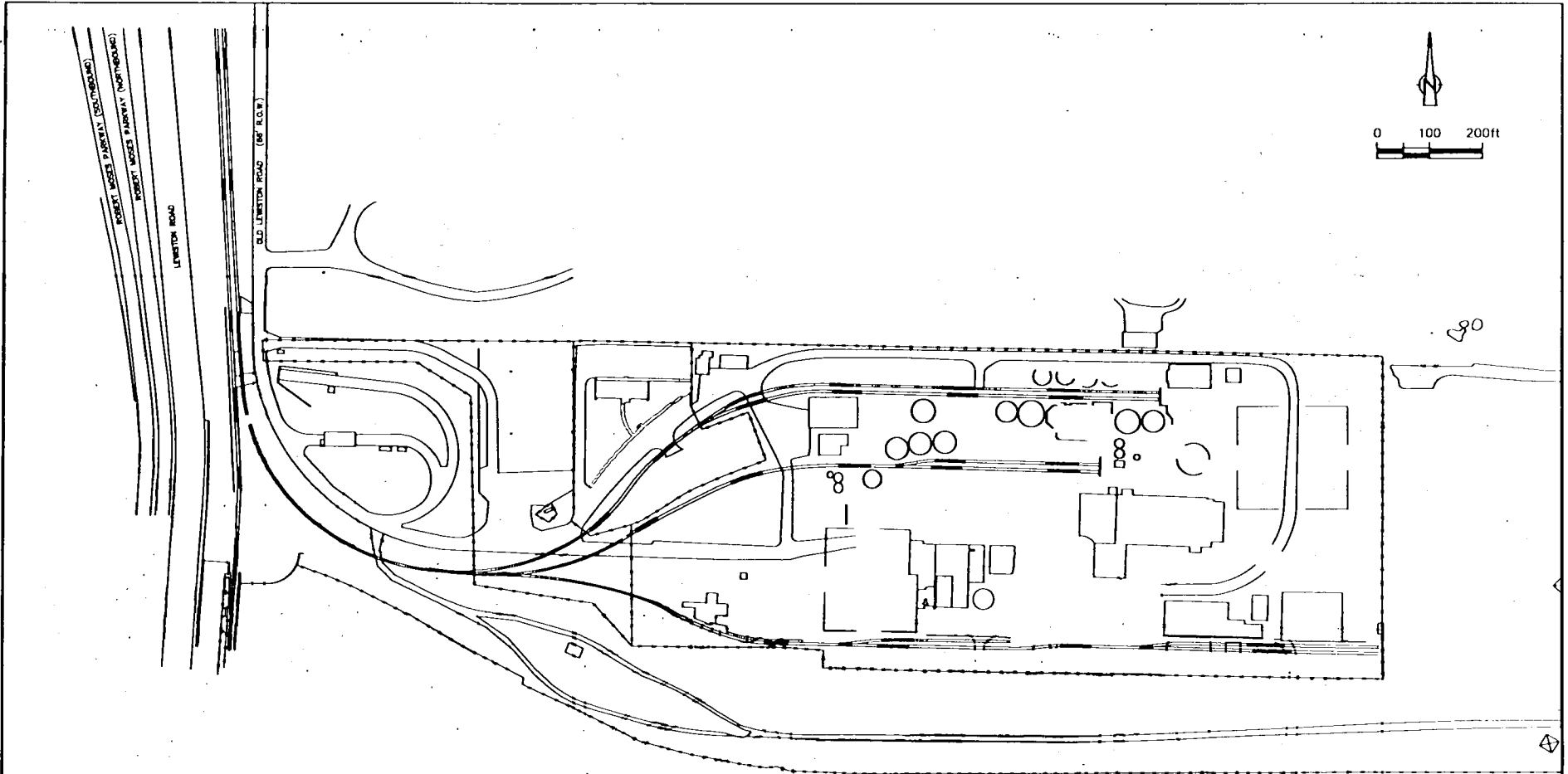


figure 1.2
 SITE PLAN
 CONCEPTUAL DESIGN REPORT
Stauffer Management Co.

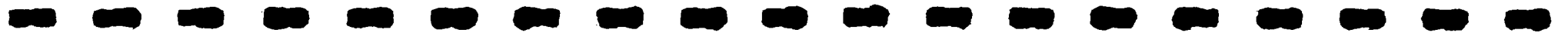


TABLE 2.1

**CATCHBASIN INSPECTION SUMMARY
STAUFFER MANAGEMENT COMPANY
LEWISTON, NEW YORK**

| <i>MH/CB</i> | <i>Pipe Diameter (in)</i> | <i>Direction</i> | <i>Depth to Invert (in)</i> | <i>Invert Elevation (ft AMSL)</i> | <i>Comments</i> |
|--------------|-------------------------------|------------------|---------------------------------|---|---|
| 1 | 18 | W | 37 | 584.51 | 6'x3.5' concrete catchbasin |
| | 14 | E | 32 | 584.67 | |
| | 15 | NE | 31 | 584.66 | |
| 2 | 16 | NNW | 28 | 585.65 | No structural catchbasin, open pipes only |
| | 16 | SSE | 28 | 585.48 | |
| 3 | 10 | W | 22 | 586.63 | No structural catchbasin |
| | 10 | S | 22 | 586.97 | |
| 4 | 14 | E | 30 | 586.06 | 3'I.D. clay manhole, no grate |
| | 14 | W | 30 | 585.96 | |
| 5 | 14 | E | 35 | 588.88 | 2.5'x2.5' catchbasin, 12" riser from main pipe, suspect connection to CB4 |
| | 14 | W | 35 | 588.88 | |
| 6 | 8 | S | 32 | 590.93 | 2.5'x2.5' catchbasin |
| | 12 | E | 36 | 587.93 | |
| | 12 | W | 36 | 587.93 | |
| 7 | 12 | S | 32 | 592.35 | 3.5'x3.5' catchbasin |
| | 12 | E | 36 | 591.96 | |
| | 12 | E | 38 | 591.93 | |
| | 14 | W | 44 | 592.22 | |
| 8 | -- | -- | -- | -- | Could not locate with ties, metal finder or excavator |
| 9 | 8 | E | 34 | 596.18 | No structural catchbasin, a footer has been cast-in-place on top of pipe, broken during construction |
| | 8 | W | 34 | 596.18 | |
| 10 | 10 | W | 30 | 598.44 | 2.5'x2.5' catchbasin |
| | 8 | E | 28 | 598.49 | |
| 11 | 12 | NW | 18 | 604.11 | 1.5'x1.5' catchbasin |
| | 12 | SE | 18 | 604.42 | |
| | 6 | E | 18 | 604.39 | |
| 12 | 12 | NW | 18 | 605.50 | 1.5'x1.5' catchbasin |

TABLE 2.1

**CATCHBASIN INSPECTION SUMMARY
STAUFFER MANAGEMENT COMPANY
LEWISTON, NEW YORK**

| <i>MH/CB</i> | <i>Pipe Diameter (in)</i> | <i>Direction</i> | <i>Depth to Invert (in)</i> | <i>Invert Elevation (ft AMSL)</i> | <i>Comments</i> |
|--------------|-------------------------------|------------------|---------------------------------|---|--|
| 13 | 12 | E | 18 | 602.20 | 8" riser from main pipe, no CB |
| | 12 | W | 18 | 602.20 | |
| 14 | -- | -- | -- | -- | Could not locate with ties, metal finder or excavator |
| 15 | 12 | S | 44 | 605.97 | 2'x3' brick catchbasin Strong Chemical Odor |
| | 12 | W | 44 | 606.01 | |
| 16 | 12 | S | 34 | 606.96 | 2'x3' brick catchbasin Strong Chemical Odor |
| | 12 | N | 34 | 607.01 | |
| | 8 | S | 33 | 607.21 | |
| 17 | 12 | N | 27 | 608.03 | 2'x3' brick catchbasin Strong Chemical Odor |
| | 8 | S | 23 | 608.20 | |
| 18 | 8 | SW | 18 | 608.98 | 2'x3' brick catchbasin Strong Chemical Odor |
| | 8 | N | 20 | 608.61 | |
| | 8 | E | 20 | 608.73 | |
| 19 | -- | -- | -- | -- | Could not locate with ties, metal finder or excavator |
| 20 | -- | -- | -- | -- | Could not locate with ties, metal finder or excavator |
| 21 | 12 | E | 32 | 602.73 | 3'x3' catchbasin |
| | 12 | W | 32 | 602.73 | |
| 22 | 12 | E | 30 | 603.30 | No catchbasin, only broken pipe beneath steel cover |
| | 12 | W | 30 | 603.30 | |
| 23 | 12 | N | 40 | 603.79 | 2.5'x2.5' catchbasin |
| | 12 | E | 40 | 603.53 | |
| | 12 | W | 40 | 603.76 | |
| 24 | 12 | S | 44 | 604.91 | 3'x3' catchbasin |
| | 12 | N | 44 | 605.11 | |
| 25 | 12 | S | 30 | 605.17 | 2'x4' catchbasin |
| | 12 | W | 25 | 605.71 | |

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