STATE OF NEW YORK: DEPARTMENT OF ENVIRONMENTAL CONSERVATION

In the Matter of the
Development and Implementation
of a Remedial Design/Remedial Action for an
Inactive Hazardous Waste Disposal
Site, Under Article 27, Title 13,
and Article 71, Title 27 of the
Environmental Conservation Law
of the State of New York by
by

Remediation and Liability Management Company, Inc.

Respondent.

ORDER
ON
CONSENT
INDEX # D7-0008-97-06

Site Code # 734044

The New York State Department of Environmental Conservation (the "Department") and the Remediation and Liability Management Company, Inc. ("Respondent") hereby agree to the making and entry of this Administrative Order on Consent ("Consent Order").

WHEREAS,

1. . The Department is responsible for enforcement of Article 27, Title 13 of the Environmental Conservation Law of the State of New York ("ECL"), entitled "Inactive Hazardous Waste Disposal Sites." This Order is issued pursuant to the Department's authority under, inter alia, ECL Article 27, Title 13 and ECL 3-0301.

2. A. Pursuant to ECL 27-1313.3.a., whenever the Commissioner of Environmental Conservation (the "Commissioner") "finds that hazardous wastes at an inactive hazardous waste disposal site constitute a significant threat to the environment, he may order the owner of such site and/or any person responsible for the disposal of hazardous wastes at such site (i) to develop an

inactive hazardous waste disposal site remedial program, subject to the approval of the department, at such site, and (ii) to implement such program within reasonable time limits specified in the order."

B. Any person under order pursuant to ECL § 27-1313.3.a., has a duty imposed by ECL Article 27, Title 13 to carry out the remedial program committed to under such order. ECL § 71-2705 provides that any person who fails to perform any duty imposed by ECL Article 27, Title 13 shall be liable for civil, administrative and/or criminal sanctions.

C. The Department also has the power, inter alia, to provide for the prevention and abatement of all water, land, and air pollution. ECL § 3-0301.1.i.

3. Respondent is a corporation organized and existing under the laws of the State of Michigan and is doing business in the State of New York. Respondent is a wholly owned subsidiary of General Motors Corporation ("GM"). GM owns a facility, formerly operated by its Inland Fisher Guide division, in the Town of Salina, County of Onondaga, State of New York, which was used for manufacturing automobile parts until December of 1993 (the "facility"; formerly known as GM: Fisher Guide). The location of the facility is indicated on the map attached and hereby incorporated into this Consent Order as Exhibit A.

4. The GM facility began operation in the 1950s and ceased manufacturing operations in December of 1993. During that time, the GM facility discharged process wastewater and storm water into Ley Creek (the "wastewater"). Testing of these waters on and around the facility has shown and storm water continues to show contamination by polychlorinated biphenyls ("PCBs") (Aroclors 1242 and 1248) and other hazardous substances. Under SPDES permit # NY-0000566, effective September 25, 1997, GM must comply with specified interim effluent PCB limits in the

discharge of wastewater from the GM facility. GM entered into an Order of Consent (Index #D-7-0001-97-06) pursuant to which it agreed to undertake remedial actions to comply with final PCB effluent limits specified in the permit.

Site Description

5. A section of Ley Creek north of the GM facility runs parallel with Factory Avenue flowing in a westerly direction until it empties into Onondaga Lake. Beginning in 1970, Onondaga County conducted channel improvements by dredging the sediments of Ley Creek in an effort to control periodic flooding. The dredging operations continued for a period of years and were concluded sometime subsequent to a September 1975 contract between Onondaga County and an independent construction company. During the dredging operations, sediment was excavated and deposited in piles primarily along the south bank of Ley Creek between Ley Creek and Factory Avenue (the "Site").

6. The Site is approximately 19 acres in size and is bounded by Factory Avenue on the south and Ley Creek to the north in the Town of Salina, Onondaga County. The New York State Thruway is located immediately to the north of Ley Creek. The eastern limit of the Site is Townline Road and the western limit is located approximately 4,300 feet downstream. A fence runs in an east-west direction along the south side of the Site approximately 10 feet north of Factory Avenue. However, there is no fence restricting access along the south bank of Ley Creek. A map of the Site is attached and hereby incorporated into this Order as Exhibit B.

7. The Site is an inactive hazardous waste disposal site, as that term is defined by ECL Section 27-1301(2), and it is listed in the Registry of Inactive Hazardous Waste Disposal Sites in New York State as Site Number 7-34-044. On November 27, 1987, the Department classified

the Site as a Classification "2" pursuant to ECL Section 27-1305(4)(b), which means that the Site presents a "significant threat to the public health or environment - action required."

Site Investigation

8. Pursuant to an Order on Consent dated August 12, 1985 (Case # 7-0383) between the Department and GM, GM conducted an investigation of PCB contamination in soil and groundwater in the Ley Creek Area. On April 24, 1987, GM submitted a Report to the Department entitled "Hydrogeologic Investigation of Fill Area Along Ley Creek," dated April 1987 and prepared by O'Brien & Gere Engineers, Inc. ("O'Brien & Gere"). The Report concluded, among other things, that "[h]igh concentrations of PCB's were identified in soil samples from all soil borings (OBG-1 through OBG-7C)," a distance of approximately 1300 feet. The level of PCB contamination was reported in the range of less than detectable to 466 parts per million (ppm).

9. As a result of the 1987 investigation, the Department determined that a more comprehensive evaluation of the Ley Creek dredge spoil area would be necessary to define the extent of PCBs along the north and south banks of Ley Creek and to evaluate any impacts to public health and the environment. GM completed a Field Investigation Report ("FIR") of the Site in 1989 which included sampling of groundwater, dredged material/soil, sediment, and surface water.

10. Based on the FIR, the Department determined that GM needed to perform a Remedial Investigation/Feasibility Study ("RI/FS") at the Site to complete the characterization of the areal and vertical extent of contamination present and to evaluate alternatives for remediation of the Site.

11. GM and the Department entered into an Administrative Order on Consent for performance of an RI/FS at the Site, effective May 23, 1991 (Index # A7-0239-90-07).

12. On January 23, 1997, the Department approved GM's final Feasibility Study Report for the Site, dated October 1996.

13. On February 6, 1997, the Department, in consultation with the New York State Department of Health, issued a Proposed Remedial Action Plan ("PRAP") for the Site which consisted of the excavation and off-site disposal of dredged materials/soils with PCB concentrations greater than or equal to 50 ppm and the consolidation and covering of the remaining volume of materials with PCB concentrations exceeding 1 ppm at the surface and 10 ppm subsurface.

14. On March 28, 1997, following a period of public comment, the Department selected a final remedial alternative for the Site in a Record of Decision ("ROD"). The ROD, which is attached hereto as Exhibit C, is hereby incorporated as an enforceable part of this Order. The United States Environmental Protection Agency ("EPA") concurred with the Department's March 28, 1997 ROD by letter dated February 9, 1998 from Jeanne M. Fox, the EPA Region II Administrator, to John Cahill, the Department Commissioner. Attached as Exhibit D to this Order are copies of the EPA's February 9, 1998 concurrence letter, William McCabe's letter to Michael O'Toole, Jr. dated January 8, 1998, and Michael O'Toole's response letter to William McCabe dated January 20, 1998.

15. The ROD for the Site addresses the piles of dredged materials/soils and contaminated soil located along the banks of Ley Creek in the area designated as the Site. While the groundwater, surface water and sediments in the Creek were also the subject of sampling during the Ley Creek

RI/FS, remedial alternatives for these media will be addressed as part of the comprehensive RI/FS currently being undertaken at the adjacent GM facility pursuant to Order on Consent Index #D-7-0001-97-06.

16. Respondent represents that, at the time of the issuance of the ROD, the property owners of the Site were the County of Onondaga (the "County"), the Niagara Mohawk Power Corporation, The Pfaltzgraff Co., and the New York State Thruway Authority. On March 16, 1999, the County conveyed its parcel within the Site to the Respondent and this is reflected on the Site map attached as Exhibit B. The County uses and maintains a 4-foot diameter sanitary sewer that runs in an east-west direction along the southern portion of the Site, and the County retained ownership of the pipeline when it conveyed its Site parcel to Respondent. Respondent intends to seek agreement with the other property owners of the Site to convey to Respondent their respective property interests.

Designation as NPL Subsite

17. Ley Creek is a tributary of Onondaga Lake. The Onondaga Lake Site was added to the National Priorities List ("NPL") on December 16, 1994. The Onondaga Lake NPL Site is composed of the Lake itself, its tributaries and the upland hazardous waste sites which have contributed or are contributing contamination to the Lake (subsites).

18. The Department has determined that PCBs are hazardous substances under CERCLA and are listed hazardous wastes under ECL Article 27, Title 9. The confirmed presence of PCBs at the Site and the proximity and discharge of PCBs to Ley Creek establishes that the hazardous substance contamination at the Site represents a release or threat of release of hazardous substances to the Onondaga Lake NPL Site pursuant to §§ 101 and 104 of CERCLA. By letter

dated June 23, 1997, the Department and EPA notified GM of their determination that the Ley Creek PCB Dredgings Site is a subsite.

19. The Department and Respondent agree that the goals of this Order are for Respondent to (i) develop and implement, in accordance with the ROD, an inactive hazardous waste disposal site remedial program ("Remedial Design/Remedial Action") for the Site that shall include design and implementation, and operation, maintenance, and monitoring of the selected remedial alternative; and (ii) reimburse the Department's administrative and oversight costs as set forth in Paragraph IX of this Consent Order.

20. Respondent waives its right to any hearing provided for by law, and consents to the issuance and entry of this Consent Order and agrees to be bound by its terms. Respondent's consent to and compliance with this Consent Order does not constitute, and shall not be construed as, Respondent's admission of liability or an admission by Respondent of law or fact or the applicability of any law to the conditions at the Site, the GM facility or the Onondaga Lake NPL Site. Respondent consents to and agrees not to contest the authority or jurisdiction of the Department to issue or enforce this Consent Order, and agrees not to contest the validity of this Consent Order or its terms.

NOW, having considered this matter and being duly advised, IT IS ORDERED THAT:

I. Remedial Design

A. The Respondent shall submit to the Department a remedial design to implement the remedial alternative for the Site selected by the Department in the ROD (the "Remedial Design"). To satisfy this requirement, the Respondent has submitted the following documents:

(1) Remedial Design ("RD") Report (February 1999, O'Brien & Gere), updated to include the following documents:

a. Revised pages submitted under cover of O'Brien & Gere's letter to the Department dated March 22, 1999;

b. O'Brien & Gere's letter to the Department dated April 21, 1998, including enclosures regarding the New York State Office of Parks, Recreation, and Historic Preservation correspondence (see Appendix D to the RD Report); and

c. Respondent's letter dated February 5, 1999, regarding Respondent's proposed wetland mitigation plan (see Exhibit E to the RD Report).

A copy of the RD Report, updated to include the documents referenced in subparagraphs I.A.(1) a. - c., is attached as Exhibit E to this Order and it is hereby incorporated as an enforceable part of this Order.

(2) Contract Drawings (February 1999, O'Brien & Gere), updated to incorporate the revised sheets submitted to the Department under cover of O'Brien & Gere's letter dated March 22, 1999.

(3) Technical Specifications and Special Provisions (February 1999, O'Brien & Gere), updated to include the revised pages submitted to the Department under cover of O'Brien & Gere's letter dated March 22, 1999.

(4) Hydraulic Analysis and Floodplain Assessment Report (February 1999, O'Brien & Gere).

(5) Wetland Delineation Report (January 1998, O'Brien & Gere).

(6) Wetland Assessment Report (May 1998, O'Brien & Gere).

(7) Revised Former Drainage Swale Evaluation (June 18, 1998 letter, O'Brien & Gere).

B. The O'Brien & Gere documents set forth at paragraph I.A.(1)-(7) of this Order and the following documents shall be hereinafter referred to under this Order as the "Remedial Design Documents:"

(1) May 14, 1998 letter from the Department's Wildlife Resources Center, regarding endangered species;

(2) May 18, 1998 letter from the United States Department of the Interior, regarding endangered species; and

(3) August 28, 1998 letter from the United States Army Corps of Engineers, authorizing the implementation of the Department-approved remedial alternative set forth in the ROD under Nationwide Permit #38.

The Remedial Design Documents are hereby incorporated into and made an enforceable part of this Order.

C. By letter to Respondent, dated June 30, 1999, the Department conditionally approved the Remedial Design and authorized Respondent to proceed with the implementation of the Remedial Design (the "Remedial Construction"). A copy of the Department's June 30, 1999

letter is attached as Exhibit F to this Order. Notwithstanding the foregoing, the Remedial Design shall also include and the Respondent shall remain obligated to submit the following:

(1) a revised time schedule to implement the Remedial Design containing the elements set forth in Section 8 of the RD Report. The time schedule shall be prepared by the Remedial Action ("RA") Contractor and submitted by the Respondent to the Department prior to the commencement of Remedial Construction;

(2) the parameters, conditions, procedures, and protocols to determine the effectiveness of the Remedial Design, including a schedule for periodic sampling of groundwater monitoring wells to be submitted to the Department after the completion of Remedial Construction. This shall be provided as a part of the Operation, Maintenance and Monitoring Plan ("O&M Plan"), which is to be submitted by the Respondent in accordance with paragraph III.C of this Order. The number, selection and placement of the groundwater monitoring wells and the monitoring schedule shall be evaluated concurrently with the performance of the Remedial Investigation for the Ley Creek Deferred Media under the Department's RI/FS Order on Consent with GM (Index #D-7-0001-97-06). However, the evaluation of the appropriate data to determine the effectiveness of the Remedial Design set forth and required herein remains the

obligation of the Respondent pursuant to the terms and conditions of this Order;

(3) a contingency plan to be implemented if any element of the Remedial Design fails to achieve any of its objectives or otherwise fails to protect human health or the environment. The Respondent shall submit the contingency plan to the Department as a part of the O&M Plan under paragraph III.C of this Order;

(4) a copy of the health and safety plan which is to be prepared by the RA Contractor for the protection of persons at and in the vicinity of the Site during Remedial Construction. A copy of the plan, which is to be prepared in accordance with 29 CFR 1910 by a certified health and safety professional, shall be submitted by the Respondent to the Department prior to the commencement of Remedial Construction; and

(5) an approvable wetland mitigation plan in accordance with the terms of the ROD and paragraph I.D of this Order.

D. 1. Under cover of its letter dated February 5, 1999, Respondent submitted to the Department a proposed wetland mitigation plan whereby it offered to pay the sum of $30,000 for use by the Department for a wetland restoration project on the shore of Onondaga Lake at the mouth of Ley Creek (the "Ley Creek Project Site"). The suitability of this area for the creation of wetlands is under review by the Department's Region 7 Office and a site characterization study may be performed in connection with wetland permits issued by the

Department and the Army Corps of Engineers ("Army Corps") to the County and the Central New York Regional Transportation Authority.

2. Respondent shall monitor the progress of the site characterization study and submit periodic written status reports to the Project Manager identified at paragraph XIII.E of this Order. Until the site characterization study of the Ley Creek Project Site is complete, the Respondent shall submit its reports not less frequently than every six (6) months, with the first report due on September 15, 1999.

3. If the site characterization study and corresponding report are completed, the Respondent shall, within 30 days of the submittal of the report to the Department's Region 7 Office, notify the Project Manager and request a copy of the report. The Department's Region 7 Office and the Army Corps may evaluate the findings of the site characterization report to determine if the Ley Creek Project Site is suitable for wetland use. The Respondent has requested that it be notified in writing by the Department's Region 7 Office if and when the Army Corps and the Department have made a determination on this issue. The date of Respondent's receipt of a writing indicating the Army Corps and the Department's consensus determination on this issue shall be referred to herein as the "Date of Notification".

a. If the Ley Creek Project Site is found to be appropriate for wetland use, the Respondent shall submit to the Department for approval a corresponding wetlands mitigation proposal ("Wetlands Mitigation Proposal"). Within thirty (30) days after its receipt of the Department's written comments on the Wetlands Mitigation Proposal, Respondent shall: (i) accept the Department's comments and conditions for the use of the Ley Creek Project Site; (ii) require approval of an extension of time to negotiate the terms and conditions specified

by the Department, which approval shall not be unreasonably withheld; (iii) submit an alternative wetland mitigation plan to the Department for review; or (iv) seek dispute resolution under paragraph VI of this Order on the issue of whether the Department's proposed conditions exceed the requirement for a wetland mitigation plan under the terms of the ROD.

b. If the Ley Creek Project Site is found not to be suitable for wetland use, the Respondent shall within sixty (60) days after the Date of Notification submit an alternative wetland mitigation plan to the Department for approval.

c. The Respondent reserves the right to withdraw its Ley Creek Project Site proposal, prior to the Department and the Army Corps completing their evaluation of the suitability of the Ley Creek Project Site for wetland use, and to submit an alternative wetland mitigation plan to the Department for approval which does not involve the Ley Creek Project Site.

d. Any alternative wetland mitigation plan submitted for consideration under subparagraph I.D. of this Order shall be considered to be a submittal under paragraph V of this Order and shall be reviewed by the Department under the terms and conditions of paragraph V. The Department's determinations on its review of any alternative wetland mitigation plan shall be subject to the Respondent's right of dispute resolution set forth in paragraph VI of this Order.

e. Notwithstanding anything in this Order to the contrary, the Department agrees that any wetland mitigation plan to be approved shall not require any modification to the Remedial Design. The Department further agrees that Respondent shall not be required to satisfy its obligation under the ROD to provide for wetland mitigation in any area

of the Ley Creek PCB Dredgings Site as that term is defined under this Order unless it otherwise agrees in writing.

4. The Respondent's implementation of a Department-approved wetland mitigation plan under paragraph I.D of this Order shall satisfy the Respondent's obligation to implement a wetland mitigation plan under the ROD and this Order.

E. By letter dated April 6, 1999, the EPA (i) stated that the March 22, 1999 letter from O'Brien & Gere to the Department adequately addressed EPA's remaining comments on the Respondent's proposed Remedial Design; and (ii) agreed that restoration of wetlands at the Ley Creek PCB Dredgings Site is not feasible. A copy of the EPA's April 6, 1999 letter is attached herein as Exhibit G to this Order.

II. Community Relations

Respondent shall cooperate and assist the Department in providing information relating to the work required hereunder to the public. As requested by the Department, Respondent shall participate in the preparation of all appropriate information disseminated to the public and in public meetings that may be held or sponsored by the Department to explain activities at or concerning the Site.

III. Remedial Construction

A. Within sixty (60) days after the effective date of this Order, the Respondent shall commence the implementation of the Department-approved Remedial Design ("Remedial Construction").

B. During implementation of all construction activities identified in the Remedial Design, Respondent shall have on-site a full-time representative who is qualified to supervise the work done.

C. 1. Within sixty (60) days after completion of the construction activities identified in the Department-approved Remedial Design, Respondent shall submit to the Department a detailed post-Remedial Construction O&M Plan, "as-built" drawings and a final engineering report (each including all changes made to the Remedial Design during construction) and a certification that the Remedial Design was implemented and that all construction activities were completed in accordance with the Department-approved Remedial Design and were personally witnessed by a professional engineer or by a person under his or her direct supervision. The O&M Plan, "as built" drawings, final engineering report, and certification must be prepared, signed, and sealed by a professional engineer.

2. The O&M Plan shall include the "Management Plan for County Maintenance Work" (O'Brien & Gere July 1998), which has been approved by the County of Onondaga by agreement with Respondent and GM (agreement effective February 18, 1999). A copy of this Management Plan is attached as Exhibit H to this Order. By letter dated August 5, 1998, the Department has agreed that, so long as the County performs its maintenance work in accordance with the terms and conditions of the Management Plan, the County will not violate the state superfund prohibitions set forth in 6 NYCRR § 375-1.2(e). A copy of the Department's August 5, 1998 letter is attached as Exhibit I.

D. Upon the Department's approval of the O&M Plan, Respondent shall implement the O&M Plan in accordance with the requirements of the Department-approved O&M Plan.

E. After receipt of the "as built" drawings, final engineering report, and certification, the Department shall notify Respondent in writing whether the Department is satisfied that all construction activities have been completed in compliance with the Department-approved Remedial Design.

F. If the Department determines that any element of the Department-approved Remedial Design/Remedial Action is failing to achieve the remedial objectives set forth in the Department-approved Remedial Design, or otherwise fails to protect human health and/or the environment, it shall advise the Respondent in a writing which sets forth the basis for its determination and the additional work which the Department deems necessary.

G. In the event Respondent is required to modify the Remedial Design and Construction in accordance with the terms of this Order, it shall perform the work in accordance with a reasonable time schedule which the Department, after consultation with Respondent, shall prescribe.

IV. Progress Reports

A. Respondent shall submit to the parties set forth in Subparagraph XIII.B, in the numbers specified therein, copies of written monthly progress reports describing the actions taken toward achieving compliance with this Consent Order during the previous month, including:

(1) a brief description of all results of sampling and tests, and all other data received or generated by Respondent or Respondent's contractors or agents in the previous month, whether conducted pursuant to this Consent Order or conducted independently by Respondent;

(2) all actions, including, but not limited to, data collection and implementation of work plans, that were performed during the month and other information relating to the progress of work being performed pursuant to this Consent Order;

(3) information regarding percentage of completion, unresolved delays encountered or anticipated that may affect the future schedule for implementation of the Respondent's obligations under the Order, and efforts made to mitigate those delays or anticipated delays;

(4) any modifications to any work plans that Respondent has proposed to the Department or that the Department has approved;

(5) all activities to be undertaken in the next month;

(6) difficulties encountered during the reporting period and the actions taken to rectify the problems; and

(7) any changes in key personnel.

B. Respondent shall submit these progress reports to the Department by the tenth day of every month beginning with the first full month after the effective date of this Consent Order until the final engineering report and certification referenced at paragraph III.C of this Order is approved by the Department. However, Respondent shall continue to submit reports concerning the implementation of any O&M Plan that may be required under this Order in accordance with that Plan's requirements.

C. Respondent also shall allow the Department to attend, and shall provide the Department at least seven (7) days advance notice of any of the following relating to the Remedial

Construction: prebid meetings with construction contractors, regularly scheduled construction progress meetings, substantial completion meeting and inspection, and final inspection meeting.

V. Review of Submittals

A. The Department shall review each of the submittals Respondent makes pursuant to this Consent Order to determine whether the submittal was prepared, and whether the work done to generate the data and other information in the submittal was done, in accordance with this Consent Order and generally accepted technical and scientific principles. The Department shall notify Respondent in writing of its approval or disapproval of the submittal, except for any health and safety plans submitted by Respondent pursuant to this Consent Order. All Department-approved submittals shall be incorporated into and become an enforceable part of this Consent Order.

B. Because the Site has been designated as a subsite on the NPL, the Department shall seek EPA's written comments on any of the required submittals under this Order.

C. If the Department disapproves a submittal, it shall so notify Respondent in writing, specify the reasons for its disapproval, and offer Respondent a timely opportunity to meet with the Department's staff to discuss the measures necessary to obtain the Department's approval. Within thirty (30) days after the date of its receipt of the Department's written disapproval of the submittal, or the date of the Respondent-Department meeting to review the basis for the Department's disapproval, whichever is later (or within such other period of time otherwise agreed upon by the parties), Respondent shall make a revised submittal to the Department that addresses all of the Department's stated reasons for disapproving the first submittal.

D. After receipt of the revised submittal, the Department shall notify Respondent in writing of its approval or disapproval and if disapproved, set forth the basis for the disapproval. If the Department disapproves the revised submittal, Respondent shall be in violation of this Consent Order and the Department may take any action or pursue whatever rights it has pursuant to any provision of statutory or common law unless, within thirty (30) days of its receipt of the Department's written notice of disapproval, Respondent invokes the Dispute Resolution procedure set forth in Paragraph VI. If the Department approves the revised submittal, it shall be incorporated into and become an enforceable part of this Consent Order.

E. 1. Respondent shall modify and/or amplify and expand a submittal upon the Department's written direction to do so if the Department determines, as a result of reviewing data generated by an activity required under this Consent Order or as a result of reviewing any other data or facts, that further work is necessary to attain the remedial objectives set forth in the Department-approved Remedial Design or to protect human health and/or the environment and sets forth the basis of that determination in writing.

2. The Respondent may challenge the Department's determination that further work is necessary under the Dispute Resolution provisions of Paragraph VI of this Consent Order by requesting the required meeting with the Director of the Department's Division of Environmental Remediation within thirty (30) days after receipt of the Department's written direction to undertake the further work.

VI. Dispute Resolution

A. If the Department disapproves a revised submittal pursuant to Paragraph V.D, or demands the performance of additional work pursuant to Paragraphs III.F or V.E, and Respondent

fails to perform such work, Respondent shall be in violation of this Order unless, within thirty (30) days of its receipt of the Department's written notice of disapproval of a revised submittal, or within thirty (30) days of its receipt of the Department's written demand for additional work, Respondent serves on the Department's Director of the Division of Environmental Remediation ("the Director"):

(1) a written request to meet with the Director to discuss the Department's objections to the revised submittal and/or the Department's demands for additional work; and

(2) a written statement of the issues in dispute, the relevant facts upon which the dispute is based, factual data, analysis, or opinion supporting its position and all supporting documentation on which the Respondent relies (the "Statement of Position").

B. The Department shall provide the Respondent with an opportunity to meet with the Director to discuss the Department's objections to the revised submittal and/or the Department's demands for additional work. Respondent and the Department shall meet at a mutually agreed upon time (the "meeting").

C. An administrative record of any dispute under this Paragraph VI shall be maintained by the Department. The record shall include the Statement of Position of the Respondent and any other relevant information, including any information submitted by either party up to and including the time of the meeting. The record shall be available for review by all parties and the public.

D. Upon review of the administrative record as developed pursuant to this Paragraph VI and taking into consideration the discussion of the parties at the meeting with the Director, the Director shall issue a final written decision, resolving the dispute (the "Director's Decision"). The period of time for revision of a submittal or commencement of additional work shall be set forth in the Director's Decision.

E. The invocation of formal dispute resolution procedures under Subparagraphs A - through D of Paragraph VI, shall excuse, toll and/or suspend ("tolling"), during the pendency of the dispute resolution process, the compliance obligation or deadline which is in dispute, and any other obligation or deadline which is dependent upon the matters in dispute, but shall not toll or suspend any of Respondent's other obligations under this Consent Order.

F. In the event of the Respondent's submission of the required modified submittal, the Department shall notify Respondent in writing of its approval or disapproval thereof. If the modified submittal fails to adequately address the Department's comments contained in the Director's Decision, as modified, and the Department disapproves the modified submittal for this reason, Respondent shall be in violation of this Consent Order and ECL Article 71, Title 27.

VII. Force Majeure

A. Respondent's failure to comply with any term of this Consent Order constitutes a violation of this Consent Order and ECL Article 71, Title 27.

B. Respondent shall not suffer any penalty under this Consent Order or be subject to any proceeding or action if it cannot comply with any requirement hereof because of war, riot, adverse weather conditions, or any fact or circumstance beyond the Respondent's reasonable control ("force majeure event"). Respondent shall, within five (5) days of when it obtains

knowledge of any such condition, notify the Department in writing. Respondent shall include in such notice the measures taken and to be taken by Respondent to prevent or minimize any delays and shall request an appropriate extension or modification of this Consent Order. Failure to give such notice within such five (5) day period constitutes a waiver of any claim that a delay is excusable under this subparagraph and not subject to penalties. Respondent shall have the burden of proving that an event is a defense to compliance with this Consent Order pursuant to this subparagraph.

VIII. Entry Upon Site

Respondent hereby consents to the entry upon the Site or areas in the vicinity of the Site which may be under the control of the Respondent, by any duly designated employee, consultant, contractor or agent of EPA, the Department or any New York State agency, at reasonable times, for purposes of inspection, sampling, and testing and to ensure Respondent's compliance with this Consent Order. Any such individual authorized to enter the Site pursuant to this paragraph shall comply with any applicable health and safety plan for the Site. During Remedial Construction, Respondent shall provide the Department with suitable office space at or in the vicinity of the Site, including access to a telephone.

IX. Payment of State Costs

A. The Department will use its best efforts to issue an itemized invoice of response costs to Respondent on an annual basis. Within thirty (30) days after receipt of an itemized invoice from the Department, beginning with the calendar quarter ending December 31, 1997, Respondent shall pay to the Department a sum of money which shall represent reimbursement for the State's expenses at the Site including, but not limited to, direct labor, fringe benefits, indirect

costs, travel, analytical costs, and contractor costs incurred by the State of New York for work performed under the terms of this Consent Order, as well as for negotiating this Consent Order, reviewing background information, reviewing and revising submittals made pursuant to this Consent Order (including the review of Remedial Design submittals made prior to the effective date of this Consent Order), overseeing activities conducted pursuant to this Consent Order, and collecting and analyzing samples. The foregoing shall not include activities relating to the Onondaga Lake NPL that are unrelated to the implementation of this Consent Order which may overlap with the oversight being conducted by the Department's Division of Environmental Remediation under this Order. Payment shall be made by check payable to the Department of Environmental Conservation. Payment shall be sent to the Director, Bureau of Program Management, Division of Environmental Remediation, N.Y.S.D.E.C., 50 Wolf Road, Albany, NY 12233-7010.

B. Itemization of the costs shall include an accounting of personal services indicating the employee name, title, biweekly salary, and time spent (in hours) on the project during the billing period, as identified by an assigned time and activity code. This information shall be documented by reports of Direct Personal Service. The Department's approved fringe benefit and indirect cost rates shall be applied. Non-personal service costs shall be summarized by category of expense (e.g., supplies, materials, travel, contractual) and shall be documented by the New York State Office of the State Comptroller's quarterly expenditure reports.

C. The accrual of State costs for reimbursement under this Consent Order shall cease after the final engineering report and certification referenced at paragraph III.C of this Order have been approved by the Department.

D. Respondent may request clarification of an invoice for State costs if it believes the invoice: (i) reflects a clerical error, (ii) is based upon inaccurate information or (iii) is not attributable to the State's activities reimbursable under this Order. If Respondent questions a State invoice issued pursuant to Paragraph IX of this Consent Order, Respondent shall do so by identifying in writing, within thirty (30) days of its receipt, the items in question. This request should be directed to the Director of the Bureau of Program Management at the above cited address. The Bureau of Program Management's written decision issued in response to this inquiry shall be a final agency determination for purposes of seeking review under Article 78 of the CPLR. If the Department revises the invoice, Respondent shall pay the revised invoice within thirty (30) days of its receipt of the revision.

E. Respondent's failure to pay the revised invoice within thirty (30) days of receipt thereof or, if the Department determines that the invoice need not be revised, Respondent's failure to pay the original invoice within thirty (30) days of receipt of the Department's written decision, shall be a violation of this Consent Order and subject to whatever enforcement action is within the Department's jurisdiction unless, within thirty (30) days after receipt of the Department's written decision, Respondent commences an action for review of the Department's written decision pursuant to Article 78 of the CPLR.

X. Department Reservation of Rights

A. Nothing contained in this Consent Order shall be construed as barring, diminishing, adjudicating, or in any way affecting any of the Department's rights, except as specified within this Consent Order.

B. Nothing herein shall be construed as barring, diminishing, adjudicating, or in any way affecting any legal or equitable rights or claims, actions, suits, causes of action or demands whatsoever that the Department may have against anyone other than Respondent, its directors, officers, employees, agents, successors and assigns (including, but not limited to, GM).

C. Nothing contained in this Consent Order shall be construed to prohibit the Commissioner or his or her duly authorized representative from exercising any summary abatement powers.

D. Nothing herein is intended to be a release or settlement of any claim for personal injury or property damage by any person not a party to this Consent Order against Respondent.

E. For violations of this Consent Order and ECL Article 71, Title 27, the Department may elect to pursue any remedy, penalty, and/or sanction, including enforcement of this Consent Order.

F. Nothing contained in this Consent Order represents a satisfaction, waiver, release, or covenant not to sue, of any claim of the State of New York against Respondent relating to the Site including, but not limited to, claims to require Respondent to undertake further response actions, and claims to seek reimbursement of response costs and/or natural resource damages pursuant to Section 107 of CERCLA, except as specified within this Consent Order.

XI. Indemnification

Respondent shall indemnify and hold the Department and the State of New York, and their representatives and employees, harmless for all claims, suits, actions, damages, and costs of every name and description arising out of or resulting from the fulfillment or attempted fulfillment of this Consent Order by Respondent, and/or Respondent's directors, officers, employees, servants,

agents, successors, and assigns. Said indemnification shall not include indemnification in any form for any unlawful, willful, malicious or grossly negligent acts or omissions on the part of the Department or the State of New York, or their representatives and employees.

XII. Public Notice

A. Within thirty (30) days after the effective date of this Order, Respondent shall file a Declaration of Covenants and Restrictions in the form attached as Exhibit J with the Onondaga County Clerk for those portions of the Site for which it has an ownership interest. Respondent shall file a Declaration of Covenants and Restrictions using the specified form for those portions of the Site to which it acquires an ownership interest after the effective date of this Order within thirty (30) days after acquiring that interest.

B. If Respondent proposes to convey any portion of the Site in which it has an ownership interest, it shall, not fewer than sixty (60) days before the date of conveyance, notify the Department in writing of the identity of the transferee and of the nature and proposed date of the conveyance and shall notify the transferee in writing, with a copy to the Department, of the applicability of this Order.

XIII. Communications

A. All written communications required by this Consent Order shall be transmitted by United States Postal Service, by private courier service, or hand delivered as follows:

Communication from Respondent shall be sent to:

1. George Harris, Section Chief
Division of Environmental Remediation
Bureau of Construction Services, NYSDEC
50 Wolf Road, Room 222
Albany, New York 12233-7010

2. Ms. Henri Hamel
New York State Department of Health
677 South Salina Street
Syracuse, New York 13202

3. Kenneth Lynch, Esq.
Regional Director
Region 7, NYSDEC
615 Erie Blvd. West
Syracuse, New York 13204-2400

4. George A. Shanahan, Esq.
Assistant Regional Counsel
EPA Region 2
290 Broadway
New York, New York 10007-1866

5. Robert Nunes
Onondaga Lake Project Manager
EPA Region 2
290 Broadway, 20th Floor
New York, New York 10007-1866

6. Carol Conyers, Esq.
Senior Attorney
NYSDEC
Division of Environmental Enforcement
50 Wolf Road, Room 410A
Albany, New York 12233-5550

B. Copies of work plans and reports shall be submitted as follows:

1. Five copies (one unbound hard copy with associated figures and one on 3-1/2" computer disk(s) in Word Perfect version 6.0 or compatible word processing format and any associated figures in Auto Cad or compatible format) to:
George Harris, NYSDEC

2. One copy to:
Henri Hamel, NYSDOH

3. One copy to:
Kenneth Lynch, Region 7 Director

4. Two copies to:
Robert Nunes

5. One copy of the transmittal letter only to:
Carol Conyers, Esq., NYSDEC, and George Shanahan, Esq., EPA

6. Upon receiving formal approval of a submittal by the Department, Respondent shall submit three copies of such submittal to the Department for placement in the designated Document Repository(s) and one copy to EPA.

C. Communication to be made from the Department to the Respondent shall be sent to:

1. William E. Kochem, Jr.
GM-Worldwide Facilities Group
1 General Motors Drive
Syracuse, New York 13206

2. James Hartnett
Remediation and Liability Management Company, Inc.
c/o GM Remediation Project Office
Route 37 East, PO Box 460
Massena, New York 13662-0460

3. General Motors Corporation
Legal Staff (Attn: Don A. Schiemann, Esq.)
New Center One Building
3031 West Grand Blvd.
Mail Code 482-208-815
Detroit, Michigan 48202

4. Bond, Schoeneck & King, LLP
Attn: Barry R. Kogut, Esq.
One Lincoln Center
Syracuse, New York 13202

D. The Department and Respondent reserve the right to designate additional or different addressees for communication or written notice to the other.

E. The Department's Project Manager for the work to be done under this Consent Order shall be Michael Cruden of the Department's Division of Environmental Remediation ("DER") and DER shall coordinate the technical review and involvement of the EPA and any Division of the Department, which is involved with regulatory or remedial decision making at the Site. The Department reserves the right to designate a different Project Manager upon written notice to the Respondent.

XIV. Record Keeping

Respondent shall preserve, during the pendency of this Consent Order, and for a minimum of five (5) years after the final engineering report and certification referenced at paragraph III.C of this Order have been approved by the Department, all records and documents in the possession of the Respondent, or in the possession of any division, employees, agents, accountants, contractors, or attorneys of the Respondent, which relate in any way to the implementation of the selected remedial alternative under this Consent Order, whether or not prepared pursuant to this Consent Order and despite any document retention policy to the contrary. After this five (5) year period, the Respondent shall notify the Department in writing within sixty (60) days prior to destruction or disposal of any such documents. Upon the request of the Department, Respondent

shall make available to the requester all or any such records, or copies of all or any such records, unless the records may be kept confidential and privileged under applicable law.

XV. Miscellaneous

A. All activities Respondent is required to undertake under this Order are ordinary and necessary expenses for the continued operation of Respondent.

B. Respondent shall retain professional consultants, contractors, laboratories, quality assurance/quality control personnel, and third party data validators acceptable to the Department to perform the technical, engineering, and analytical obligations required by this Order. The Respondent has retained O'Brien & Gere Engineers, Inc. and O'Brien & Gere Laboratories to perform the technical, engineering and analytical obligations required by this Order, and they are acceptable to the Department. If the Respondent chooses to substitute another firm to perform any of the foregoing obligations under this Order, it shall submit that firm's respective experience, capabilities and qualifications to the Department for prior approval, which approval shall not be unreasonably withheld or delayed. The responsibility for the performance of the professionals retained by Respondent shall rest solely with Respondent.

C. 1. With respect to the work to be performed under this Consent Order, the Department shall have the right to obtain split samples, duplicate samples, or both, of all substances and materials sampled by Respondent, and the Department also shall have the right to take its own samples. Respondent shall notify the Department at least seven (7) business days in advance of any sample collection activity and the Department shall provide the Respondent with a reasonable opportunity to take split samples of all substances and materials sampled by the Department.

2. Respondent and the Department shall make available to each other the results of all sampling and/or tests or other data generated by the Respondent or the Department (the "information") with respect to the performance of work under this Consent Order. Respondent shall submit the information in accordance with Paragraph IV of this Consent Order and the Department shall submit any information to the Respondent in a manner which allows for timely consideration by the Respondent in its preparation of submittals required under this Consent Order.

D. Respondent shall notify the Department at least seven (7) business days in advance of any field activities to be conducted pursuant to this Order.

E. 1. Respondent shall use its best efforts to obtain whatever permits, easements, rights-of-way, rights-of-entry, approvals, or authorizations that are necessary to perform Respondent's obligations under this Order (the "authorizations"). Respondent shall promptly notify the Department in the event of Respondent's inability to obtain such authorizations on a timely basis. In the event Respondent is unable to obtain the necessary authorizations, the Department may, consistent with its legal authority, assist in obtaining all such authorizations which Respondent was unable to obtain despite its best efforts, or which Respondent could not obtain without unreasonable terms or conditions. If Respondent cannot obtain such authorization on a timely basis, the time for performance of any obligation dependent upon such authorization shall be appropriately extended and the Order appropriately modified.

2. Notwithstanding anything in this subparagraph XV.E.1 to the contrary, the Respondent and its contractors and representatives shall not be required to obtain State or local

permits pursuant to 6 NYCRR § 375-1.7 for on-site Remedial Construction activities. However, Respondent shall comply with the substantive requirements for applicable state permits.

F. Respondent and Respondent's officers, directors, agents, servants, employees, successors, and assigns shall be bound by this Order. Any change in ownership or corporate status of Respondent including, but not limited to, any transfer of assets or real or personal property shall in no way alter Respondent's responsibilities under this Order. Respondent's officers, directors, employees, servants, and agents shall be obliged to comply with the relevant provisions of this Order in the performance of their designated duties on behalf of Respondent.

G. Respondent shall provide a copy of this Order to each contractor hired to perform work required by this Order, and to each person representing Respondent with respect to the Site, and shall condition all contracts entered into in order to carry out the obligations identified in this Order upon performance in conformity with the terms of this Order. Respondent or Respondent's contractors shall provide written notice of this Order to all subcontractors hired to perform any portion of the work required by this Order. Respondent shall nonetheless be responsible for ensuring that Respondent's contractors and subcontractors perform the work in satisfaction of the requirements of this Order.

H. All references to "professional engineer" in this Order are to an individual registered as a professional engineer in accordance with Article 145 of the New York State Education Law. If such individual is a member of a firm, that firm must be authorized to offer professional engineering services in the State of New York in accordance with Article 145 of the New York State Education Law.

I. All references to "days" in this Order are to calendar days unless otherwise specified.

J. The paragraph headings set forth in this Order are included for convenience of reference only and shall be disregarded in the construction and interpretation of any of the provisions of this Order.

K. 1. The terms of this Consent Order shall constitute the complete and entire Consent Order between Respondent and the Department concerning the Site. No term, condition, understanding, or agreement purporting to modify or vary any term of this Consent Order shall be binding unless made in writing and subscribed by the party to be bound. No informal advice, guidance, suggestion, or comment by the Department regarding any report, proposal, plan, specification, schedule, or any other submittal shall be construed as relieving Respondent of Respondent's obligation to obtain such formal approvals as may be required by this Consent Order.

2. If Respondent desires that any provision of this Consent Order be changed, Respondent shall make timely written application, signed by the Respondent, to the Department setting forth reasonable grounds for the relief sought. Copies of such written application shall be delivered or mailed to NYSDEC Attorney Carol Conyers at the address set forth at Paragraph XIII.A of this Order. The Department shall advise the Respondent in writing if the application should be sent to another Department representative.

L. The effective date of this Order shall be the date it is signed by the Commissioner of the Department or his authorized representative.

DATED: Albany, New York
July 15, 1999

JOHN P. CAHILL
Commissioner
New York State Department
of Environmental Conservation

By: Michael J. O'Toole, Jr.

CONSENT BY RESPONDENT

Respondent hereby consents to the issuing and entering of this Consent Order, waives Respondent's right to a hearing herein as provided by law, and agrees to be bound by this Consent Order.

REMEDIATION AND LIABILITY
MANAGEMENT COMPANY, INC.

By: William J. McFarland

Name: William J. McFarland

Title: President

Dated: July , 1999

STATE OF MICHIGAN)
) SS:
COUNTY OF WAYNE)

On the 2nd day of July, 1999 before me, the undersigned, a notary public in and for said state, personally appeared William J. McFarland, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that he/she executed the same in his/her capacity, and that by his/her signature on the instrument the individual, or the person upon behalf of which the individual acted, executed the instrument.

Carolyn E. Stoehr
Notary Public

CAROLYN E. STOEHR
Notary Public, Wayne County, MI
My Commission Expires July 9, 2000

LIST OF EXHIBITS

Exhibit A	Map of GM Facility
Exhibit B	Map of Ley Creek PCB Dredgings Site
Exhibit C	Department's March 28, 1997 ROD
Exhibit D	EPA's February 9, 1998 ROD concurrence letter, William McCabe's letter to Michael O'Toole datcd January 8, 1998, and Michael O'Toole's response letter to William McCabe dated January 20, 1998
Exhibit E	O'Brien & Gere Remedial Design Report
Exhibit F	Department's letter of June 30, 1999, approving the Remedial Design
Exhibit G	EPA's April 6, 1999 concurrence letter with the Remedial Design and agreement on the scope of the wetland mitigation plan
Exhibit H	Management Plan for County Maintenance Work
Exhibit I	Department's letter of August 5, 1998 on the Management Plan for County Maintenance Work
Exhibit J	Form of Declaration of Covenants and Restrictions

Department of Environmental Conservation

Division of Environmental Remediation

Record of Decision

Ley Creek PCB Dredgings Site
Salina (T), Onondaga County
Site Number 7-34-044

March 1997

New York State Department of Environmental Conservation

GEORGE E. PATAKI, *Governor*

JOHN P. CAHILL, *Acting Commissioner*

a minimum, from the first twenty five feet of the floodway area to restore this area to appropriate elevation. After restoration to floodway elevations, any remaining materials above the remedial level remaining in the floodway will be covered with a geomembrane or clay and then twelve inches of soil or the gravel roadway. In areas outside of the floodway, the dredged material to be addressed will be graded and covered with a vegetated soil cover which will consist of twelve (12) inches of soil. The total area that will be covered is approximately 17 acres.

- To provide Onondaga County crews access to maintain Ley Creek as a part of the existing drainage district, a gravel access road will be provided adjacent to the southern bank of the Creek to allow for future maintenance and/or dredging. The four existing drainage swales from Factory Avenue will be graded back, covered with the vegetated cover and the flow channel lined with a half pipe or formed concrete spillway where they pass through the area of covered dredge spoils. Access pads and pathways, as well as gates in the fence, will be provided to allow access for maintenance of the County sewer line which is also located in the area to be covered.

- Since the remedy will result in dredge materials/soils with elevated levels of PCBs remaining untreated, but covered at the site, a long term monitoring program will be instituted. In addition, yearly reviews will be conducted to allow the effectiveness of the selected remedy to be evaluated and to determine whether the remedy continues to be protective of human health and the environment.

New York State Department of Health Acceptance

The New York State Department of Health concurs with the remedy selected for this site as being protective of human health.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

3/28/97
Date

Michael J. O'Toole, Jr., Director
Division of Environmental Remediation

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Appendix B: Administrative Record . . . . . .

the GM facility in 1969. The formation of the Ley Creek Drainage District and clearing and dredging of the creek channel was initiated following the 1969 flooding event. Dredging of Ley Creek was performed by the Onondaga County Department of Drainage and Sanitation. In 1970, the section of the creek between Route 11 and Seventh North Street was dredged and in 1971 additional portions of the creek between Seventh North Street and Onondaga Lake were dredged. Additional dredging of Ley Creek from Townline Road to Onondaga Lake took place in 1975 and in 1983, the section of the Creek between Town line Road and Route 11 was dredged. Dredged materials generated during these activities were placed along the south bank of the creek or used for land restoration projects. The presence of PCBs in the stream sediments was not identified prior to 1985.

This PRAP addresses only the piles of dredge materials and contaminated soil located on the banks of Ley Creek in the area designated as the site. While the groundwater, surface water and sediments in the Creek were also the subject of sampling during the Ley Creek RI/FS, alternatives for these media will be addressed as part of a comprehensive RI/FS to be undertaken for the adjacent GM; Fisher Guide site.

2.2: Remedial History

1985: A Hydrogeologic Investigation Report, dated September 1985, performed pursuant to a SPDES Consent Order with GM, identified the presence of PCBs in the dredged materials at the site. This investigation which included sampling for volatile and semivolatile organic compounds, as well as metals, ruled out these other compounds as contaminants of concern. The major source of the PCBs was believed to be oil used in hydraulic equipment for die casting operations at the GM plant.

1985: A program to evaluate the occurrence and concentration of PCBs in the sediments and water of Ley Creek was completed by GM. Sediment and water were collected at 500 foot intervals along a 4,000 foot length of Ley Creek, which included a 1,000 foot length upstream of the GM Outfall 003. The pattern of PCB occurrence observed in sediments was irregular and this irregularity was attributed to the Ley Creek dredging program conducted from 1970 to 1983.

During this study, fish from Ley Creek were also sampled and analyzed for PCBs. Elevated levels of PCBs were identified in the fish tissue.

1987: Pursuant to a NYSDEC consent order, GM completed an investigation of dredged material/soil and ground water in the area between Factory Avenue and Ley Creek beginning at Townline Road and continuing for 1600 feet downstream. Groundwater flow was determined to be north towards Ley Creek. PCBs were detected in dredged material/soil and ground water samples.

While the investigation was underway, the NYSDEC Division of Environmental Enforcement (DEE), NYSDOH and the Onondaga County Department of Health also sampled offsite areas that had received some of the Creek dredge material as fill. This resulted in an agreement between GM and Onondaga County for a soil removal program in the Meadowbrook Road/Hookway area. The soils were removed by Onondaga County and brought back to the GM Plant for placement in a former treatment lagoon that was subsequently closed under the oversight of the NYSDEC RCRA program.

1989: As a result of the 1987 investigation, NYSDEC determined that a more comprehensive evaluation of the Ley Creek dredged material/soil would be necessary, to define the extent of PCBs along the north and south banks of Ley Creek and to evaluate any impacts to public health and the environment. GM completed a Field Investigation Report (FIR) of the site in 1989 which included sampling of groundwater, dredged material/soil, sediment, and surface water.

1991: Based on the FIR, NYSDEC determined that GM needed to perform a Remedial Investigation/Feasibility Study (RI/FS) at the site to complete the characterization of the areal and vertical extent of contamination present. GM was also required to prepare a habitat based assessment according to NYSDEC guidelines. GM and NYSDEC entered into an Administrative Order on Consent for performance of a RI/FS at the site, effective May 23, 1991.

1991: GM performed an Interim Remedial Measure (IRM) soil removal program under a June 1991 NYSDEC Consent Order. The IRM was conducted to allow the installation of a sewer force main on Factory Ave through an area of identified PCB subsurface soil contamination. This IRM is discussed in more detail in Section 4.2.

1992: The Work Plan for the Ley Creek RI/FS was approved and field work commenced in July 1992.

1993: The RI was completed in accordance with the RI/FS Work Plan. The GM; Fisher Guide site was listed on the Registry of Inactive Hazardous Waste Disposal Sites, as a Class 2 site, in July of 1993.

1994: GM submitted the first draft of the Ley Creek Feasibility Study to the NYSDEC. As a component of the RI/FS, a leachability study was undertaken for the dredge material.

3.1.1 Nature of Contamination

As described in the RI Report, many soil, groundwater and sediment samples were collected at the Site to characterize the nature and extent of contamination. Preliminary investigations at the site had narrowed the contaminant of concern to the PCBs which had been released from the GM Plant.

The PCBs were constituents of a hydraulic fluid used at the GM Plant in the operation of their injection molding machines. PCBs are comprised of a number of chemical isomers, which are generally referred to by the trade name "Aroclor" followed by a number which indicates the number of carbon atoms and the percentage of chlorine by weight for that Aroclor. The PCBs found at the Ley Creek Site are primarily Aroclor 1242 and Aroclor 1248.

3.1.2 Extent of Contamination

Table 1 summarizes the extent of PCB contamination in the dredge materials, surface and subsurface soils and compares the data with the proposed remedial action levels (SCGs) for the Site. The following is a summary of the findings of the investigation. As stated previously, the groundwater, sediments and surface water will be addressed as part of the RI/FS for the adjacent General Motors; Fisher Guide Site.

Dredge Materials/Soils

The dredge spoil piles along the south bank of Ley Creek extend for over 4,000 feet. Aroclors 1242 and 1248 have been found to be the major constituents of the PCB contamination at the site. Elevated PCB levels have been identified throughout the dredged materials at the site. The PCB concentrations range from non-detect to 466 mg/kg. An area where elevated concentrations of PCBs were detected also exists along the north bank of Ley Creek, around soil boring B-19.

The dredge piles have been intermixed with the surface and subsurface soils and, as they have been on the banks of the Ley Creek for more than 20 years, are overgrown with vegetation. The volume of materials to be addressed which exceeds the remedial goals of 1 mg/kg at the surface and 10 mg/kg in the subsurface is approximately 110,000 cubic yards.

demonstrates, based on the distribution, that the PCBs are present throughout the area in question at levels requiring remediation.

3.2 Interim Remedial Measures:

Interim Remedial Measures (IRMs) are conducted at sites when a source of contamination or exposure pathway can be effectively addressed before completion of the RI/FS.

GM performed an Interim Remedial Measure (IRM) under a NYSDEC IRM consent order in 1991. The IRM was conducted to allow for the installation of a sanitary sewer force main south of Factory Avenue, which encountered an area of PCB subsurface soil contamination. This contamination was attributed to a filled in drainage swale from the GM Facility prior to the construction of outfall pipe 003. The IRM involved sampling to identify the limits of the PCB contaminated buried swale and once the swale was located, the excavation and off-site disposal of the contaminated soils. Sheet piling was then put in place so that the installation of the 48 inch sanitary sewer force main could proceed.

At the time, this IRM was performed in 1991, the contamination identified was believed to be associated with the Ley Creek Site. However, since then the GM Plant has been listed as a class 2 inactive Hazardous Waste Site, in part due to the migration of the PCBs, some of which were addressed by this IRM. Based on the information generated and the location of the IRM, this contamination will now be addressed as part of the GM; Fisher Guide Site.

3.3 Summary of Human Exposure Pathways:

This section describes the types of human exposures that may present added health risks to persons at or around the site.

An exposure pathway is how an individual may come into contact with a contaminant. The five elements of an exposure pathway are 1) the source of contamination; 2) the environmental media and transport mechanisms; 3) the point of exposure; 4) the route of exposure; and 5) the receptor population. These elements of an exposure pathway may be based on past, present, or future events.

Soil and dredge materials present at the site exceed the soil cleanup criteria of 1 mg/kg at the surface and 10 mg/kg subsurface (greater than 12 inches in depth), established for PCB contaminated soils (USEPA Guidance on Remedial Actions for Superfund Sites with PCB Contamination, EPA/540G-90/607, August 1990), therefore the NYSDOH has determined that action is necessary to be protective of human health. Completed pathways which are known to or may exist at the site include:

- Dermal contact with, or ingestion of dredge materials/soils by workers maintaining the sewer or power lines and by the public should they enter the site.

Resources has accepted a site specific surface soil remedial level of 1 mg/kg for PCBs at this site. This decision was based on the expected significant reduction in fish and wildlife exposure; practical limitations (see evaluation of alternatives in Section 6.2); plans for reviews to monitor the effectiveness of the remedy in protecting the environment and future remedial efforts at the adjacent GM; Fisher Guide Plant site.

SECTION 4: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

The NYSDEC and the General Motors Corporation entered into Consent Orders for the investigation and an IRM for this site. Upon issuance of the Record of Decision the NYSDEC will approach the PRPs to implement the selected remedy under an Order on Consent.

The following is the chronological enforcement history of this site.

Date	Index No.	Subject of Order
10/30/87	**A7-0129-87-09**	**PCB Invest.**
5/23/91	**A0239-90-07**	**RI/FS**
6/10/91	**S7-0263-91-5**	**IRM-Sewer**

SECTION 5: SUMMARY OF THE REMEDIATION GOALS

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375-1.10. The overall remedial goal is to meet all Standards, Criteria, and Guidance (SCGs) and be protective of human health and the environment.

At a minimum, the remedy selected should eliminate or mitigate all significant threats to the public health and to the environment presented by the hazardous waste disposed at the site through the proper application of scientific and engineering principles.

The goals selected for this site are:

- Reduce, control, or eliminate the PCB contamination present within the dredge materials/soils on the site.

Alternative 1: No Action, Groundwater Monitoring, Deed Restrictions, Fencing:

Present Worth:	$ 216,000
Capital Cost :	$ 5,500
Annual O&M:	$ 12,000
Time to Implement:	3 months

The no action alternative is evaluated as a procedural requirement and as a basis for comparison. It requires continued monitoring only, allowing the site to remain in an unremediated state. This alternative would leave the site in its present condition and would not provide any additional protection to human health or the environment, other than the installation of a fence and deed restrictions to limit future use of the site.

Alternative 2: Twelve (12) Inch Vegetated Soil Cover, Ground Water Monitoring, Deed Restriction, Fencing and Maintenance Access Provisions:

Present Worth:	$ 2,327,000
Capital Cost:	$1 ,665,000
Annual O&M:	$ 41,000
Time To Implement:	6-9 months

Alternative 2 is a containment alternative, which would cover all areas of the site where PCB contamination exists at levels greater than 1 mg/kg at the surface or 10 mg/kg in the subsurface. The cover would consist of soil with a permeability less than or equal to the underlying dredge material and soils and be capable of sustaining vegetation. Alternative 2 would also include deed restrictions (i.e., restrictions on future use and disturbance of the remedial areas), fencing, ground water monitoring and long term maintenance of the cover.

The property comprising the majority of the site is owned by Onondaga County and the remaining area of the site, not owned directly by the County, include County utility easements or rights of way. Access by the County would be required to maintain the existing sanitary sewer which parallels Factory Avenue on the southern portion of the site and to maintain Ley Creek which is a significant feature of the surface drainage district for the surrounding area. To address concerns raised by the County relative to these maintenance responsibilities, the following access provisions would be incorporated into the remedy: (l) Cross culverts directing storm water from Factory Avenue would be lined and pathways provided for access; (2) Sanitary sewer manholes would be modified to match final grades, asphalt work pads would be installed around each and fencing would be modified to provide gates for direct access to the maintenance area; and (3) An access road would be constructed on the south bank of Ley Creek to provide a work area for future creek maintenance activities by the County. The constructed remedy components, including the Onondaga County access provisions, would be routinely inspected and maintained.

exceed the 1 and 10 mg/kg remedial levels. The maintenance access provisions detailed in Alternative 2 would also be included and would be routinely inspected and maintained.

Alternative 5: Dredged Material/Soil Excavation, Thermal Desorption Treatment, Replacement, Groundwater Monitoring:

Present Worth:	$ 43,762,000
Capital Cost:	$ 43,762,000
Annual O&M:	$ 0
Time To Implement:	12 months

Alternative 5 is also a removal, treatment and replacement alternative which would require excavation of dredge materials/soils containing PCBs greater than 1 and 10 mg/kg remedial levels. Excavated material would then be treated on-site using the thermal desorption technology. This technology heats the soil, volatilizing the PCBs and removing them from the soil matrix. The PCBs are them condensed and either subject to further treatment onsite or sent to an off site incinerator. Treated dredged material would be backfilled into the excavated areas, as necessary to achieve proper grades for the floodway. Alternative 5 would also include ground water monitoring.

Alternative 6: In-Situ Biological Treatment of Dredged Material/Soil, Groundwater Monitoring, Deed Restrictions, Fencing and Maintenance Access Provisions:

Present Worth:	$ 2,761,000
Capital Cost:	$ 486,000
Annual O&M:	$ 449,000
Time to Implement:	Indefinite

Alternative 6 would provide for an in situ treatment alternative, rather than requiring the excavation of the contaminated material. For treatment, the contaminated soils would remain in place while the existing site bacteria would be encouraged to use the PCBs as a food source. Since the time required to achieve the cleanup goals would be several years, at best, Alternative 6 would include deed restrictions, fencing, and monitoring of the in situ biological treatment of dredged material/soil as well as groundwater. The access provisions detailed in Alternative 2 would also be required and would be routinely inspected and maintained.

Alternative 7: Dredged Material/Soil Excavation and Offsite Landfill Disposal > 50 mg/kg PCBs 12 Inch Vegetated Soil Cover Groundwater Water Monitoring, Fencing and Maintenance Access Provisions:

Present Worth:	$ 6,112,448
Capital Costs:	$ 4,788,582
Annual O&M:	$ 84,309
Time To Implement:	9-12 months

6.2 Evaluation of Remedial Alternatives

The criteria used to compare the potential remedial alternatives are defined in the regulation that directs the remediation of inactive hazardous waste sites in New York State (6 NYCRR Part 375). For each of the criteria, a brief description is provided followed by an evaluation of the alternatives against that criterion. A detailed discussion of the evaluation criteria and comparative analysis is contained in the Feasibility Study.

The first two evaluation criteria are termed threshold criteria and must be satisfied in order for an alternative to be considered for selection.

1. **Compliance with New York State Standards, Criteria, and Guidance (SCGs).** Compliance with SCGs addresses whether or not a remedy will meet applicable environmental laws, regulations, standards, and guidance.

Alternative 1 would leave hazardous waste levels of PCBs in the surface and subsurface of the dredged material/soil. Accordingly, the no action alternative would not satisfy NYS SCGs.

Alternative 2 would also leave levels of PCBs in the subsurface soils at levels that are a hazardous waste. The vegetative soil cover as proposed in this alternative would not meet SCGs since hazardous waste at concentration greater than 50 mg/kg would be left in a condition that is non-compliant with U.S. Environmental Protection Agency (USEPA) guidance for capping PCB contaminated media and the Toxic Substances Control Act (TSCA).

Alternatives 3, 4, 5, 7 and 8 would all remove PCBs greater than 50 mg/kg, however the 25 mg/kg remedial level used for Alternative 4 would not comply with the Technical and Administrative Guidance Memorandum (TAGM) #4046 level of 1 mg/kg in the surface and 10 mg/kg subsurface (1/10). Alternatives 3,5, 7 and 8 would address all contamination above the TAGM levels.

Alternative 6 would rely on bioremediation to address all contamination leaving the PCBs greater than 50 mg/kg exposed during the process. It is also questionable whether the remedial goals for the site would ever be achieved by a bioremediation process.

2. **Protection of Human Health and the Environment.** This criterion is an overall evaluation of the health and environmental impacts to assess whether each alternative is protective.

Alternatives 1 and 2 leave behind unacceptable levels of PCBs that are a hazardous waste in the surface and or subsurface of the dredged materials/soils. Therefore, alternatives 1 and 2 are not protective of human health and the environment.

Alternatives 3, 4, 5, 7 and 8 remove and/or treat the hazardous levels of PCBs in the Ley Creek dredging materials/ soils. Contaminated surface soils with concentrations of greater than 1 mg/kg

4. **Long-term Effectiveness and Permanence.**

This criterion evaluates the long-term effectiveness of alternatives after implementation of the response actions. If wastes or treated residuals remain on site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the controls intended to limit the risk, and 3) the reliability of these controls.

Alternative 1 would not be effective in the long term since no additional protection would be implemented. Alternatives 3 and 5 would be most protective since all of the contaminated materials present at the site would either be removed or treated. Alternative 4 and 5 offer the greatest permanence since the PCBs would be destroyed in the treatment processes but Alternative 4 would not be as protective for the site since this alternative only addressees contaminated media above 25 mg/kg. Alternative 6 would have questionable long term effectiveness since bioremediation of PCB contaminated material has yet to effectively demonstrate the ability to meet the remedial goals for the site. Alternatives 2 and 7 offer similar levels of protection from identified exposure pathways for the vast majority of the contaminated materials, with Alternative 7 offering slightly greater protection since the contaminated material greater than 50 mg/kg would be removed. Alternative 8, while addressing the same material as Alternative 7, would be more protective in the long term since it would remove material from the most critical area of the floodway and provide for a low permeability component in the cover in the area, as well as significantly reducing the likelihood of erosion of the covered area impacting the Creek or breaching the containment system. Alternative 8 also includes provision for the addition of rip rap or other additional flood protection, as determined necessary during design, to insure the integrity of the remedy.

5. **Reduction of Toxicity, Mobility or Volume.** Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

Alternative 1 would not reduce the toxicity, mobility or volume of the hazardous waste or the contaminated soils present at the Site. Alternative 2 would result in a decrease in the mobility however, it would not address the hazardous waste present at the site so there would be no reduction in toxicity or volume.

Alternatives 3, 4, and 5 would all significantly reduce the mobility, toxicity and volume of the contaminants at the site, however Alternative 4 would be less effective due to the higher action level. Both Alternatives 4 and 5, since they involve treatment which would destroy the PCBs, would be the most effective in achieving a reduction in the toxicity and volume of the contaminant. Alterative 6 would not be expected to be as effective in reducing the mobility, toxicity or volume of the contaminants.

Alternatives 7 and 8 present similar degrees of reduction in toxicity of the wastes present in the dredge spoils at the site, by eliminating the pathways for exposure, and volume by removing the volume of material representing hazardous waste. Both Alternatives 7 and 8 would also reduce

can be used as the basis for the final decision. A remedy is cost effective if the cost of the remedy is proportional to its' overall effectiveness. The costs for each alternative are presented in Table 3.

8. **Community Acceptance.** Concerns of the community regarding the RI/FS reports and the Proposed Remedial Action Plan have been evaluated. The "Responsiveness Summary" included as Appendix A presents the public comments received and the Department's response to the concerns raised. No significant public comments were received at the public meeting, however, extensive written comments were received from General Motors, Onondaga County, Syracuse China/Pfaltzgraff and the New York State Thruway Authority. In general these comments were supportive of the selected remedy, while raising several specific concerns with certain aspects of the project, such as flood protection and possible impacts to the property owners resulting from the remedy. These concerns should either be addressed by the ongoing negotiation between GM and the various property owners or, for the more technical issues, will be addressed during the design of the remedy.

SECTION 7: SUMMARY OF THE PREFERRED REMEDY

Based upon the results of the RI/FS, and the evaluation presented in Section 7, the NYSDEC has selected **Alternative 8: Excavation and Off Site Disposal of Dredged Material /Soil > 50 mg/kg PCBs, Regrading of Material in the Floodway with a Low Permeability Cover, 12-inch Vegetated Soil Cover Over the Remaining Material, Groundwater Monitoring, Deed Restrictions, Fencing and Maintenance Access Provisions** as the remedy for this site. This selection is based upon this alternative's ability to meet New York State Standards, Criteria and Guidance, be protective of human health and the environment, and offer the best balance of the five remaining evaluation criteria presented in Section 7.

This selection is based upon the evaluation of the eight alternatives developed for this site. Alternative 8 will be protective of human health and the environment, as discussed in Sections 3.3 and 3.4, by removing PCB contamination above hazardous waste levels from the site and consolidating the remaining materials out of the floodway. These remaining contaminated areas, approximately 17 acres, exceeding the remedial goals will be covered with a minimum of a twelve (12) inch vegetated soil cover, with the exception of the areas in the floodway where this cover will consist of a geomembrane or clay layer overlain with the twelve (12 inch vegetated soil cover or the gravel access road. This will prevent exposures to the PCBs below 50 mg/kg which will remain on the site. While Alternatives 3 and 5 would offer greater long term protection, their respective costs would be excessive in comparison to the increased effectiveness and the risk presented by the remaining contamination. Alternative 8 will be effective in the short term, since much of the contaminated material will remain undisturbed. Alternative 8 will also address the volume and toxicity of the most highly contaminated material and reduce the mobility of the remaining contaminants present at the site, however, not to as high a degree as the removal or treatment alternatives. Alternative 8 is significantly lower in cost than the removal and treatment

2. Excavation and removal of dredge material/soils that contain PCBs at concentrations exceeding 50 ppm to a permitted hazardous waste landfill. It is estimated that up to 5000 cubic yards could be excavated from the areas identified on Figure 2.

3. Consolidation and covering of the remaining PCB contaminated dredge materials where concentrations are less than 50 mg/kg but exceed the remedial level of 1 mg/kg at the surface and 10 mg/kg for subsurface areas. The dredged materials will be removed, at a minimum, from the first twenty five feet of the floodway area to restore this area to appropriate elevation, with the excavated material consolidated in the area shown on Figure 2. After restoration to floodway elevations, any remaining materials above the remedial level remaining in the floodway will be covered with a geomembrane or clay and then twelve inches of soil or the gravel access road (see Figure 3 and 4). The floodway is the area defined by the Federal Emergency Management Agency August 23,1982 Flood Boundary and Floodway Map for the Town of Salina (Community Panel Number 360591 0007). In areas to be addressed outside of the floodway the dredged material will be graded and covered with a vegetated soil cover which will consist of twelve (12) inches of soil, with a permeability equal to or less than the material to be covered. Figure 5 shows the approximate 17 acre area that will be covered.

4. Dredged material/soils in the vicinity of boring B-19, located on the north bank of Ley Creek (See Figure 2), will be excavated from an area of approximately 6200 square feet to a depth of 3 feet to achieve the remedial levels for the site. The excavated material is expected to be less than 50 ppm and will be consolidated with the rest of the material on the south bank.

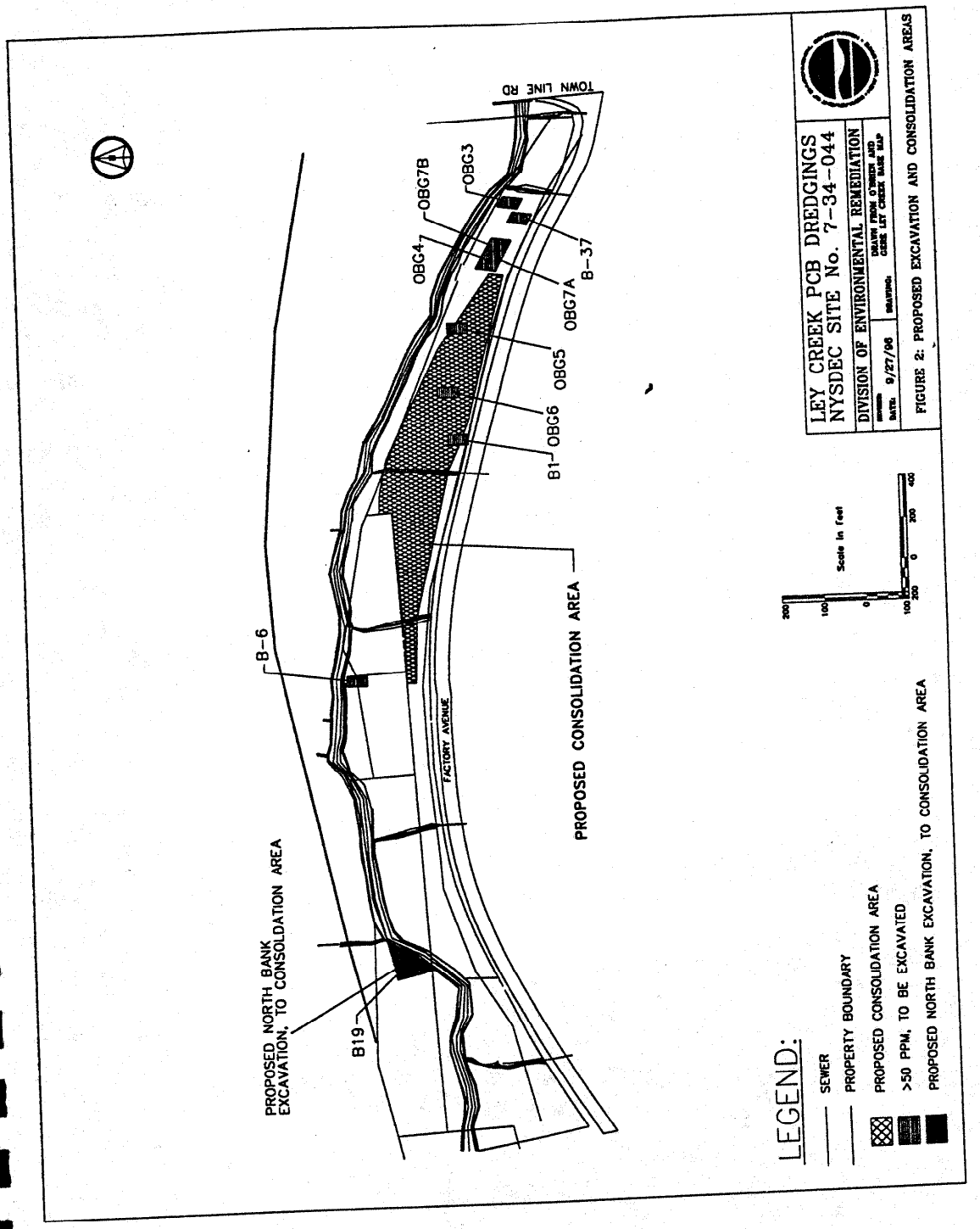
5. A hydraulic analysis and floodplain assessment to assure compliance with Executive Order 11988 (Floodplain Management) will be completed during the remedial design for the consolidated capped materials to insure that the material to be left in the floodplain and floodway will not result in any significant change in flood elevations and to ensure that there will not be any adverse impact to the remedy from a 100 or 500 year flood. If necessary, based on this analysis, additional material will be consolidated out of the floodway/flood-plain. Rip rap or other stabilization/flood protection techniques will also be applied as determined necessary during the design, to assure the integrity of the cover during flood events.

6. To provide Onondaga County crews access to maintain Ley Creek as a part of the existing drainage district, a gravel access road will be provided adjacent to the southern bank of the Creek to allow for future maintenance and/or dredging. The four existing drainage swales from Factory Avenue will be graded back, covered with the vegetated cover and the flow channel lined with a half pipe or formed concrete spillway where they pass through the area of covered dredge spoils.

SECTION 8: HIGHLIGHTS OF COMMUNITY PARTICIPATION

As part of the remedial investigation process, a number of Citizen Participation (CP) activities were undertaken in an effort to inform and educate the public about conditions at the site and the potential remedial alternatives. The following public participation activities were conducted for the site:

- A repository for documents pertaining to the site was established.
- A site mailing list was established which included nearby property owners, local political officials local media and other interested parties.
- In February 1997 a Fact Sheet was sent to the mailing list announcing the availability of the Proposed Remedial Action Plan (PRAP) and the planned public meeting to accept comments on the PRAP.
- On February 7, 1997, a legal notice was published in the Post-Standard and Syracuse Herald-Journal announcing the availability of the PRAP for review and the date of the public meeting.
- On February 26, 1997 the NYSDEC and NYSDOH held a public meeting to explain the State's proposed remedy and accept comments on the PRAP.
- In March 1997 a Responsiveness Summary was prepared and made available to the public, to address the comments received during the public comment period for the PRAP.


LEY CREEK PCB DREDGINGS
NYSDEC SITE No. 7-34-044
DIVISION OF ENVIRONMENTAL REMEDIATION
DRAWN: 9/27/96
DRAWING: DRAWN FROM O'BRIEN AND GERE LEY CREEK BASE MAP
FIGURE 2: PROPOSED EXCAVATION AND CONSOLIDATION AREAS
TOWN LINE RD
OBG7B
OBG3
OBG4
B-37
OBG7A
OBG5
OBG6
B1
B-6
PROPOSED CONSOLIDATION AREA
FACTORY AVENUE
PROPOSED NORTH BANK EXCAVATION, TO CONSOLIDATION AREA
B19
Scale in Feet
200 100 0 100 200 0 200 400
LEGEND:
SEWER
PROPERTY BOUNDARY
PROPOSED CONSOLIDATION AREA
>50 PPM, TO BE EXCAVATED
PROPOSED NORTH BANK EXCAVATION, TO CONSOLIDATION AREA

LEY CREEK PCB DREDGINGS SITE
NYSDEC SITE No. 7-34-044
DIVISION OF HAZARDOUS WASTE REMEDIATION
REVISED: DATE 2/21/96
DRAWING: DRAWN FROM O'BRIEN AND GERE BASE MAP
FIGURE 4: PROPOSED FLOODWAY REMEDIATION PLAN
PROPOSED REMEDIATION PLAN
SECTION – CONSOLIDATION AREA
NOT TO SCALE
SOIL & VEGETATIVE COVER
SOUTH SIDE OF FLOODWAY
25'-0"
48"ø COUNTY SEWER
SOIL & VEGETATION
GRAVEL ACCESS ROAD
15'-0"
SYNTHETIC MEMBRANE COVER OR VEGETATION & MINIMIZE EROSION
END OF FLOODWAY
XX WIDTH VARIES WITH FLOODWAY
25'-0"
PROPOSED REMEDIATION PLAN
SECTION – FLOODWAY ALONG SOUTH SIDE OF LEY CREEK
NOT TO SCALE
NOTE:
MATERIALS USED AS PART OF THE LOW PERMEABILITY
COVER (SYNTHETIC MEMBRANE & CLAY SOIL) SHALL

Susan Edwards - EDMSPROD-#141960-v1-EXECUTED_-_GM_LEY_CREEK_DREDGINGS-RD_RA_ORDER.TIF Page 55

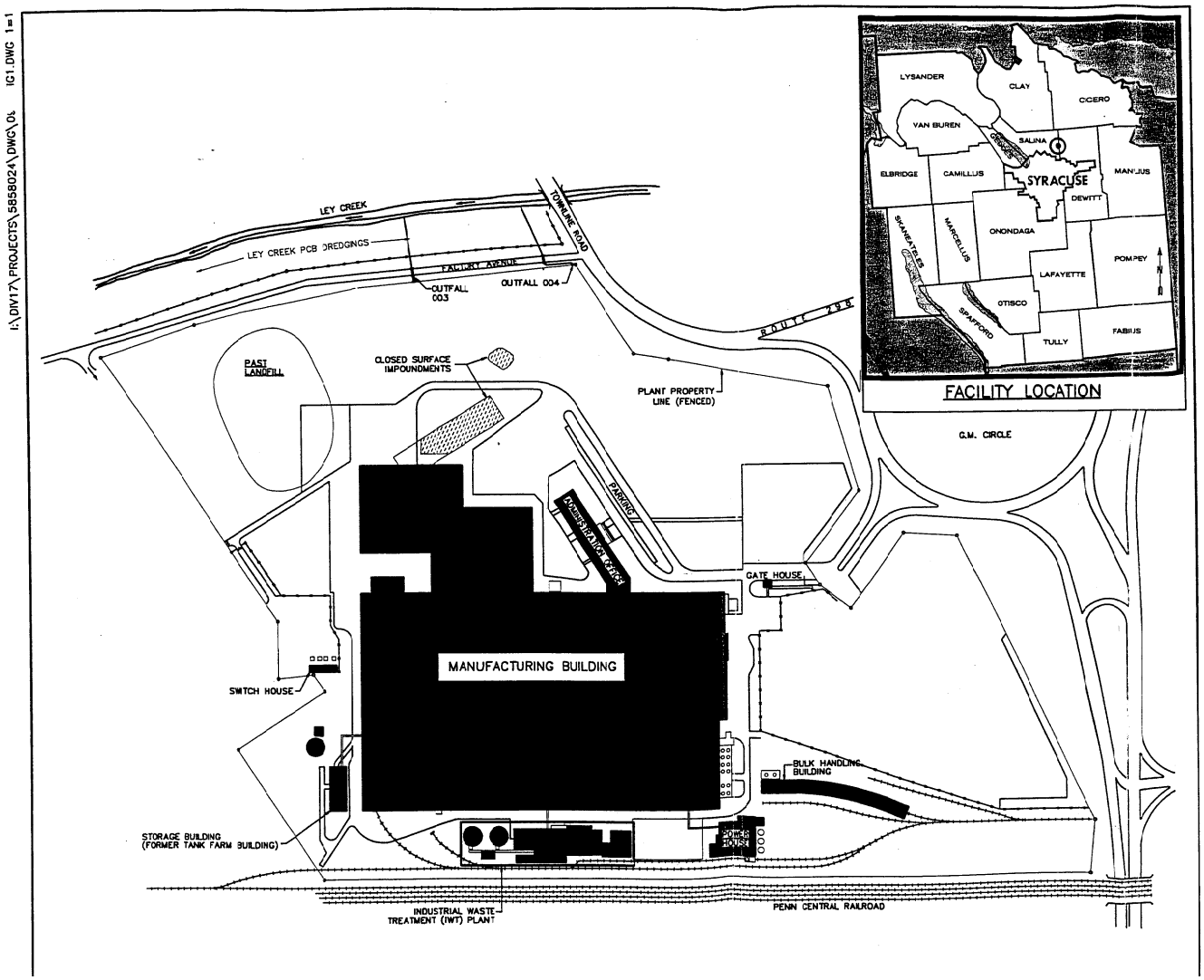


EXHIBIT A

GENERAL MOTORS CORP.
FORMER INLAND FISHER
GUIDE FACILITY

SYRACUSE, NEW YORK

FACILITY MAP

FILE NO. 5858.024-090

O'BRIEN & GERE ENGINEERS INC.

Susan Edwards - EDMSPROD-#141960-v1-EXECUTED_-_GM_LEY_CREEK_DREDGINGS-RD_RA_ORDER.TIF Page 56

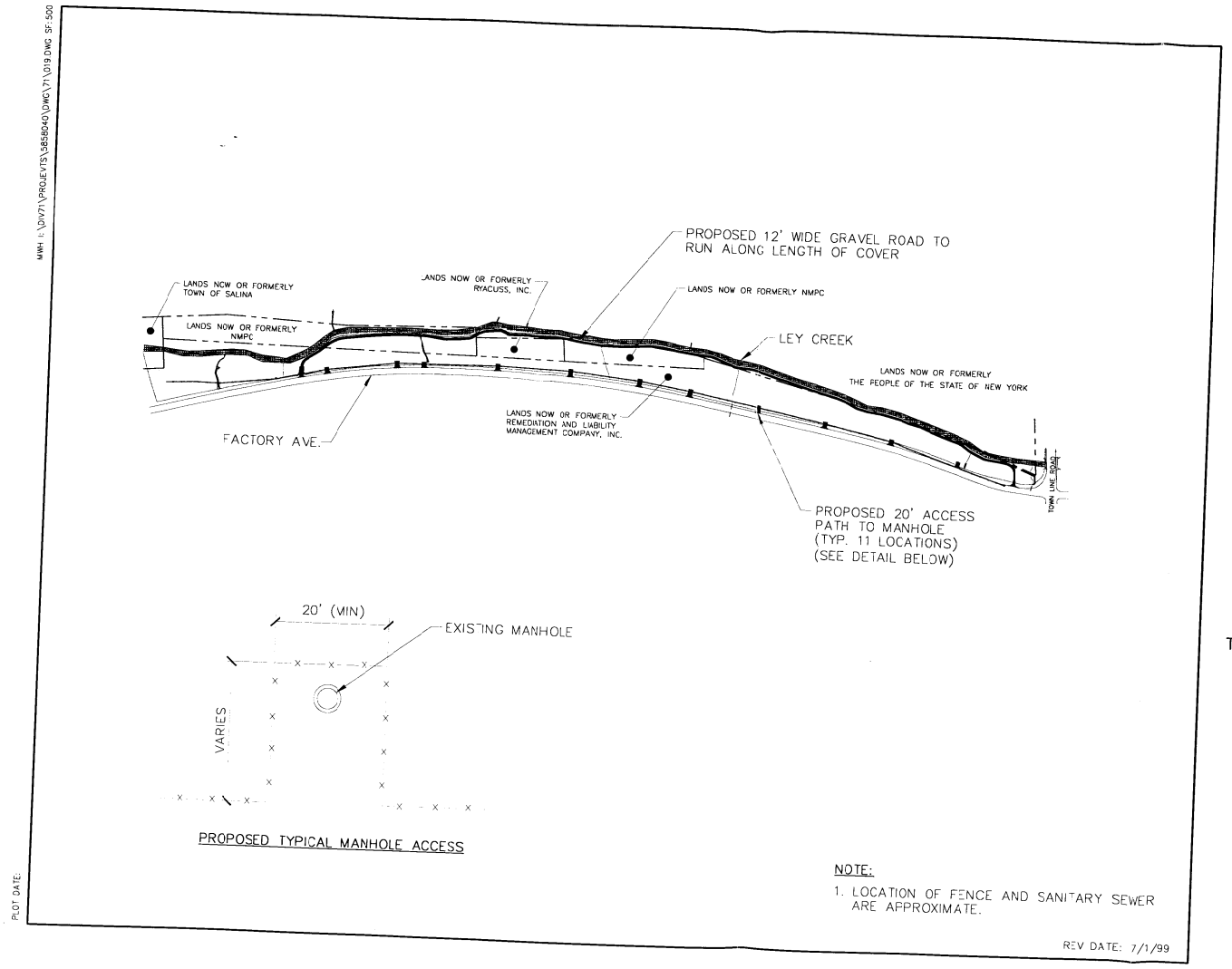


EXHIBIT B

LEGEND

- GRAVEL ACCESS ROAD
- SANITARY SEWER
- PROPERTY BOUNDARY
- MANHOLE ACCESS LOCATION
- FENCE
- PROPOSED EXTENT OF SOIL COVER

LEY CREEK PCB DREDGINGS SITE
TOWN OF SALINA, NEW YORK

SITE PLAN

0 500 1000
SCALE IN FEET

DATE: JULY 1999
FILE NO. 5858.040.019

O'BRIEN & GERE

Susan Edwards - EDMSPROD-#141960-v1-EXECUTED_-_GM_LEY_CREEK_DREDGINGS-RD_RA_ORDER.TIF Page 57

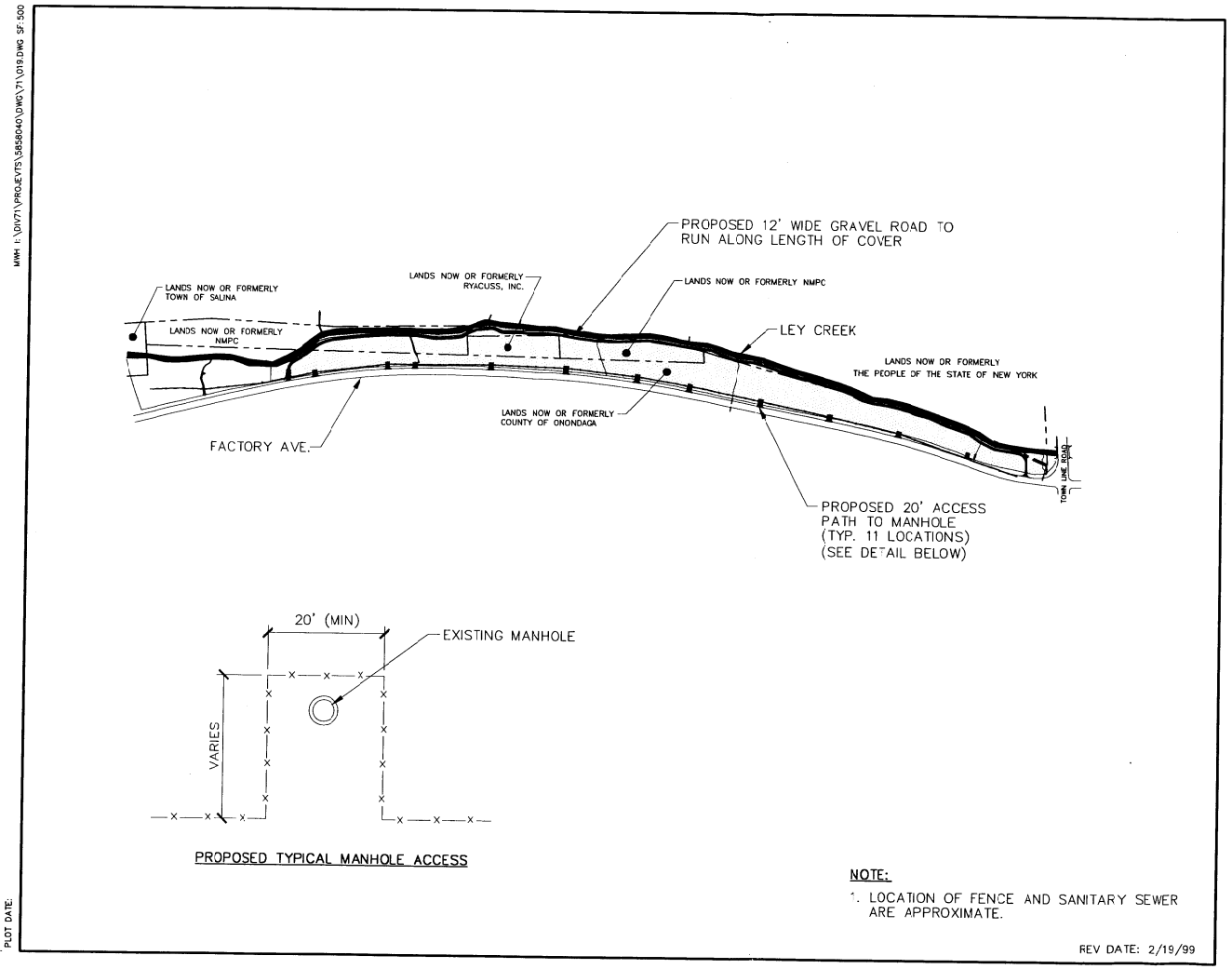


FIGURE 1–2

LEGEND

- GRAVEL ACCESS ROAD
- SANITARY SEWER
- PROPERTY BOUNDARY
- MANHOLE ACCESS LOCATION
- FENCE
- PROPOSED EXTENT OF SOIL COVER

LEY CREEK PCB DREDGING SITE SYRACUSE, NEW YORK

SITE PLAN

0 500 1000
SCALE IN FEET

DATE: FEBRUARY 1999
FILE NO. 5858.040.019

O'BRIEN & GERE ENGINEERS INC.

PLOT DATE:
WWH I:\DIV71\PROJECTS\5858040\DWG\71\009.DWG SF:1 2/19/99 (DVIEW 348.59)
FIGURE 3-1
LEGEND
OVERHEAD WIRES
CHAINLINK FENCE (SEE NOTE 9)
GATE IN FENCE
PROPERTY BOUNDARY
EDGE OF WOODS
TOP OF BANK
UTILITY POLE
GUY WIRE
SANITARY SEWER
SANITARY MANHOLE
CATCH BASIN
EXISTING ELEVATION CONTOUR
PROPOSED ELEVATION CONTOUR
PROPOSED SPOT ELEVATION
HIGH POINT
PROPOSED SECURITY FENCE
PROPOSED PAVEMENT
PROPOSED STONE ACCESS ROAD
LIMITS OF SOIL LOCATED ALONG FACTORY AVENUE TO BE RELOCATED
PROPOSED CATCH BASIN
MONITORING WELL
LIMITS OF EROSION CONTROL MAT
SOIL BORING
HOT SPOT EXCAVATION AREA (ACTUAL AREA MAY VARY)
LIMITS OF COVER SYSTEM
25 FT. SANITARY OFFSET
LIMITS OF NON-WOVEN GEOTEXTILE
LANDS NOW OR FORMERLY THE PEOPLE OF THE STATE OF NEW YORK
LEY CREEK
FACTORY AVENUE
TOWN LINE ROAD
OUTFALL 004
OUTFALL 003
TEST PIT #1
TEST PIT #2
TEST PIT #3
TEST PIT #4
TEST PIT #5
DRAINAGE SWALE #1 (BASED ON 1971 TOPOGRAPHIC SURVEY)
DRAINAGE SWALE #2 (ESTIMATED BASED ON 1997 AND 1947 AERIAL PHOTOS)
AREA OF LEY CREEK RELIEF REGIONAL RIM SEWER SOIL REMOVAL
THIS DRAWING WAS PREPARED AT A SCALE OF 1"=40' AND MAY NOT BE REPRODUCED AT SMALLER SCALES WITHOUT THE INCLUSION OF A BAR SCALE. ALL DRAWINGS ARE REPRODUCED BY MAY BE REPRODUCED AT SMALLER SCALES IN THIS TITLE BLOCK TO THE SCALE BAR IN THE ACTUAL SCALE OF THIS DRAWING.
IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ENGINEER, TO ALTER THIS DOCUMENT.
1"=40'
40 0 40 80
NO. DATE REVISION INIT.
O'BRIEN & GERE ENGINEERS INC.
LEY CREEK PCB DREDGINGS SITE
SYRACUSE, NEW YORK
SITE REMEDIATION PROJECT
GENERAL
TEST PITTING PLAN
IN CHARGE OF
DESIGNED BY
DRAWN BY
CHECKED BY
TILE NO 5858.040.02
DATE FEBRUARY 1999

is a site where remediation has been completed and only continued operation and maintenance of the remedy is required.

COMMENT 2: Would PCB levels in fish be monitored?

RESPONSE 2: Additional fish monitoring will likely be a component of the RI/FS for the GM; Fisher Guide Plant site, which is expected to be initiated in the near future. Based upon the findings of this RI, and the need for any further remediation resulting from the FS, long term monitoring of the fish may be determined necessary. Additional monitoring of the Ley Creek remedy is anticipated, primarily to insure that the integrity of the cap is maintained.

The following comments were included in a letter dated March 10, 1997 received from Mr. William Kochem of General Motors:

COMMENT 3: The Department suggests that pre-design soil sampling be conducted to determine the nature and extent of PCBs in the area of the drainage swales as part of the selected remedy. This language should be deleted in the final ROD, because the investigation has already been done.

As part of the Remedial Investigation, additional soil borings were installed to evaluate (I) if the former drainage ditch swale extended to the north side of Factory Avenue and (ii) if PCBs, which were detected in soils south of Factory Avenue and outside of the interim remedial measure (IRM) work area, extended north of Factory Avenue (see sections 2.06.4, 2.07.4, and Figure 2 of the Remedial Investigation Report ("RI")). The results of the investigation are set forth at section 3.06.2.1 of the RI, and in view of the findings, there is no need for any additional pre-remedial investigation.

RESPONSE 3: The work from the RI, cited above as providing confirmation that the swale was investigated and found not to exist, is considered inadequate to make such a determination. The soil borings identified as having been installed to determine if the swale exists, B-25 to B-29 and B-34 to B-43, do not support this conclusion. Out of the 11 borings in question, only 3 appear to have been to sufficient depth to pass through the dredge spoils and possibly detect the existing swale. Furthermore, no evaluation was presented relating the location and elevation of the high levels of PCB contamination in the soil encountered during the sewer construction, to the location and depth of any of the installed borings. Additional investigations

in Appendix B of this OSWER document. Therefore, the citation of this document in the Section of the PRAP which discusses the Human Exposure Pathways resulting from the site is appropriate and no revision to this language in the ROD is necessary.

COMMENT 7: Table 1 at page 7 of the PRAP lists 110 ppb as a SCG for fish tissue and cites the "Niagara River Biota Contamination Project: Fish Flesh Criteria for Piscivorous Wildlife" as the supporting authority. The reference should be deleted for two reasons: (1) Impact on surface waters has been deferred to the RI/FS review on the GMIFG Main Plant Site and so this issue is not properly a subject of this PRAP and (2) There is no discussion in the PRAP to support the view that the Niagara River study is a proper SCG for this site as required under 6 NYCRR §375-1.10(c)(1)(ii). It is GM's view that there are differences between the receptors in the Niagara River study and the receptors present in Ley Creek and this will impact the analysis.

RESPONSE 7: The Newell reference is appropriate for use here, for the following reasons: (1) While selection of a remedy for the surface waters and sediments may have been deferred, the assessment of any impacts by site contaminants from the dredge material itself on surface waters and offsite has not been deferred to the Main Plant investigation, specifically the impact of erosion or other migration of the contaminated sediments to the Creek. The fish tissue data collected shows an impact to the environment attributable to the dredge spoils and these results of the investigation are available, relevant and appropriate to share with the public at this time in this document. (2) These environmental criteria were developed for chemicals for which none existed. They were intended to protect piscivorous wildlife not only along the Niagara River, but anywhere in the State, and have been applied as such since their development. The Newell criterion is consistent with, but slightly less conservative than the 0.1 mcg/g in fish set by the International Joint Commission as the objective for protection of fish and wildlife.

COMMENT 8: The eastern limit of the site is described as Townline Road, but the site does not actually extend that far. The eastern terminus of the site is described in the Department's Registry notice as the vicinity of the Fisher Guide discharge point (that is, Outfall 003), rather than all the way down to Townline Road (see page 1 of the RI). A revision reflective of the Registry description should be made.

NCP is also a requirement under the state's superfund program (see 6 NYCRR § 375- 1. 10 (c)).

RESPONSE 11: The USEPA has reviewed the FS and the PRAP and has assured the Department that it finds the selected remedy to be protective of human health and the environment. It is the Department's position, as indicated in the Declaration to this ROD, that the remedial program selected is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300).

COMMENT 12: Page 5 of the PRAP refers to a previous soil removal program occurring in the "Meadowbrook Road" area. The reference should be corrected to read: "Meadowbrook/Hookway" area.

RESPONSE 12: The ROD has been modified to reflect this comment.

COMMENT 13: At page 14 of the PRAP, it is correctly noted in Alternative 8 that areas outside of the floodway are to be covered with a 12 inch vegetated cover. However, at page 21, there is a tag line to the effect that the soil cover is to have a "permeability equal to or less than the material to be covered." The language on permeability should be deleted. As explained at page 63 of the FS, the objective of the soil cover is to minimize direct contact, rather then to minimize infiltration.

RESPONSE 13: It is acknowledged that the purpose of the cover is primarily to address exposure resulting from direct contact, not to minimize infiltration into the contaminated materials. This requirement, while likely resulting in reduced infiltration, is intended to preclude the situation where a more permeable layer, overlaying a less permeable material, becomes saturated leading to sloughing or other erosion of the cap. Use of a material of a predetermined low permeability is not contemplated by this requirement, the intent is to require a cover material similar in nature (permeability) to that which it will cover. This requirement is intended to insure the structural integrity of the cover particularly in the event of a flood, therefore, this requirement will remain as a performance standard in the ROD.

Ryacuss parcel, Boring B-6, where sampling identified levels of PCBs in excess of 50 ppm. This area will be excavated to remove this material, however, PCBs will remain on the balance of the parcel at concentrations less than 50 ppm. The soil cover, included in the selected remedy, will cover the entire parcel, mitigating any identified human health and environmental exposures, which may result from the contaminants remaining at the site. While the selected remedy will be protective of human health and the environment Syracuse China/Pfaltzgraff, as the property owner, is free to attempt to negotiate with GM other reasonable considerations as a condition of access to their property.

COMMENT 15: According to the Final FS, there is one monitoring well on the Ryacuss parcel. However, given the way that the well location map is presented, it is not possible to determine from that map which monitoring well it is. Based upon an estimated location, it may be MW 12 or MW 13 (Final FS, Figure 5). Data from MW 12 and MW 13 indicate the presence of PCBs above the *NYS Class* GA groundwater standard of 0.1 ug/l

RESPONSE 15: Based upon the review of the mapping, MW 12 is located on the Ryacuss property. Based upon the results of the RI, the groundwater beneath the property is contaminated above groundwater standards, as indicated by this comment. As stated in the PRAP and ROD, the groundwater contamination is believed to be related not just to the Ley Creek site, but also is influenced by the GM; Fisher Guide site, therefore further action to address the groundwater has been deferred to the RI/FS for this site.

COMMENT 16: The basis for the decision to defer the remediation of groundwater contamination appears to lie in the fact that there is a hydraulic connection in the groundwater under the Study Area and the upgradient groundwater underlying the Main Plant site (Final FS, p 22). The extent of that hydraulic connection is not discussed.

RESPONSE 16: As stated in the PRAP and ROD, it is anticipated that additional groundwater investigations will be carried out as part of the RI/FS for the General Motors: Fisher Guide Site. The extent of the hydraulic connection of the groundwater and any associated contamination at the GM; Fisher Guide site to Ley Creek and this site has yet to be fully defined. For this reason, a groundwater remedy was not identified for the Ley Creek PCB Dredgings site by this ROD.

COMMENT 19: A remedial alternative that proposes to re-grade only the first 25 feet of the floodway to remove PCB contaminated soil contemplates leaving the balance of the PCB contaminated soil, even soil located within the floodway, in place. There is no explanation in the Final FS or the PRAP regarding what measures will be taken, if any, to prevent flooding of the Study Area. Apart from the referenced language regarding erosion controls, the Final FS does not include any flood control measures. In fact the large mounds of soil that presently exist along the southern banks of Ley Creek will be leveled and graded. Without flood control measures in place, the potential exists for flooding to carry contaminants downstream, even those overlain with impermeable materials such as clay or a geomembrane cover. No provision appears to have been made to prevent the influence of flood waters upon the Study Area.

RESPONSE 19: As stated in this comment, there are no measures proposed by the ROD to prevent flooding of the site. There are however several measures to insure the structural integrity of the components of the remedy against the effects of flooding. Alternative 8 was developed in recognition of this need, including the provision for the use of a low permeability cover in areas of the floodway, to enhance the protection and stabilization of the cover. In addition, the gravel roadway will serve a dual function by providing increased protection to the first fifteen feet of the cover along the creek bank. Also, the requirement for comparable soil permeability between the cover and the material being covered, is also intended to mitigate any deleterious impacts of saturation during flooding on the cover. The remedy as described in the FS also provides for the use of rip rap of the creek channel as determined necessary during design and this has been noted in the ROD. Finally, the long term operation, maintenance and monitoring program required by the ROD will include inspections and repairs to the cover, as well as the required review of the effectiveness of the remedy and its protectiveness of human health and the environment.

COMMENT 20 : Section 6 NYCRR 373-2.2(j) provides that hazardous waste storage facilities that are located in the 100 year flood plain must be designed, constructed, operated, and maintained to prevent washout of any hazardous waste unless the owner or operator can demonstrate that procedures are in effect that allow removal of the hazardous wastes before flood waters can reach the facility. For existing waste sites the owner or operator must demonstrate that there will be no adverse effects on human health or the environment if a washout occurs.

could be undertaken without much additional cost. Given the location of the site and the USEPA regulations that have been referenced or identified as guidance for this project, excavation soil from the Ryacuss parcel for disposal off site or consolidation elsewhere on the site is warranted.

RESPONSE 22: The State considers the selected remedy to be protective of human health and the environment for the entire 17 acre site. While it may be technically feasible to remove the material from the 1.3 acre parcel in question, taken in the context of the entire site and the need for a site wide remedy, there is no remedial justification to alter the selected remedy, as suggested. Future liability concerns of a landowner are not a factor in determining the feasibility of a proposed remedy. The property owner is however free to raise such considerations with the PRP during the negotiations for access to this parcel to implement the remedy.

COMMENT 23: The Final FS concluded that the PCB-contaminated soil in the Study Area would lead to insignificant exposure to certain forms of wildlife and that a remedial action objective for the dredged materials based on risk reduction is not warranted (Final FS, p 14). This finding appears to be based, at least in part, upon "the infrequent study area use by terrestrial wildlife,, (id.).

However, NYSDEC notes that this area is an "island of wildlife habitat" and "that the resident wildlife are concentrated within the area, spending the majority of their feeding activity here" (Final FS, Exhibit E). NYSDEC believes that some of species identified at risk include raccoon, mink and hawk (id). Other species upon which these animals would prey, and are typically found in the cover type identified in the Study Area, would include mice, shrews, reptiles and amphibians (RI, Exhibit D).

Many of these smaller species would likely (1) burrow into the contaminated PCB dredge piles and (2) feed on invertebrates that utilize the dredge piles as a habitat. Given the variety of species found in the Study Area, and the findings in the Fish and Wildlife Impact Analysis that provide that dredged material/soil, surface water, sediment, and food chain pathways are complete" (Final FS, p 12), risk to the referenced species should have been quantified. As a consequence, the Final FS incorrectly asserts that a remedial action objective for the dredged materials based on risk reduction is not warranted. Such a risk analysis ought to be performed and, if appropriate to the findings of the risk analysis, a remedial action objective should be developed and implemented.

amphibians from Ley Creek have body burdens of PCBs up to 5 ppm or higher which significantly exceed fish flesh criteria.

In addition, we question the value of the great blue heron study given (1) that toxicity data for the great blue heron was taken from a different species and (2) other species appear to be more representative of the Study Area (Final FS, Exhibit E). Department comments indicate that the great blue heron should" ... not be considered as a representative species in ... response to contaminant problems" (Id.).

RESPONSE 25: The PRP's specific HQ calculations for the great blue heron have not been validated by the Department, however, the unremediated site constitutes a significant risk to fish and wildlife, and therefore will be remediated. Future assessment of the area as part of the GM; Fisher Guide site RI/FS, and remediated dredge spoil site impacts to surface water, sediments and biota, especially those of Ley Creek, will be evaluated by DEC and EPA risk evaluators as soon as data are available. Appropriate follow up actions will then be taken to alleviate significant remaining impacts, if any.

COMMENT 26: It appears that the Final FS suggests that the results of the hazard evaluation allow departure from the standards set forth in the Sediment Criteria (Final FS p 20). Please note that Pfaltzgraff and Syracuse China continue to question whether the Sediment Criteria is appropriate guidance setting soil cleanup standards, however, the contaminated material in question for this Study Area is sediment from an open water body - precisely the medium for which the sediment criteria was designed. By way of contrast, NYSDEC rejected arguments that the wetland soils located adjacent to the Syracuse China landfill were not "sediments" as defined in scientific literature but were soils. The Department insisted that *Cleanup Criteria for Aquatic Sediments* (NYSDEC 1993) be applied to the establishment of cleanup levels for those wetland soils.

RESPONSE 26: Sediment criteria for this project are not being applied since the soils in question are located in upland areas and not in inundated or low areas, as was the case for the referenced site.

COMMENT 27: The dredged soils are now piled adjacent to Ley Creek and within what appears to be a 100 year flood plain. The chances for erosion or flooding to wash this material into the creek is realistic. This possibility of flooding

RESPONSE 29: During the development of the PRAP two letters commenting on various issues associated with the project were received from Onondaga County by the Department. The first, a September 25, 1996 letter from County Executive Nicholas J. Pirro and the second, a September 30,1996 letter from David Coburn, the Director of the Onondaga County Office of the Environment. The majority of the issues raised by these letters have either already been addressed in the final version of the PRAP or are the subject of ongoing negotiations (see comment 31) between the County and GM. Therefore, no additional response has been provided to these comments. Those County concerns not previously, or in the process of being addressed by the ongoing negotiations, have been responded to below.

COMMENT 30: The County is negotiating a contract with GM whereby the County will seek transfer of the property, plus defense and indemnification from GM relative to the PCBs. The County is also seeking, through the contract negotiation, to address other issues raised in our previous comments concerning the County's ability to carry out ongoing work at the site. We hope that the negotiations will be successful, but additional issues still need to be resolved.

If an agreement is successfully negotiated, the transfer of the property must still receive County Legislative approval. There is no guarantee that the Legislature will approve such a measure.

RESPONSE 30: The NYSDEC delayed issuance of the PRAP from October 1996 until February 1997 at the County's request, in order to allow time for the County and GM to begin discussions relative to the County concerns detailed in the letters discussed in Response 30. Based upon the apparent success of the ongoing negotiations, which typically NYSDEC would view as a post-ROD activity, the decision was made to proceed with remedy selection for the site, so that the remediation could proceed in a timely manner. Given the progress made to date, the NYSDEC is confident that the necessary agreements can and will be completed to allow the remedy to be implemented.

The following comments are from the Onondaga County September 25 and 30, 1996 letters discussed in Comment 30 above:

COMMENT 31: The PRAP is misleading in that it fails to notify the public that it (the public) may bear the financial burdens associated with the long term

"maintaining" facilities on the site in the future. The County is already on the record with its concern about the potential for extensive exposure to workers in the not unlikely event the buried trunk sewer needs to be repaired or replaced.

RESPONSE 34: Provisions are included in the remedy to mitigate any exposure to County workers from contact with the soils, which will remain at the site, during the course of routine maintenance of the utilities present at the site. These are detailed in Section 7, item 6 of the ROD. In addition the NYSDEC is aware that the ongoing negotiations with GM are developing operation and maintenance plans to ensure that proper health and safety plans and contingencies are in place so there should be no adverse impacts to County or contractor workers in the event repairs or replacement of the sewer should be necessary.

COMMENT 35: The PRAP declares that the removal of all soils contaminated with PCB concentrations of less than 50 ppm to the main plant site is not feasible because there is insufficient room for the volume of material that would require relocation. The State limited this evaluation of the main plant site to the "former landfill" and two small treatment lagoons. Based on the limited capacity of these small areas, the alternative was rejected. The PRAP does not explain why other, more extensive space on the main plant site was not considered for this material, and the County will not accept rejection of this alternative until this approach is satisfactorily evaluated.

RESPONSE 35: In proposing this as an alternative to be considered for disposal, the NYSDEC limited possible locations at the main plant for the Ley Creek material to those where the disposal would not interfere with the need to complete the remedial investigation or where remediation may be needed to address another problem. It was not considered appropriate to place this material in an uncontaminated area of the site. This limited the area available to those areas which had previously been characterized by investigations as contaminated and where placement of this material could serve as contouring fill for a final closure. Needless to say, the area available was rather limited and this was further constrained by the presence of high tension power lines which limited the allowable height.

COMMENT 36: The PRAP fails to include the future cost of RCRA compliance for any of the alternatives noted. These can be substantial.

The following comments were received from the New York State Thruway Authority:

COMMENT 39: It should be noted that Factory Avenue is located just south of the proposed site location. For obvious highway safety reasons, access should be gained to the site using this road instead of the Thruway.

RESPONSE 39: With the exception of the small area located on the north bank of Ley Creek, designated as the B-19 area, it is not expected that access will be required to the Thruway property north of the Creek. To remediate the B-19 area, however, it most likely will be necessary to enter this area from the Thruway right of way. This will be a limited action and of short duration and it is recognized that all applicable Thruway rules and regulations to protect the users of the highway, as well as the roadway and infrastructure will have to be complied with by the remedial contractors.

COMMENT 40: The Syracuse Division will need to know GM's and their contractor's plans for any work on Thruway property in advance of remediation. GM and DEC should be told that any work on Thruway property will require an approved work permit from the Syracuse Division. Traffic control will need to be incorporated into the design if plans affect the Thruway traffic flow patterns in any way.

RESPONSE 40: The need for any permits will be brought to GM's attention and the Thruway Authority will be consulted during the design of the remedy.

COMMENT 41: Have the necessary endorsements been received from the Corps of Engineers and other DEC programmatic areas?

RESPONSE 41: All necessary Federal and State reviews, permits, etc. will be obtained prior to the implementation of the remedy.

Inter-Office Memo (handwritten) dated March 5, 1993 from Jack Cooper, DFW to Bob Schick, DHWR, Re: Ley Creek Site

Memorandum dated August 16, 1994 from Jack Cooper, DFW to Steve Scharf, DHWR, Re: Ley Creek Fish and Wildlife Impact Analysis September 1993

Memorandum dated December 6, 1995, from Emmy Thomee, DFW to Steve Scharf, DHWR, Re: GM Proposal for Remediation of Ley Creek PCB Dredgings

Memorandum dated January 30, 1997 from Gina Ferreira, U.S. Environmental Protection Agency (USEPA), ERRD, PSB, Technical Support Team to Alison Hess, USEPA Remedial Project Manager, ERRD, SPB, Sediments Projects/Caribbean Team, Re: Hazard Quotient Calculations for Terrestrial Wildlife at the Ley Creek PCB Dredgings Site

Health Issues

Letter dated January 13, 1994, from Ron Heerkens of the New York State Department of Health (NYSDOH) to Robert Schick of the NYSDEC, DHWR

Letter dated April 8, 1994, from Ron Heerkens of the NYSDOH to Robert Schick of the NYSDEC, DHWR

Letter dated February 21, 1995, from Ron Heerkens of the NYSDOH to Steven Scharf of the NYSDEC, DHWR

Notice of Deferral of Groundwater and Sediment Remedy for the Ley Creek Site

Letter dated January 14, 1994, from Robert Schick of the NYSDEC, DHWR to William Kochem, General Motors - Inland Fisher Guide Division

PRAP Comments

Letter dated March 7, 1997, from David Coburn, of the Onondaga County, Office of the Environment to Robert Schick of the NYSDEC, Division of Environmental Remediation (DER). Included by reference in this letter were the following:

- Letter dated September 25, 1996, from Nicholas Pirro, Onondaga County Executive to Robert Davies of the NYSDEC Division of Environmental Enforcement (DEE)

Exhibit D

Copy to BJD

FEB - 9 1998

John P. Cahill
Commissioner
New York State Department
of Environmental Conservation
50 Wolf Road
Albany, New York 12233-7010

Re: Ley Creek PCB Dredging Sub-site, Onondaga Lake NPL Site

Dear Commissioner Cahill:

On March 28, 1997, the New York State Department of Environmental Conservation ("NYSDEC") issued a Record of Decision ("ROD") for the Ley Creek Dredging Sub-site pursuant to the State's Environmental Conservation Law ("ECL"). NYSDEC staff subsequently requested that the United States Environmental Protection Agency ("EPA") concur with this ROD.

By letter dated January 8, 1998 to Michael J. O'Toole, Jr., NYSDEC's Director of Environmental Remediation, William McCabe, EPA Region II 's Deputy Director, Emergency and Remedial Response Division identified six points that needed to be addressed to provide a basis for EPA's concurrence with the ECL ROD for purposes of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended ("CERCLA"). Under cover of a letter dated January 20, 1998, Mr. O'Toole enclosed responses to the points of concern that had been raised by EPA. I am pleased to inform you that EPA has determined that these responses satisfactorily address EPA's concerns.

As referenced in the enclosures to Mr. O'Toole's January 20, 1998 letter, NYSDEC will supplement the Administrative Record for this Sub-site for purposes of CERCLA with additional documents, including Mr. McCabe's January 8, 1998 letter, Mr. O'Toole's January 20, 1998 letter in reply, and this letter. EPA hereby concurs on the NYSDEC's March 28, 1997 ROD, as supplemented by these additions to the Administrative Record.

EPA looks forward to a continuing productive relationship with the NYSDEC in our ongoing efforts to remediate Onondaga Lake.

Sincerely,

William J. Muszynski

Jeanne M. Fox
Regional Administrator

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DIVISION OF
ENVIRONMENTAL REMEDIATION

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

JAN 8 1998

Michael J. O'Toole, Jr., Director
Division of Environmental Remediation
New York State Department of
Environmental Conservation
50 Wolf Road
Albany, NY 12233-7010

Re: Ley Creek PCB Dredgings Sub-site, Onondaga Lake NPL Site

Dear Mr. O'Toole:

As agreed during our July 14, 1997 meeting in New Paltz, the U.S. Environmental Protection Agency ("EPA") has reviewed the March 28, 1997 Record of Decision ("ROD") issued by New York State pursuant to its Environmental Conservation Law.

EPA's review identified six major issues that need to be resolved prior to EPA concurrence pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act, as amended ("CERCLA"). Enclosed is a detailed description of these issues, which are listed below.

- floodplains
- wetlands
- ARARs
- risk assessment/PRGs
- statutory determinations
- drainage swale investigation

We believe that all of these CERCLA issues can be addressed now or during remedial design and look forward to resolution of this matter. Please contact me at (212) 637-4405 if you have any questions.

Sincerely yours,

William McCabe

William McCabe, Deputy Director
Emergency and Remedial Response Division

Enclosure

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Enclosure
CERCLA Issues Regarding the March 28, 1997 ECL ROD
Ley Creek PCB Dredgings

- Floodplains

The selected remedy calls for moving the PCB-contaminated dredge material/soils out of the first 25 feet of the floodway, capping them within the 100-year floodplain, and using "rip rap or other stabilization/flood protection techniques to assure the integrity of the cover during flood events" (ROD, p. 26). If the dredge material/soils are to remain within the 100-year floodplain, the selected remedy must ensure that the PCBs will be prevented from entering Ley Creek. The use of rip-rap alone may be insufficient to eliminate erosion of the PCB-contaminated materials into Ley Creek. An engineered structural barrier, such as a wall along the length of the cap on the creek side, may be necessary to prevent the dredge material/soils from serving as a continuous source of PCBs to Ley Creek. For purposes of CERCLA, erosion control within the floodplain should be considered during remedial design.

The ROD (p. 26) states that the selected remedy will comply with Executive Order 11988: Floodplain Management. To comply with this Executive Order, a floodplain assessment must be performed during the remedial design to ensure that the remedy is protective of the environment. The floodplain assessment includes an evaluation of the impact to the floodplain by the remedy and the impact to the remedy by 100-year and 500-year floods. Engineering specifications developed during remedial design must be protective of the 100-year floodplain and must consider the additional cost of being protective of the 500-year floodplain. As stated in the ROD (p. 26), additional dredge material may be consolidated out of the floodplain based on the results of the floodplain assessment.

- Wetlands

The ROD (p. 25) states that the selected remedy will comply with the Executive Order 11990: Protection of Wetlands. To comply with this Executive Order, actions must be taken to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands. Specifically, remedial design of the selected remedy must include a) a field delineation of wetlands using the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual, b) a wetlands functions and values assessment, typically performed using the Wetland Evaluation Technique Method, and c) a wetlands impact mitigation plan designed to avoid or minimize impacts to wetlands and mitigate any losses; this is done, if necessary, through restoration of the impacted wetlands, enhancement of other existing wetlands, or wetlands replacement through creation of new wetlands from upland areas. Any necessary replacement would be required to provide equal value, but not necessarily equal acreage.

- ARARs

The ROD (p. 9) states that site data were compared to NYS Standards, Criteria, and Guidance (SCGs). For purposes of CERCLA, the documents that comprise a CERCLA ROD must identify and compare site data to applicable or relevant and appropriate requirements (ARARs). Although there is overlap between the two approaches, SCGs are not the same as ARARs. The location-specific, action-specific and chemical-specific ARARs should be identified for each

alternative, an evaluation of whether the alternative would comply with each ARAR should be made, and the additional steps, if any, that would be required to attain compliance should be described. Such ARARs include the following:

Executive Order 11990: Protection of Wetlands: see comment above.
Executive Order 11988: Floodplain Management: see comment above.

Toxic Substances Control Act, 15 U.S.C. 2601-2671: This statute and its implementing regulations at 40 CFR Part 761 are an ARAR for dredge material/soils with PCB concentrations > 50 mg/kg.

National Historic Preservation Act, 16 U.S.C. 470 (ROD, p. 27): The NHPA requires that a Stage 1A Cultural Resources Survey be completed prior to remedial action and requires further investigation of cultural resources if indicated by the conclusions of the Stage 1A Survey.

Endangered Species Act, 16 U.S.C. 1531 (ROD, p. 25): NYSDEC, as lead agency, is responsible for initiating informal consultation with the U.S. Fish and Wildlife Service to determine whether endangered or threatened species and/or their habitats exist on or in the vicinity of the site.

Fish and Wildlife Coordination Act, 16 U.S.C. 661 (ROD, p. 25): In accordance with the FWCA, the appropriate state and federal wildlife agencies must be consulted when wetlands/water resources are impacted.

Other ARARs that may apply to one or more alternatives include the Occupational Safety and Health Standards for Hazardous Responses and General Construction Activities (29 CFR Sections 1904, 1910, and 1926) and the Department of Transportation Rules for Hazardous Materials Transport (49 CFR Parts 107 and 171-177).

- Risk Assessment/PRGs

Under CERCLA, the decision to remediate must be based on a finding of unacceptable risk to human health or the environment (or both), based on a comparison of site data to ARARs, the results of a baseline risk assessment, and preliminary remediation goals (PRGs). For purposes of CERCLA, the results of the risk assessment should be summarized and each pathway with unacceptable risk should be identified. In addition, the technical rationale for selecting cleanup levels of 1 mg/kg PCBs at the surface and 10 mg/kg in the subsurface should be presented.

Inhalation of dust leaving the site is listed as an exposure route (ROD, p. 13). The rationale provided by the PRPs in the RI for not quantitatively evaluating this exposure route (incomplete pathway based on non-detections during pre-RI air monitoring) is not valid for the future maintenance worker or the future construction worker scenario. However, this exposure route can be evaluated qualitatively rather than quantitatively in this case because the risk posed by

inhalation of PCBs is known to be less than the risk posed by ingestion and dermal contact. Therefore, adding the contribution of the inhalation exposure route to the calculated excess cancer risk for the Site would not change the conclusions of the human health risk assessment.

Consistent with the EPA's risk assessment guidance (NCP, p. 8709-9711), the main sources of uncertainty associated with the human health and ecological risk calculations should be identified. For example, the PCB slope factor was revised downward in Fall 1996, and it should be noted that use of the current slope factor would result in lower risks than those calculated in the September 1993 RI.

- Statutory Determinations

The Declaration Statement and p. 15 of the ROD contain language that closely tracks, but is not identical to, the statutory determinations required under CERCLA. For purposes of CERCLA, the documents that comprise a CERCLA ROD must cite CERCLA Section 121, 42 U.S.C. §9621 and describe how the selected remedy meets the statutory requirements: (1) it is protective of human health and the environment; (2) it attains a level or standard of control of the hazardous substances, pollutants and contaminants, which at least attains the legally applicable or relevant and appropriate requirements (ARARs) under federal and state laws (or justifies a waiver), (3) it is cost-effective; (4) it utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable; and (5) it satisfies the statutory preference for remedies that employ treatment to reduce the toxicity, mobility, or volume of the hazardous substances, pollutants or contaminants at a site. In addition, the following should be stated:

a) The Ley Creek PCB Dredgings Site is a sub-site of the Onondaga Lake site on EPA's National Priorities List (NPL).

b) The selected remedial action for the Ley Creek PCB Dredgings inactive hazardous waste disposal site was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA), 42 U.S.C. §9601 et seq., and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300. There should also be an identification of the principal threats posed by conditions at the site and a statement as to whether and how this response action addresses the principal threats.

c) Actual or threatened release of hazardous substances from this site, if not addressed by implementing the response action selected in this ROD, may present an imminent or substantial endangerment to public health, welfare, or the environment.

d) The Administrative Record is established pursuant to the NCP, 40 CFR §300.800. For purposes of CERCLA, OSWER Directive 9833.3A-1, "Final Guidance on Administrative Records for Selecting CERCLA Response Actions," dated December 3, 1990, should be reviewed and any additional documents that form the basis of the remedial decision

should be added to the CERCLA Administrative Record, including, but not limited to, the public participation documents described in Section 8 of the ROD and this letter.

- Drainage Swale Investigation

The selected remedy calls for a pre-design sampling program to further characterize the former drainage swale underneath the area where the dredge material/soils will be capped. EPA has received a copy of the September 16, 1997 report submitted by GM to NYSDEC, which summarizes the investigation of this portion of the drainage swale conducted to date. EPA and NYSDEC should discuss this report before the scope of the additional investigation is finalized.

ROD

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233-7010

JOHN P. CAHILL
Commissioner

JAN 20 1998

VIA REGULAR MAIL

Richard Caspe
Director
Emergency and Remedial Response Division
USEPA, Region II
290 Broadway
New York, New York 10007-1866

Re: Ley Creek PCB Dredging Sub-site, Onondaga Lake NPL Site

Dear Mr. Caspe:

This letter responds to William McCabe's letter to me dated January 8, 1998, outlining the U.S. Environmental Protection Agency's ("EPA's") concerns with the New York State Department of Environmental Conservation's (the "Department's) March 28, 1997 Record of Decision ("ROD") for the above referenced site. The letter identifies six points that needed to be resolved prior to receiving EPA concurrence with the Department's ROD for the Ley Creek PCB Dredging Site. The enclosed point-by-point responses provide the substantive and procedural clarification sought by EPA regarding the Environmental Conservation Law process followed by the Department when issuing and implementing the Ley Creek PCB Dredging Site ROD.

The Department believes that the enclosed responses adequately resolve the concerns of EPA and provide the basis for EPA concurrence pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act, as amended ("CERCLA"). Should you and your staff agree, please send me a letter of EPA concurrence for the Ley Creek PCB Dredging Site ROD at your earliest convenience.

Please contact me at (518) 457-5861 if you have any further questions in regard to this matter.

Sincerely,

Michael J. O'Toole Jr.

Michael J. O'Toole, Jr.
Director
Division of Environmental Remediation

Enclosure

bcc: ~~Commissioner Cahill (w/out encl.)~~
Frank Bifera (w/out encl.)
M. O'Toole file (2)
Tom Quinn (w/out encl.)
Charles Sullivan, Jr. (w/out encl.)
Steve Hammond (w/encl.)
Bill Little (w/encl.)
Bill Daigle (w/encl.)
Sue Benjamin (w/encl.)
Robert Davies (w/encl.)

Enclosure
DEC Responses to EPA Issues of Concern
Ley Creek PCB Dredging Site

- Floodplains

As noted, the ROD (p. 26, Paragraph 5) addresses erosion concerns and requires that the selected remedy comply with Executive Order 11988: Floodplain Management. NYSDEC will ensure that all of EPA's concerns regarding these issues are addressed during the remedial design.

- Wetlands

As noted, page 25 of the ROD states that the remedy will comply with Executive Order 11990: Protection of Wetlands. Steps necessary to comply with Executive Order 11990 are underway as the PRP has developed a Wetlands Delineation Work Plan. Any requisite mitigative measures resulting from the delineation work will be addressed during remedial design and construction.

- ARARs

Location-specific, action-specific and chemical-specific ARARs for Alternatives 1-7 are contained in the Feasibility Study, dated October 1996; in addition, all of these alternatives, except for Alternative 1: No Action, would comply with Executive Orders 11988 and 11990, the National Historic Preservation Act, the Endangered Species Act, and the Fish and Wildlife Coordination Act. ARAR Table (attached as Appendix I) contains the ARARs for Alternative 8, the selected remedy.

- Risk Assessment/PRGs

Under CERCLA, remediation goals equate to a cumulative excess carcinogenic risk over an individual's lifetime in the range of 10^{-4} to 10^{-6} (i.e., an excess cancer risk of 1 in 10,000 to 1 in 1,000,000) or less and a maximum Hazard Index, which reflects noncarcinogenic effects for a human receptor, equal to 1.0 or less. A Hazard Index greater than 1.0 indicates a potential for non-carcinogenic health effects. Please note that GM submitted a human health risk assessment as part of the RI, which indicates that the carcinogenic risk associated with the dredge material/soils at the Site is below the CERCLA risk range for all current and future receptors. For example, the excess carcinogenic risk for current maintenance workers from ingestion and dermal contact with PCB-contaminated dredge materials/soils was calculated to be 5.0×10^{-7} (5 in 10 million) and the excess carcinogenic risk for a child trespasser was calculated to be 3.3×10^{-7} (3 in 10 million). The Hazard Index for the current maintenance worker was 0.007 and for the child trespasser was 0.003, which are both less than 1 and therefore not indicative of unacceptable non-carcinogenic health effects. The State disagreed with certain elements of GM's human health risk assessment. The New York State Department of Health ("NYSDOH") nevertheless determined, as stated in the ROD, that the remedy selected is protective of human health. The risks to human receptors calculated in the RI may be overestimated, because the PCB slope factor used in the calculations has since been revised downward by EPA. However, it is important to note that, regardless of the calculated risk, the selected remedy would further protect human health by lowering the risk posed by PCBs at the Site.

The ecological risk assessment is presented in Appendix D of the FS (for aquatic wildlife as exemplified by the great blue heron) and in a January 30, 1997 EPA memorandum (for terrestrial wildlife as exemplified by the short-tailed shrew and the red-tailed hawk). The results of the ecological risk assessment indicate that the current conditions at the Site pose an unacceptable risk to the shrew and hawk (Hazard Indices of 65.2 and 14.5, respectively). Further, calculation of the ecological risk using the remediation goals of 1 mg/kg PCBs in surface soil and 10 mg/kg in subsurface soil indicates that the selected remedy is protective of the environment.

The procedures and inputs used to assess risks at the Site, as in all such risk assessments, are subject to a variety of uncertainties. In general, the main sources of uncertainty include those associated with environmental chemistry sampling and analysis, environmental parameter measurement, fate and transport modeling, exposure parameter estimation, and toxicological data. Some of the uncertainty has been addressed by making conservative exposure assumptions that are likely to overestimate the risk posed by the Site.

- Statutory Determinations

The ROD addresses the Ley Creek PCB Dredgings site, which is site No. 7-34-044 on the NYSDEC Registry of Inactive Hazardous Waste Sites and a sub-site of the Onondaga Lake Superfund site on EPA's National Priorities List. The selected remedy was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA), 42 U.S.C. §9601 et seq., and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300. The selected remedy addresses the principal threats to human health and the environment that are posed by conditions at the Site. Exposure to PCB-contaminated dredge material/soils with concentrations greater than 50 mg/kg of PCBs will be addressed by excavation and off-site disposal at a TSCA-permitted landfill; concentrations in the remaining dredge material/soils above 1 mg/kg of PCBs in the surface and 10 mg/kg in the subsurface will be addressed by consolidation and covering using a geomembrane or clay cover in the floodway and a soil cover in areas outside the floodway.

The selected remedy is protective of human health and the environment because all dredge material/soils with concentrations of PCBs above the Site-specific remedial action levels will be either disposed of off-site or consolidated and covered. The selected remedy complies with all federal and state requirements that are legally applicable or relevant and appropriate to the remedial action (see Appendix I: ARAR Table). The remedy is cost-effective because it offers a high degree of effectiveness at an intermediate cost of approximately $6.7 million.

The remedy provides the best balance of trade-offs among the alternatives with respect to the evaluation criteria and utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable. Off-site disposal of the most highly contaminated dredge material/soils will significantly reduce the toxicity, mobility, and volume of PCBs at the Site and offers a permanent solution to the risks posed by these hazardous substances at the Site. The remedy does not satisfy the statutory preference for remedies that employ treatment to reduce the toxicity, mobility, or volume of the hazardous substances, pollutants, or contaminants. Treatment alternatives, including an alternative treatment technology, were evaluated but determined not to be cost-effective, i.e., any increase in effectiveness of the remedy was disproportionate to the increase in cost. The conditions at the Site would require treatment of a large volume of dredge material/soils (110,000 cubic yards) over a large area (18 acres).

A review of the Site will be conducted no later than five years after commencement of the remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment, because this remedy will result in hazardous substances remaining on-site above environmentally-based levels.

An administrative record containing the documents that form the basis for NYSDEC's selection of the remedial action under CERCLA has been compiled pursuant to the NCP, 40 CFR §300.800. The list of documents in the Administrative Record File is attached as Appendix II.

There are no significant changes from the preferred alternative presented in the Proposed Remedial Action Plan issued in February 1997 pursuant to the ECL and the subsequent ECL Record of Decision issued in March 1997.

- Drainage Swale Investigation

The initial step related to pre-design sampling of the former drainage swale area is for DEC to review the data compiled to date by the PRP pertinent to the issue. This data should assist in scoping the requisite sampling program. DEC will treat the sampling program work plan as any other project deliverable, which includes opportunity for EPA review and comment.

Appendix I

Applicable or Relevant and Appropriate Requirements (ARARs)
for the Ley Creek PCB Dredgings Sub-site
Onondaga Lake NPL Site

Selected Remedy--Excavation and off-site disposal of dredged material/soils with concentrations of PCBs > 50 mg/kg at a TSCA-approved, RCRA-permitted landfill; consolidation of dredged material/soils with concentrations of PCBs at surface (top 12 inches) >1 mg/kg and in subsurface >10 mg/kg; capping of consolidated dredged material/soils with 12-inch vegetative soil cover or clay/membrane cap; long-term monitoring; deed restrictions; fencing; and Five-Year Reviews.

Location-Specific ARARs

Executive Order 11988: Floodplain Management
The selected remedy will comply with Executive Order 11988. A floodplain assessment will be performed during remedial design to ensure that the remedy as constructed is protective of the floodplain.

Executive Order 11990: Protection of Wetlands
The selected remedy will comply with Executive Order 11990. Actions will be taken to minimize any destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands. During remedial design, a field delineation and a wetlands functions and values assessment will be performed and a wetlands impact mitigation plan will be developed, if necessary, to ensure that construction of the selected remedy avoids or minimizes any impact to wetlands and mitigates any losses.

National Historic Preservation Act, 16 U.S.C. 470
The selected remedy will comply with the National Historic Preservation Act. A Stage 1A Cultural Survey will be performed during remedial design and further action will be taken regarding cultural resources as necessary.

Fish and Wildlife Coordination Act, 16 U.S.C. 661
The selected remedy will comply with the Fish and Wildlife Coordination Act. NYSDEC will consult with the appropriate state and federal wildlife agencies during remedial design regarding any impact by the selected remedy to wetlands and/or water resources.

Endangered Species Act, 16 U.S.C. 1531
The selected remedy will comply with the Endangered Species Act. NYSDEC will consult with the U.S. Fish and Wildlife Service during remedial design to determine whether endangered or threatened species and/or their habitats exist on or in the vicinity of the sub-site.

Location-specific TBC

Land Use Guidance
The selected remedy is consistent with EPA's policy entitled, "Land Use in the CERCLA Remedy Selection Process," OSWER Directive No. 9355.7-04; dated May 25, 1995.

Chemical-specific ARARs

None
Although there are no chemical-specific ARARs for dredge material or soil, the selected remedy sets forth standards for dredged material/soils remaining at the sub-site that are protective of human health and the environment.

Action-Specific ARARs

Occupational Safety and Health Act, 29 U.S.C. Part 651 et seq., 29 CFR Sections 1904, 1910, and 1926
The selected remedy will comply with OSHA and its implementing regulations, including requirements for hazardous responses and general construction activities.

Toxic Substances Control Act, 15 USC 2601-2671, 40 CFR Part 761
The selected remedy will comply with TSCA and its implementing regulations. Dredged material/soils with concentrations of PCBs > 50 mg/kg will be disposed of at a TSCA-approved landfill. Marking and decontamination of PCB containers will meet TSCA requirements. Dredged material/soils with concentration > 50 mg/kg of PCBs to be disposed of off-site will be manifested. An EPA Identification Number will be obtained for PCB waste generation and EPA Notification of PCB Waste Activity forms will be filed by the generator for on-site storage more than 30 days prior to disposal and by the transporter.

Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act of 1976, as amended, 42 U.S.C. Part 6901 et seq., 40 CFR Part 260 et seq.
The selected remedy will comply with RCRA and its implementing regulations. Dredged material/soils with concentrations of PCBs > 50 mg/kg will be disposed of at a RCRA-permitted landfill.

Federal Hazardous Materials Transport Law, 49 U.S.C. Part 5101 et seq., 49 CFR Parts 100-185
The selected remedy will comply with the Department of Transportation regulations. Requirements for marking and decontamination will be complied with as necessary during transportation of PCB-contaminated dredge material/soils.

6 NYCRR Part 364- Waste Transporter Permits
The selected remedy will comply with 6 NYCRR Part 364. The dredge material/soils will be transported off-site by a hauler permitted under 6 NYCRR Part 364.

Appendix II

Administrative Record File Index of Documents
Ley Creek PCB Dredgings Sub-site
Onondaga Lake NPL Site

1.0 SITE IDENTIFICATION

1.1 Site Background

Notice of inclusion of Onondaga Lake on the National Priorities List, 59 Federal Register 65206, December 16, 1994.

Report: Oil and PCB Sampling and Analyses of Portions of Ley Creek, prepared by EDI Engineering and Science, September 1985.

Report: Hydrogeological Investigation, prepared by EDI Engineering and Science, September 1985.

Report: Hydrogeologic Investigation of Fill Area Along Ley Creek, prepared by O'Brien and Gere Engineers, Inc., April 1987.

Report: Field Investigation: Ley Creek Dredged Material Area, prepared by O'Brien and Gere, Engineers, Inc., July 1989.

Report: Interim Remedial Measure Ley Creek Relief Interceptor Area, prepared by O'Brien and Gere Engineers, Inc., March 1992.

3.0 REMEDIAL INVESTIGATION (RI)

3.3 Work Plans

Plan: Remedial Investigation/Feasibility Study Work Plan: Ley Creek Dredged Material Area, prepared by O'Brien and Gere Engineers, Inc., February 1992.

3.4 Remedial Investigation Reports

Report: Remedial Investigation: Ley Creek Dredged Material Area, prepared by O'Brien and Gere Engineers, Inc., September 1993.

3.5 Correspondence

Letter dated August 25, 1993 from Robert Schick of NYSDEC to William Kochem of General Motors Corporation, conditionally approving Remedial Investigation Report.

4.0 FEASIBILITY STUDY (FS)

4.2 Feasibility Study Work Plans
see Section 3.3.

4.3 Feasibility Study Reports
Report: Feasibility Study; Ley Creek Dredged Material Area, prepared by O'Brien and Gere Engineers, Inc., October 1996.

4.4 Proposed Plan
Proposed Remedial Action Plan; Ley Creek PCB Dredgings Site, issued by NYSDEC, February 1997.

4.6 Correspondence
Letter dated June 28, 1994 from Nicholas Pirro, Onondaga County Executive to William Little of the NYSDEC, Re: Information on County plans for the future use of the Ley Creek Dredgings Site.

Memorandum dated January 30, 1997 from Gina Ferreira of EPA to Alison Hess of EPA, Re: Hazard Quotient Calculations for Terrestrial Wildlife at the Ley Creek PCB Dredgings Site.

Letter dated February 6, 1997 from Robert Schick of NYSDEC to David Coburn of Onondaga County transmitting NYSDEC's February 1997 proposed plan, its fact sheet, and announcing public meeting and opportunity for public comment.

Letter dated February 6, 1997 from Robert Schick of NYSDEC to Philip Harvard of Syracuse China transmitting NYSDEC's February 1997 proposed plan, its fact sheet, and announcing public meeting and opportunity for public comment.

Letter dated February 6, 1997 from Robert Schick of NYSDEC to William Kochem of General Motors Corporation transmitting NYSDEC's February 1997 proposed plan, its fact sheet, and announcing public meeting and opportunity for public comment.

Letter dated February 6, 1997 from Robert Schick of NYSDEC to Charles Randal of the New York State Thruway Authority transmitting NYSDEC's February 1997 proposed plan, its fact sheet, and announcing public meeting and opportunity for public comment.

Letter dated February 6, 1997 from Robert Schick of NYSDEC to William Weiss of Niagara Mohawk Power Corporation transmitting NYSDEC's February 1997 proposed plan, its fact sheet, and announcing public meeting and opportunity for public comment.

5.0 RECORD OF DECISION (ROD)

5.1 Record of Decision
Record of Decision; Ley Creek PCB Dredgings Site, Salina (T), Onondaga County, Site Numbe

7-34-044; issued by NYSDEC, March 1997.

January 8, 1998 letter from William McCabe of EPA identifying CERCLA requirements for ROD.

January 15, 1998 letter from Michael J. O'Toole of DEC responding to EPA's January 8, 1998 letter and requesting EPA concurrence on selected remedy for purposes of CERCLA.

[date3] letter from Jeanne M. Fox of EPA to Michael J. O'Toole of NYSDEC responding to [date2] letter requesting EPA concurrence on selected remedy for purposes of CERCLA.

6.0 SUPPORT AGENCY COORDINATION

6.3 Correspondence

Letter dated April 4, 1994 from Steven Scharf of NYSDEC to Herbert King of EPA transmitting September 1993 Remedial Investigation Report.

Letter dated December 20, 1996 from Susan Benjamin of NYSDEC to Alison Hess of EPA transmitting October 1996 Feasibility Study.

7.0 ENFORCEMENT

7.3 Administrative Orders

In the matter of a Field Investigation to Identify Any Significant Threat to the Environment Caused by the Disposal of Hazardous Wastes at Ley Creek, Index # A7-0129-87-09, November 1987.

In the matter of a Remedial Investigation and Feasibility Study of the Ley Creek Dredged Material Site, Index # A7-0239-90-07, May 1991.

In the matter of the Implementation of an Interim Remedial Measure to Complete Construction of the Ley Creek Service Area Improvements, Index #A7-0263-91-05, June 1991.

7.7 Notice Letters

Letter dated June 23, 1997 from Michael J. O'Toole of NYSDEC and Richard L. Caspe of EPA to David Coburn of the Onondaga County Office of the Environment, providing notice of liability under CERCLA.

Letter dated June 23, 1997 from Michael J. O'Toole of NYSDEC and Richard L. Caspe of EPA to Philip Harvard of Syracuse China, providing notice of liability under CERCLA.

Letter dated June 23, 1997 from Michael J. O'Toole of NYSDEC and Richard L. Caspe of EPA to Michelle Fisher of General Motors Corp., providing notice of liability under CERCLA.

Letter dated June 23, 1997 from Michael J. O'Toole of NYSDEC and Richard L. Caspe of EPA

CERCLA.

Letter dated June 23, 1997 from Michael J. O'Toole of NYSDEC and Richard L. Caspe of EPA to William C. Weiss of the Niagara Mohawk Power Corp., providing notice of liability under CERCLA.

8.0 HEALTH ASSESSMENTS

8.1 ATSDR Health Assessments

Report: Public Health Assessment; Onondaga Lake, Syracuse, Onondaga County, New York, CERCLIS No. NYD986913580; prepared by New York State Department of Health, Under Cooperative Agreement with the Agency for Toxic Substances and Disease Registry, July 24, 1995.

9.0 NATURAL RESOURCE TRUSTEES

9.1 Notice

Letter dated August 19, 1997 from William Daigle of NYSDEC to Andrew Raddant of U.S. Department of the Interior and Anton Geidt of U.S. Department of Commerce, National Oceanic and Atmospheric Administration NOAA, requesting written confirmation regarding national resource trustee interest in Onondaga Lake NPL Site.

9.4 Correspondence

Letter dated November 20, 1997 from William Daigle of NYSDEC to Anton Geidt of U.S. Department of Commerce, National Oceanic and Atmospheric Administration, reiterating request for written confirmation regarding national resource trustee interest in Onondaga Lake NPL Site.

Letter dated November 20, 1997 from William Daigle of NYSDEC to Andrew Raddant of U.S. Department of the Interior, reiterating request for written confirmation regarding national resource trustee interest in Onondaga Lake NPL Site.

10.0 PUBLIC PARTICIPATION

10.1 Comments

Letter dated March 7, 1997, from David Coburn, of the Onondaga County, Office of the Environment to Robert Schick of NYSDEC. Included by reference in this letter were the following:

- Letter dated September 25, 1996 from Nicholas Pirro of Onondaga County Executive Office to Robert Davies of NYSDEC
- Letter dated September 30, 1996 from David Coburn of Onondaga County Offic of the Environment to Robert Davies of NYSDEC

Letter dated March 10, 1997 from William Kochem of General Motors Corporation to Robert Schick of NYSDEC.

Letter dated March 10, 1997 from Robert S. McEwen, Jr. of Nixon, Hargraves, Devans and Doyle, on behalf of the Syracuse China Company and Pfaltzgraff Co., to Robert Schick of NYSDEC.

Undated and unsigned fax from the New York State Thruway Authority received by the NYSDEC on March 12, 1997.

10.3 Public Notices

Proof of Publication, The Post-Standard/Syracuse Herald-Journal, County of Onondaga, Proposed Remedial Action Plan, Public Meeting Notice for the Ley Creek PCB Dredgings Site, dated February 7, 1997.

10.4 Public Meeting Record

Sign-In Sheet dated February 26, 1997 for the Proposed Remedial Action Plan Public Meeting

10.6 Fact Sheets and Press Releases

Fact Sheet dated April 1997, Notice of Availability of the Record of Decision for the Ley Creek PCB Dredgings Site, issued by NYSDEC.

Mailing List (confidential).

Exhibit E

5858.040

REPORT

Remedial Design
Ley Creek PCB Dredgings Site
Syracuse, New York

Remediation and Liability Management Company, Inc.

James R. Heckathorne, P.E.
Vice President

February 1999

O'BRIEN & GERE ENGINEERS, INC.

5000 Brittonfield Parkway
P.O. Box 4873
Syracuse, New York 13221

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1. Introduction

The Ley Creek PCB Dredgings Site (the site) is a Class 2 site in the New York State Registry of Inactive Hazardous Waste Disposal Sites. The site is located in the Town of Salina, Onondaga County, New York, and is bounded by Factory Avenue on the south and Ley Creek to the north. The eastern limit of the site is Townline Road and the western limit is located approximately 4,300 ft downstream. A site location map is presented as Figure 1-1, and a site plan is presented as Figure 1-2. The site is approximately 19 acres in size. Additionally, there is a 0.4 acre area on the north side of Ley Creek to be addressed during site remediation.

This report, along with the February 1999 Hydraulic Analysis and Floodplain Assessment Report, the February 1999 Contract Drawings and the February 1999 Contract Documents (technical specifications and special provisions), represent the Remedial Design for the site. This Remedial Design Report was initially submitted to the New York State Department of Environmental Conservation (NYSDEC) on June 19, 1998. NYSDEC submitted its comments in a letter dated July 20, 1998, and USEPA submitted its comments by letter dated July 30, 1998. This revised Remedial Design Report incorporates NYSDEC's and USEPA's comments.

The following sections present the history and conditions of the site, investigations that have been conducted at the site, components of the Remedial Design, health and safety requirements, construction quality assurance, post construction maintenance and monitoring, contingency plan, and the anticipated construction schedule and sequence.

1.1. Site history

Prior to the early 1970's, the combination of poor channel conditions and large areas of low permeability in the Ley Creek watershed caused extensive flooding, some of the worst of which was near the General Motors Corporation (GM) former Inland Fisher Guide (IFG) facility in 1969 (Calocerinos and Spina, 1969). The formation of the Ley Creek Drainage District and clearing and dredging of the channel occurred after

May 23, 1991. Based on NYSDEC's Field Investigation Report comments and on several meetings between GM and NYSDEC, a Work Plan was developed for an RI/FS for the site (O'Brien & Gere Engineers, 1992) and approved by NYSDEC on June 3, 1992 (Schick, 1992). RI sampling activities commenced in July 1992, and the RI was completed in accordance with the RI/FS Work Plan (O'Brien & Gere Engineers, 1992). The September 1993 revised RI Report (O'Brien & Gere Engineers, 1993[a]) incorporated revisions approved by NYSDEC on August 25, 1993 (Schick, 1993) to the February 1993 initial RI Report.

A FS Report was submitted to NYSDEC on November 24, 1993. NYSDEC provided comments on the FS Report in letters dated January 14, 1994 (Schick, 1994[a]) and April 21, 1994 (Schick, 1994[b]). Responses were prepared and provided in an Addendum to the FS report and submitted to NYSDEC as the revised FS Report on May 20, 1994 (Kochem, 1994[a], and O'Brien & Gere Engineers, 1994). Based on further NYSDEC comments (Little, 1994) and Onondaga County concerns as a property owner (Pirro, 1994), a revised FS Report was submitted to NYSDEC on October 9, 1996. NYSDEC approved the FS Report in a letter dated January 23, 1997 (Davies, 1997). A topographic and property boundary survey was performed in the summer of 1995 for the FS.

In March 1997, following a period of public comment, NYSDEC issued its Record of Decision (ROD) for the site (NYSDEC, 1997). The United States Environmental Protection Agency (USEPA) concurred in the selection of NYSDEC's remedial alternative in the ROD by its letter dated February 9, 1998 to NYSDEC Commissioner John Cahill (Fox, 1998). Since that time, the site was designated as a subsite of the Onondaga Lake National Priorities List (NPL) site by NYSDEC and USEPA. The property owners at the time of issuance of the ROD are noted on Figure 1-2. It is anticipated that the current owners of property within the site will be conveying their respective fee interests to a GM subsidiary, the Remediation and Liability Management Company, Inc. ("REALM"). REALM, in turn, will be entering into an Order on Consent with NYSDEC to implement the ROD-selected remedial alternative at the site.

1.2. Existing site conditions

The September 1993 revised RI Report (O'Brien & Gere Engineers, 1993[a]) contains a detailed summary of investigatory activities performed and data generated at the site. A concise summary of site conditions is presented in this section.

1.2.3. Site hydrogeology

The direction of ground water flow is to the north toward Ley Creek. Ground water elevations indicate an upward flow potential exists between the upper fluvial and lacustrine deposits and the underlying till. The average ground water flow velocity in the shallow zone was calculated to be 0.08 ft/day (29 ft/yr) assuming an average study area-wide hydraulic conductivity for materials in the shallow aquifer of 9.5 gpd/ft^2, an average hydraulic gradient of 0.022 ft/ft, and an estimated porosity of 0.35.

2. Site investigations

2.1. Remedial investigation/feasibility study

An RI/FS was conducted for the Ley Creek PCB Dredgings Site by O'Brien & Gere Engineers, Inc. on behalf of GM in accordance with an Administrative Order on Consent (#A7-0239-90-07; Order) between GM and NYSDEC. The RI/FS was conducted in accordance with the RI/FS Work Plan (O'Brien & Gere Engineers, 1992) approved by NYSDEC on June 3, 1992 (Schick, 1992). The results of the RI were documented in the September 1993 revised RI Report (O'Brien & Gere Engineers, 1993[a]) which incorporated revisions approved by NYSDEC on August 25, 1993 (Schick, 1993) to the February 1993 initial RI Report. Results of the RI demonstrated PCB (Aroclor 1242, 1248) concentrations in dredged material/soil that ranged from less than the detection limit (generally 1 mg/kg) to 470 mg/kg.

The FS Report was submitted to NYSDEC on November 24, 1993. NYSDEC provided comments on the FS Report in letters dated January 14, 1994 (Schick, 1994[a]) and April 21, 1994 (Schick, 1994[b]). The revised FS Report was submitted to NYSDEC in October 1996 and approved on January 23, 1997.

The alternative recommended for implementation in the FS consisted of: excavation and off-site disposal of dredged material/soil containing PCBs at concentrations greater than or equal to 50 mg/kg, regrading of material in the floodway for the purposes of erosion control, 12-inch vegetated soil cover over the remaining material, construction of an access road along the south bank of Ley Creek to facilitate potential future dredging operations, installation of fence gates and access paths to provide access to Onondaga County sewer manholes, grading and piping of drainage swales crossing the site, routine ground water monitoring, deed restriction, fencing, routine inspection and maintenance, and five-year reviews. This remedial alternative is substantially what NYSDEC selected as the remedial action for the site in its ROD.

3. Remedial design

3.1. Remedial objectives

The following were the remediation goals identified by NYSDEC in its March 1997 ROD (the "remedial objectives").

- Reduce, control, or eliminate the PCB contamination present within the dredged material/soil on the site.
- Eliminate the threat to surface waters and sediments by eliminating any future contaminated surface runoff from the contaminated dredged material/soil on site.
- Eliminate a source of PCBs for uptake by fish and other organisms in Ley Creek.
- Eliminate the potential for direct human or animal contact with the contaminated dredged material/soil on site.
- Prevent, to the extent possible, migration of contaminants into the groundwater.

The description of the selected remedy in the ROD is presented in Exhibit A, and generally consists of the following:

- Excavation and removal of dredged material/soil that contain PCBs at concentrations at or exceeding 50 mg/kg to a permitted hazardous waste landfill.
- Consolidation and covering of the remaining PCB contaminated dredged material/soil where concentrations are less than 50 mg/kg but exceed the remedial levels of 1 mg/kg at the surface and 10 mg/kg for subsurface areas. The dredged material/soil will be removed, at a minimum, from the first twenty five feet of the floodway area to restore this area to appropriate elevation. After restoration to floodway elevations, remaining materials above the remedial level remaining in the floodway

Utility poles designated by Niagara Mohawk Power Corporation (NMPC) will be taken down. The Remedial Action (RA) Contractor will address management of the utility poles in the Materials Handling Plan to be prepared prior to implementation of the remedial action.

During clearing and grubbing of the site, caution will be used to avoid damaging existing onsite monitoring wells and the fence.

3.3. Excavation of hot spots

Two of the remedial objectives established by the ROD are to reduce, control, or eliminate the PCB contamination present within the dredged material/soil on the site, and to eliminate a source of PCBs for uptake by fish and other organisms in Ley Creek. Excavation of areas of detectable PCBs at or above 50 mg/kg threshold will help achieve these remedial objectives.

3.3.1. Former drainage swale evaluation - test pitting sampling investigation

Further evaluation of the level of PCBs in the former drainage swale area will be conducted to address the first component of the ROD (as presented in Exhibit A). The purpose of this investigation will be to evaluate if there are additional areas which contain detectable PCBs at or above 50 mg/kg. Newly identified areas, if any are found, will be excavated as part of the Remedial Construction.

As discussed in the former drainage swale evaluation submittal submitted to NYSDEC on June 18, 1998 (O'Brien & Gere 1998c), the following soil borings were located on the site in the vicinity of the former drainage swale and were sampled for PCBs: MW-OBG7C, B-41, B-40, B-39, B-38, B-37, B-28, B-27, B-26, B-25, B-24, B-127B, B-127A. Figure 3-1 depicts the above listed soil borings and the approximate location of the former drainage swale. In addition to the soil boring characterization data, six test pits are proposed to evaluate the potential presence of PCBs at concentrations at or greater than 50 mg/kg. The first test pit will be located approximately 15 feet from the northern edge of Factory Avenue; the second will be located between B-24 and the site fence along the northern edge of Factory Avenue; the third will be located between B-25 and B-28; the fourth will be in the vicinity of B-41; and the fifth and sixth test pits will be located between MW-OBG7C and the southern edge of Ley Creek.

Dredged material/soil excavated from the test pits will be staged on 40 mil plastic during sampling activities. Dredged material/soil contaminated with PCBs greater than or equal to 50 mg/kg will be transported off-site for disposal along with dredged material/soil from other previously identified PCB "hot spots" at the site. If a test pit dredged material/soil analysis indicates the presence of PCBs greater than or equal to 50 mg/kg, dredged material/soil confirmation sampling will be conducted similar to the Post-Excavation Confirmatory Sampling Program presented as Special Provision 23 (SP-23) in the Contract Documents. Dredged material/soil contaminated with PCBs less than 50 mg/kg will be regraded on-site and covered with a vegetative soil cover in accordance with the Contract Documents and Contract Drawings.

It may be necessary to dewater prior to or during excavation. Water generated as part of the dewatering efforts will be managed in accordance with the RA Contractor's Construction Water Management Plan. Sheeting/shoring of excavations may also be required to maintain excavation stability. Sheeting/shoring will be conducted according to the Contract Documents.

3.3.2. Excavation and staging

Excavation and staging of dredged material/soil that contain PCBs at concentrations at or exceeding 50 mg/kg will be conducted. Excavation of dredged material/soil will be conducted using standard equipment (*e.g.*, backhoes). Based on dredged material/soil analytical results from soil boring samples conducted during the RI, there are fifteen boring locations that contain PCBs at concentrations exceeding 50 mg/kg. The boring designations and their corresponding vertical extent of PCBs greater than 50 mg/kg are as follows: B-122.5A [0-4ft], B-122.5B [0-5ft], B118A [0-1ft], B118B [0-5ft], B127A [0-7ft], B127B [0-3ft], B1 [4-8ft], B6 [0-8ft], B37 [4-8ft], OBG3 [0-4ft], OBG4 [4-6ft], OBG5 [0-2ft], OBG6 [2-10ft], OBG7A [2-4ft], and OBG7B [6-8ft].

Each soil boring location mentioned above will be excavated with a 10 ft by 10 ft horizontal area using the boring location as the center of the area. Dredged material/soil will be excavated to the depth that corresponds to the vertical extent mentioned above. Thus, the minimum volume of dredged material/soil to be excavated as part of the proposed excavation is approximately 310 cy. The volume of dredged material/soil contaminated with PCBs equal to or greater than 50 mg/kg is approximately 220 cy and will be transported off-site. Based upon sampling data collected to date, the volume of dredged material/soil contaminated with PCBs less than 50 mg/kg is approximately 90 cy.

material/soil was performed in July-August 1998. Pre-disposal characterization data are presented in Exhibit B.

Transported dredged material/soil will be covered to minimize potential hazards to humans due to transportation of PCB contaminated dredged material/soil to the TSCA-permitted facility.

3.3.4. Confirmatory sampling/analysis

For the dredged material/soil contaminated with PCBs less than 50 mg/kg that are excavated and staged as part of the excavation, a minimum of one sample will be collected and analyzed using a field screening kit per excavation. An additional field screening sample will be collected and analyzed for every 20 cy of excavated dredged material/soil contaminated with PCBs less than 50 mg/kg per excavation.

A combination of field screening and laboratory analysis will be utilized to confirm PCB concentrations in excavated areas following the initial excavation. Samples of the excavation walls and floor will be obtained and analyzed using PCB field screening kits to evaluate whether the remaining dredged material/soil contains PCBs concentrations at or greater than 50 mg/kg. The minimum number of confirmatory samples will consist of one sample of each wall and one sample of the excavation floor (for a total of five samples per excavation). If a sample result shows PCB concentrations at or greater than 50 mg/kg, then the excavation will proceed in the appropriate direction, as indicated by the sample results. For example, if one of the wall samples contains PCBs in excess of 50 mg/kg, excavation of that wall surface will continue.

Numbers of confirmatory samples will increase as the excavation size increases. The number of confirmatory samples per length of wall excavation is as follows: up to 20 ft excavation length, one sample; 21 ft to 40 ft wall length, two samples; and 41 ft to 60 ft wall length, three samples. The number of confirmatory samples per depth of wall excavation is as follows: up to 10 ft excavation depth, one sample; 11 ft to 20 ft, two samples; 21 ft to 30 ft, three samples; and so on. In other words, one sample will be taken from a wall that has an excavation length up to 20 ft and an excavation depth up to 10 ft. If either the excavation length or excavation depth increases, additional samples will be taken as presented above.

The number of confirmatory samples for the floor excavation would increase as the amount of floor area increases. The number and approximate locations of the floor samples will be determined by superimposing the grid formed by connecting the locations of the wall samples from opposite walls

3.4.2. On-site dredged material/soil

On-site dredged material/soil will be consolidated on site exclusive of the area within 25 ft north and south of the sanitary sewer line after being removed from the following areas:

- That portion of the site bounded by Factory Avenue to the south, the site fence to the north and west, and Townline Road to the east. Dredged material/soil will be removed to a minimum depth of 1 ft from this area. For drainage purposes, some areas within the drainage ditch on the north side of Factory Avenue may require further excavation to establish final grades.
- As part of the drainage swale conversion to pipe culverts, dredged material/soil will be removed to a depth appropriate to construct the pipe culverts.
- Other portions of the site requiring dredge material/soil removal to establish final grades.

3.5. Site grading

3.5.1. Grading plans

Grading will be conducted using standard equipment (*i.e.*, dozers, graders) to establish the final grades presented in Contract Drawings G-2 through G-6.

3.5.2. Ley Creek hydraulic modeling

Hydraulic modeling was conducted utilizing the Hydrologic Engineering Center's River Analysis System (HEC-RAS) model. HEC-RAS is a modeling system developed by the United States Army Corp of Engineers and packaged as Windows®-based software by Haested Methods to perform steady flow hydrologic calculations. Modeling for this project was conducted using HEC-RAS for Windows® (Version 2.1). The hydraulic modeling was conducted as required by the ROD for the site. The ROD required that a hydraulic analysis and floodplain assessment be conducted to demonstrate compliance with Executive Order 11988 by verifying that the remedy would not result in a significant change in flood elevations and that there would be no adverse impacts to the remedy from the 100-yr and 500-yr floods. Accordingly, the HEC-RAS model was used as part of the Remedial

baseline conditions. Thus, the remedy as designed will not result in an increase in flood levels within the community during a 100-yr flood or 500-yr flood, as compared to baseline conditions.

The complete Hydraulic Analysis and Floodplain Assessment including hydraulic modeling procedures and results are presented in the Hydraulic Analysis and Floodplain Assessment Report (O'Brien & Gere 1999).

3.6. Access road

A gravel access road will be constructed at the site to provide Onondaga County a means to perform potential future dredging activities at Ley Creek. The access road will be located along the southern side of Ley Creek with curb tie-ins to Factory Avenue (see Drawings G-2 through G-6 for access road location). The access road will be 12 ft wide and sloped to facilitate proper drainage.

NYSDEC and Onondaga County have approached REALM to consider incorporation of a bike path along Ley Creek as part of a conceptual county-wide bike trail system. It is not appropriate at this time to evaluate the practical and legal feasibility of incorporating a bike path into the remedial design for the site, because the Ley Creek media are the subject of a continuing investigation as part of the Former IFG Facility/Ley Creek Deferred Media RI/FS.

3.7. Cover system

Constructing a cover system at the site will address the following remedial objectives established in the ROD: eliminate the threat to surface waters and sediments by eliminating future contaminated surface runoff from the contaminated dredged material/soil on site; prevent, to the extent possible, migration of contaminants into ground water; and eliminate the potential for direct human or animal contact with the contaminated dredged material/soil on site.

The materials of construction for the cover will consist of a vegetated soil cover over the entire site except for the area in which the gravel access road will be constructed. The 12 in vegetative soil cover will consist of 6 in of top soil placed over a 6 in barrier soil layer. Further, as a visual indicator of erosion in the soil cover, a non-woven geotextile will be placed between the

- Typical synthetic geomat materials with established vegetation can withstand flow velocities of 14 ft/s or less without erosion

The recommended remedial alternative in the NYSDEC-approved Feasibility Study Report contemplates the cover design to include a geomembrane to serve the express function of erosion protection. NYSDEC's ROD reflects this and includes the geomembrane throughout the floodway. Upon further evaluation of erosion protection of the cover in the Remedial Design, it is apparent that a cover cross section consisting of 12 inches of well-maintained vegetative cover would provide adequate erosion protection for even the 500-year flood. However, as a measure of additional erosion protection, the cover design will include a synthetic geomat (erosion control and revegetation matrix) from the southern edge of Ley Creek to the northern edge of the access road. This area has a slope of 33% and is the only area on the site which would require added erosion control based on slope and flood velocities. The synthetic geomat is a lightweight, porous material which strengthens the interface between soil and vegetation. It will be anchored by keying the edges into the soil cover as shown in the Contract Drawings.

As an added protection measure requested by NYSDEC (Mizerak 1998a), a visual indicator of erosion in the soil cover will be placed from the southern edge of Ley Creek to a few feet south of the start of the slope increase south of the access road, where the slope is upward to 33% at the creek bank. A non-woven geotextile will be placed between the 6 in barrier soil layer and the 6 in top soil layer. The non-woven geotextile is a lightweight (4 oz/sy), porous fabric which will serve as an indicator that erosion has occurred and maintenance to the soil cover is required. The non-woven geotextile will be anchored by keying the edges into the soil cover as shown in the Contract Drawings. During construction activities, the northernmost edge of the non-woven geotextile (visual indicator fabric) will be surveyed. The survey data will then be provided to Onondaga County and NYSDEC for use in future dredging operations.

The RA Contractor will provide an Erosion Control Plan which will include procedures to prevent dredged material/soil from washing into Ley Creek or the existing drainage ditches during Remedial Construction activities.

3.7.2. Slope stability

The proposed final grades of the cover system include one vertical on five horizontal (20%) for the slope leading from the central portion of the site to the access road, and one vertical on 25 horizontal (4%) for slope leading from the central portion of the site to Factory Avenue. During construction

Court Street. The drainage ditch referred to as Outfall 003 discharges storm water from the former IFG facility and treated water from the Industrial Waste Treatment Plant (IWTP) at the former IFG facility. The IWTP consists of equalization, chemical addition, flocculation, filtration, and carbon adsorption processes to treat water collected in oil/water collection sumps and thinner spill area interceptor trenches at the facility to remove oil, solids, PCBs, and VOCs . Outfall 003 and Outfall 004 are engineered channels which consist of geofabricated mats, corrugated metal, and rip rap.

One of the drainage ditches conveys a SPDES-regulated wastewater discharge from the Syracuse China facility as well as local surface runoff to Ley Creek. This drainage ditch consists of native materials. The remaining two drainage ditches located toward the western end of the site discharge local surface runoff to Ley Creek; they consist of native materials. Local surface runoff includes runoff from Factory Avenue, property south of Factory Avenue, and the site. As part of the Remedial Design, the five existing open drainage ditches will be converted to drainage pipes. In addition, catch basins will be installed between the Factory Avenue culverts and the newly installed drainage pipes. Locations and invert elevations of the catch basins and the hard pipes are shown on Contract Drawing G-2 through G-6. Details of the catch basin, hard pipe bedding, and drainage pipe end sections are shown on Contract Drawing G-9.

As shown in the Contract Drawings G-2 through G-6, the drainage ditch between Factory Avenue and the site will be graded such that storm water runoff drains to one of the five catch basins. There will be thirteen corrugated metal culverts installed within the drainage ditch. Locations and invert elevations of the culverts are shown on Contract Drawings G-2 through G-6. Two of the thirteen culverts will be installed beneath the access road at the eastern and western entrance/exit locations. The remaining eleven culverts will be installed beneath the sanitary sewer truck access paths.

To assist in the design of the drainage pipes, catch basins, culverts, drainage ditch sloping and site slopes, storm water runoff modeling was conducted. The EPA computer modeling package known as TR55® (USEPA, 1989) was utilized to calculate the flow of storm water runoff from the designated portions of the site that would drain into the culverts. Details of the modeling are presented in Appendix A. Flows generated from the TR55® modeling were combined with estimates of flows from the Factory Avenue culverts to calculate design flows for the new drainage pipes. Calculations for sizing the drainage pipes and culverts are presented in Appendix B.

3.11. Site access

Access will be provided by the new access road entering and leaving the site from Factory Avenue. The proposed location of the site access road is shown on Contract Drawings G-2 through G-6. During the excavation/staging/transport/disposal activities, the existing access gate just west of Outfall 003 will be modified to allow transport of dredged material/soil from the site to the Railcar Loading Area at the former IFG facility site. The modified access gate will allow transport vehicles to cross Factory Avenue perpendicularly.

3.12. Site security

As part of the site remediation, a new 6 ft chain link fence will be installed around the eastern and western limits of the soil cover system and off set from Factory Avenue on the southern side (see Contract Drawing G-2 for location and G-8 for details). The bottom of the fence will be 6 inches above the ground surface to allow passage of small wildlife.

As part of the Remedial Construction, two double swing security gates will be installed at both entrance/exit points along Factory Avenue (see Contract Drawings G-2 and G-6 for locations). A detail of the 15 ft wide security gates is shown on Contract Drawing G-8.

Site access during Remedial Construction will be monitored by the RA Contractor. Only authorized personnel will be permitted onsite. Authorized personnel will sign in and out at the site trailer using the sign in sheet provided by the RA Contractor. Appropriate signs will be posted at selected intervals on the security fence to warn potential trespassers.

3.13. Basis of design summary

A Basis of Design Summary is included as Appendix C to this Report.

Federal Hazardous Materials Transportation Regulations

- 49 CFR Sections 172-174 and 177-179

Executive Orders

- 11988 (Floodplain Management)
- 11990 (Protection of Wetlands)

State

Environmental Conservation Law

- Article 15, Title 5 - Stream Disturbance and Excavation/Fill Below Mean High Water Level
- Article 17, Title 8 - SPDES
- Article 24 - Wetlands
- Article 27, Title 7 - Solid Waste - 6 NYCRR Part 364 - Waste Transporter
- Article 27, Title 9 - Hazardous Waste - 6 NYCRR Part 372 - Hazardous Waste Manifest System and Related Standards for Generators, Transporters and Facilities
- Article 36 - Participation in Flood Insurance Programs - 6 NYCRR Part 500 - Floodplain Management Regulations Development Permits

New York State Thruway

- Work Permit for activities on NYS Thurway Property

Local

Town of Salina Excavation/Fill Permit

- Work conducted in the Town of Salina which involves excavation/fill activities must be permitted. Although there exists an exemption from permitting under local government zoning, land-use or other regulatory program (see 6 NYCRR § 375-1.7(c)), Remediation and Liability Management Company, Inc. (REALM) applied for a permit as a courtesy to the Town. The submittal to the Town included a completed short environmental assessment form (EAF), which reflected the fact that the excavation/fill work will be undertaken in accordance with an Order on Consent with the NYSDEC. At a town meeting on July 13, 1998, the Town passed a resolution authorizing the permit.

4. Health and safety requirements

4.1. General

Prior to the commencement of on-site remedial activities, the RA Contractor will be required to prepare and implement a site-specific HASP for persons working at and in the vicinity of the site in accordance with the Federal Regulations found under 29 CFR 1910.120 Hazardous Waste Operations and Emergency Response, 29 CFR 1926 Safety and Health Regulations for Construction, and the citations adopted by reference.

The HASP will be developed by a certified health and safety professional. The site-specific HASP will, at a minimum, address the following elements:

- RA Contractor's organizational chart
- Results of health and safety risk analysis performed by the RA Contractor
- Employee training and experience
- Summary of medical surveillance program
- List of standard operating procedures incorporated into the HASP
- A method to monitor entry and exit from the work site
- Personnel and equipment decontamination procedures
- A spill containment program
- Emergency response plan and emergency reporting procedures
- Fire protection plan
- Confined space entry procedures

4.3. Health and safety risk analysis

The RA Contractor shall perform and provide in the HASP the results of a health and safety risk analysis for each location and operation to be performed.

The risk analysis shall be based upon the best information available regarding the contaminants and conditions present at the site as well as the practices and tools to be applied in the operation and shall include but not be limited to the following:

- Overview of the following information:
  - Location, site topography, accessibility and size of the site.
  - Description of the site operation and tasks to be performed. The specific tasks for the activities include, but are not limited to:
    - Excavation and relocation of dredged material/soil within the limits of the proposed vegetative cover limits within the property boundary
    - Excavation and transportation of dredged material/soil to be disposed of off-site.
    - Extension of ground water monitoring wells located within the limits of the vegetative cover
    - Extension of sanitary manholes located within the limits of the vegetative cover
    - Construction of access roadways to the sanitary manholes
    - Covering of dredged material/soil with an erosion control and vegetation matrix between Ley Creek edge and the access road
    - Installation of drainage culverts within the vegetative cover area
    - Installation of chain link fences around the vegetative cover area to limit access
    - Construction of a site access road

4.4. Employee training and experience

Employees performing on-site activities and the supervisors and management responsible for the site are to be trained to the level required by their job function as specified by OSHA 29 CFR 1910.120(e) prior to the start of work at the site. Each employee, manager and supervisor will also receive eight hours of refresher training annually. Written certification of the successful completion of the necessary training is required by the regulations.

Employees who have been designated as responsible for responding to on-site emergencies are also required to receive additional training meeting the requirements of 29 CFR 1910.120(q) in how to respond to such emergencies prior to the start of site work.

4.5. Medical surveillance program

The RA Contractor will establish and implement a Medical Surveillance Program (MSP) for employees engaged in on-site operations, consistent with 29 CFR 1910.120(f). The MSP will include physical examinations performed by or under the supervision of a licensed physician. The written opinion of the attending physician on the employee's ability to perform the required work will be obtained by the RA Contractor and provided to the employee.

The RA Contractor will retain an accurate record of the required medical surveillance information for the appropriate period as specified in 29 CFR 1910.120.

4.6. Standard operating procedures

The RA Contractor shall be responsible for developing and implementing necessary standard operating procedures (SOP) for site operations.

4.7 Site control

Routine requirements: for ongoing operations, the RA Contractor and/or his designee will be required to meet with the Owner or Engineer, when present, prior to the start of the day's activities to prepare all the necessary paperwork

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The RA Contractor shall be responsible for conducting operations in accordance with federal, state and local regulations and requirements for storage of the RA Contractor's hazardous materials (*e.g.*, gasoline, lube oils, etc.) on-site, including locating staging areas, labeling/signage, etc.

The RA Contractor shall use a "buddy system" as required.

4.8. Personnel and equipment decontamination

The RA Contractor will develop and implement decontamination procedures as required by 29 CFR 1910.120(k) which will minimize employee contact with hazardous substances or equipment that has contacted hazardous substances. The RA Contractor will also develop and implement decontamination procedures for heavy equipment and tools.

Engineering controls, work practices, the use of PPE, or a combination of these will be implemented by the RA Contractor during site operations to protect employees from exposure to hazardous substances, and safety and health hazards as required by 29 CFR 1910.120(g).

A written personal protective equipment (PPE) program including, but not limited to, the following elements will be required to be incorporated into the RA Contractor's site-specific HASP:

- PPE selection based on site hazards
- Duration of site operations
- PPE use and limitations
- PPE maintenance and storage
- PPE decontamination and disposal
- PPE training and proper fit
- Procedures for donning and doffing PPE
- PPE inspection prior to, during, and after use
- Evaluation of the effectiveness of the PPE program

4.11. Fire protection plan

The RA Contractor shall develop procedures for handling and responding to small and large fires. This Fire Protection Plan (FPP) shall be included in the HASP as a separate document. The FPP shall include procedures for requesting emergency assistance and notifying the Owner and Engineer of the incident. The RA Contractor shall insure that fire traffic lanes are available (not blocked) and all fire exits are properly marked.

4.12. Confined space entry

The RA Contractor will include confined space entry procedures in the site-specific HASP as required by 29 CFR 1910.120(b). Workers that are involved with confined space entry activities will be required to take an 8-hr confined space entry class.

5. Construction quality assurance

5.1. General

This Section has been prepared as a means of providing guidelines and procedures for Construction Quality Assurance and Construction Quality Control (CQA/CQC) during Remedial Construction. Within this Section, the CQA/CQC responsibilities of each of the entities associated with the project are outlined. This includes a delineation of the appropriate lines of communication between the RA Contractor, inspection personnel and design personnel associated with construction activities. Also provided is a description of the required level of experience and training for the RA Contractor, its crew, and CQA/CQC inspectors in sufficient detail to determine that personnel permitted to be involved with the project have the necessary qualifications to properly complete the work in accordance with the methods and procedures specified.

In addition to personnel requirements, this Section provides a description of the CQA/CQC protocols to be utilized for documenting construction activities and compliance with the technical specifications. Detailed information, including the frequency of inspection, field testing methods, sampling requirements for laboratory testing, testing procedures and equipment to be utilized, criteria for acceptance/failure, and a description of the corrective actions to be initiated upon test failure will also be presented in the technical specifications.

It is the responsibility of CQA/CQC personnel to coordinate with the parties involved with the construction activities of the project to maintain awareness of the requirements specified in the Contract Documents.

- Review submittals and shop drawings from the RA Contractor
- Schedule and perform CQA/CQC inspections of the construction work
- Approve firms retained and methods employed by the RA Contractor to perform CQA/CQC testing services
- Confirm that testing equipment, personnel, and procedures do not change over time, or if changes are made, determine that any changes do not adversely impact inspection processes
- Confirm that inspection reports are accurately recorded and maintained
- Confirm that work is conducted in accordance with RA Contractor's approved plans for project implementation (*e.g.*, Construction Quality Control Plan, Health and Safety Plan, Perimeter Air Monitoring and Dust Control Plan, Storm Water Pollution Prevention Plan, Construction Water Management Plan, and Materials Handling Plan)
- Provide REALM with reports on inspection results
- Accept, reject, or halt work based on the results of field inspection and CQA/CQC results and order corrective measures for defective work
- Conduct confirmatory sampling during the hot spot excavation
- Provide a line of communication between REALM and the RA Contractor
- Schedule and attend project meetings during construction
- Prepare the Certification Report and Operation, Maintenance and Monitoring Plan following construction completion.

RA Contractor's Responsibilities

The RA Contractor retained will perform the following:

The RA Contractor selected to construct this project will be prequalified based on evidence of having experience in constructing projects of similar size and scope.

5.4. Lines of communication

An important component to the successful completion of any project is effective communication. A pre-construction meeting will be held at the site with the selected RA Contractor, a REALM representative, the Engineer and the NYSDEC prior to the commencement of work to review site conditions, design considerations and implementation of the terms and conditions of the Contract Documents. Also, the responsibilities of both the Engineer and RA Contractor, and the lines of communication discussed herein will be reviewed during the pre-construction meeting.

During the performance of work, meetings will be held periodically to keep the involved parties apprised of the status of the project, to maintain awareness of the requirements specified herein and within the plans and specifications, and, as needed, to address construction-related problems. These meetings will be attended by a representative of the RA Contractor who has decision making responsibilities, and by the Engineer. NYSDEC will also be availed the opportunity to attend site meetings associated with construction issues. Minutes of these meetings will be kept and distributed.

5.5. Construction quality control and construction quality assurance

Construction quality control and construction quality assurance (CQC/CQA) will focus on two issues. First, CQC/CQA will focus on the execution of the work conducted by the RA Contractor during Remedial Construction. As a part of field inspections, the Engineer will review the RA Contractor's execution of the work relative to the approved plans (*e.g.*, Construction Quality Control Plan, Health and Safety Plan, Perimeter Air Monitoring and Dust Control Plan, Storm Water Pollution Prevention Plan, Construction Water Management Plan, and Materials Handling Plan) submitted by the RA Contractor prior to Remedial Construction.

Secondly, CQC/CQA will focus on the quality of the construction. This will be accomplished through testing parameters, procedures, and criteria to be utilized during the project. Procedures for field testing are outlined, and

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additional embankment is placed. Improperly compacted embankment shall be removed.

- Where required, the RA Contractor shall, at his expense, add sufficient water during the compaction effort to assure proper density. If, due to rain or other causes, the material exceeds the optimum moisture content for satisfactory compaction, it shall be allowed to dry, assisted by discing or harrowing, if necessary, before compaction or filling effort is resumed.

- The RA Contractor shall be required to seal the working surface at the close of each day's operation and when practical prior to rainfall. Sealing shall be accomplished by rolling the surface with a smooth wheel steel roller.

- Compaction or consolidation achieved by traveling trucks, machines and other equipment will not be accepted unless such procedures are approved by the Engineer and proper compaction density is achieved.

- Hand tamping shall be required around buried utility lines or other subsurface features that could be damaged by mechanical compaction equipment.

- Embankments shall be constructed to such elevations as to make allowance for any settlement that may occur. Prior to the construction of any structure, roadway or other ground feature and before final acceptance of the contract, the RA Contractor shall regrade the embankments to conform to the established lines and grades.

The density control of embankments will vary based on the type of material the embankment is placed over. If the embankments are placed primarily over organic materials, then a performance based criteria will be used to provide that the embankment material is compacted adequately. If embankments are placed primarily over soil, then analytical based criteria will be used to provide that the embankment material is compacted adequately.

The performance based criteria consists of a certain type of compaction equipment that is specified or proposed by the Contractor. The proposed compaction equipment will operate at a predetermined speed for a predetermined number of passes. The compaction effort will be monitored by the Engineer and will be modified if adequate compaction is not obtained. The analytical based criteria will consist of compacting the embankments to 90% of maximum dry density as determined by the density tests designated

mudmat as specified or directed and shall be sufficiently stable to remain firm and intact during the preparation for the placing of concrete thereon.

The RA Contractor shall at all times provide and maintain proper and satisfactory means and devices for the removal of all water entering the excavations, and shall remove all such water as fast as it may collect, in such manner as shall not interfere with the prosecution of the work or the proper placing of pipes, structures, or other work. The management of water shall be in accordance with the RA Contractor's Construction Water Management Plan.

Backfilling will be conducted as follows:

- Backfilling shall be with suitable excavated materials which can be compacted as specified. In the event the excavated materials are not suitable, Special Backfill as specified or ordered by the Engineer shall be used for backfilling.

- Backfilling around structures shall not be commenced before the structure has developed sufficient strength to withstand the loads applied. No backfill material shall be allowed to fall directly on a structure, until at least 12 in of material has been hand-placed and compacted nor shall any material be pushed directly against a structure in backfilling.

- Backfill shall be deposited in horizontal layers in 8 in lifts or thickness no greater than can be compacted to obtain the specified minimum densities.

Compaction will be conducted as follows:

- Where structures, driveways, sidewalks or other features are to be constructed on the backfilled area the entire backfill shall be compacted to obtain 95% maximum modified effort density in accordance with ASTM D1557. Other areas shall be compacted to obtain 90% maximum standard effort density in accordance with ASTM D698 or as directed by the Engineer.

- The density shall be determined as set forth in the Contract Documents.

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- Where pipe is to be laid on special granular material the excavation below subgrade shall be to the depth specified or directed. The excavation below subgrade shall be refilled with special granular material as specified or directed, shall be deposited in layers not to exceed 6-inches and shall be thoroughly compacted prior to the preparation of pipe subgrade.

- The subgrade shall be prepared by shaping with hand tools to the contour of the pipe barrel to allow for uniform and continuous bearing and support on solid undisturbed ground or embedment for the entire length of the pipe.

- Pipe subgrade preparation shall be performed immediately prior to installing the pipe in the trench. Where bell holes are required they shall be made after the subgrade preparation is complete and shall be only of sufficient length to prevent any part of the bell from becoming in contact with the trench bottom and allowing space for joint assembly.

Storage of materials shall be conducted as follows:

- Traffic shall be maintained at all times in accordance with the applicable County DOT Permit. Where no County DOT Permit is required at least one-half of the street must be kept open for traffic.

- Where conditions do not permit storage of excavated materials having suitable character for utilization as backfill adjacent to the trench, the material excavated from a length as may be required, shall be removed by the RA Contractor, at his cost and expense, as soon as excavated and stored on-site in designated stockpiling areas. The material subsequently excavated shall be used to refill the trench where the pipe had been built, provided it be of suitable character. The RA Contractor shall, at his cost and expense, bring back adequate amounts of satisfactory excavated materials as may be required to properly refill the trenches.

- Any soil displaced during pipe installation shall be incorporated under the soil cover.

- If directed by the Engineer, the RA Contractor shall refill trenches with select fill or other suitable materials and excess excavated, not potentially contaminated, materials shall be either incorporated into the work (if feasible) or disposed of as spoil.

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Backfill above embedment shall be conducted as follows:

- The remaining portion of the pipe trench above the embedment shall be refilled with suitable materials compacted as specified.
  - Where trenches are within the ditch-to-ditch limits of any street or road or within a driveway or sidewalk, or shall be under a structure, the trench shall be refilled in horizontal layers not more than 8 in thickness, and compacted to obtain 95% maximum standard density.
  - Where trenches are within areas of general grading, the trench shall be refilled in horizontal layers not more than 8 in thickness, and compacted to obtain 95% maximum standard density.
  - Hand tamping shall be required around buried utility line or other subsurface features that could be damaged by mechanical compaction equipment.
- Backfilling of trenches beneath, across or adjacent to drainage ditches and water courses shall be done in such a manner that water will not accumulate in unfilled or partially filled trenches and the backfill shall be protected from surface erosion by adequate means.
  - Where trenches cross waterways, the backfill surface exposed on the bottom and slopes thereof shall be protected by means of stone or concrete rip-rap or pavement.
- All settlement of the backfill shall be refilled and compacted as it occurs.

Selected fill

Type A fill shall be crushed gravel and shall have the following characteristics:

- Thoroughly washed crushed, durable, sharp angled fragments of gravel free from coatings. Crushed particles shall be a minimum of 85% by weight of the particles with at least two fractured faces. The total area of each fractional face shall exceed 25% of the maximum cross-sectional area of the particle.

Type E fill shall be run-of-bank gravel and shall have the following characteristics:

- Run-of-bank gravel or other acceptable granular material free from organic matter with a gradation by weight of 100% passing a 1 ½ in square opening, 30 to 65% passing a ¼-in square opening and not more than 10% passing a No. 200 mesh sieve as determined by washing through the sieve in accordance with ASTM D422.

Type F fill shall be run-of-crusher stone and shall have the following characteristics:

- Run-of-crusher hard durable limestone or approved equal having the following gradation by weight:

% Passing	Square Opening (in)
100	1 ½
95 - 100	1
65 - 80	½
40 - 60	¼
0 - 10	#200 Sieve

Type G fill shall be a mixture of Type E material and Portland cement mixed in a ratio of 15:1 and placed and compacted in a dry state.

Type H fill shall be a specially blended mixture of materials as specified in the Payment Items.

Installation of fill shall be conducted as follows:

- Special granular material as specified or directed for pipeline embedment shall be placed in accordance with the Contract Documents.
- Special backfill where specified or directed shall be placed in accordance with the backfilling provisions of the Contract Documents.

Disposal of fill shall be conducted as follows:

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2) Materials shall contain a sufficient amount of stones smaller than the average stone size to fill the spaces between the larger stones.
3) Materials shall contain less than 20 percent of stones with a ratio of maximum to minimum dimension greater than three.

Installation of rip rap shall be as follows:

- The ground surface on which rip-rap is to be placed shall be free of brush, trees, stumps, and other objectionable material and shall be dressed to a smooth surface. All soft or spongy material shall be removed to the depth shown on the plans or as directed by the Engineer and replaced with approved material. Filled areas shall be compacted in accordance with applicable provisions of the Contract Documents.

- The area to be protected by rip rap shall be accurately shaped prior to placing of any bedding material or rip rap. Where bedding material is called for, it shall be placed on the prepared area and compacted to the depth, lin and grades indicated on the plans.

  The riprap shall be placed to its full course thickness in one operation in such a manner as to produce a reasonably well-graded mass of rock without causing displacement of the underlying material. The finished surface shall be free from pockets of small stones and clusters of larger stones. Placing this material by methods likely to cause segregation of the various sizes of stone will not be permitted. Rearranging of individual stones by mechanical or hand methods will be required to the extent necessary to obtain a reasonably well-graded distribution of the specified stone sizes. The completed course shall be of the specified thickness and to the lin and grades as shown on the plans or as ordered by Engineer.

- Placement of stone upon finished bedding material or geotextile filter fabric, when used, shall be carefully controlled to avoid disruption and damage to the layer of bedding material or geotextile filter fabric. The stone shall be so placed and distributed that there will be no pockets of uniform size material.

- The desired distribution of the various sizes of stone throughout the mass shall be obtained by selective loading of the material at the quarry or other source; by controlled dumping of successive loads during final placing; or by other methods of placement which will produce the specified results. Rearranging of individual stones by

Mass Per Unit Area (oz sy)	ASTM D5261	10.0	10.5
Porosity[4] (%)	Calculated	95	95
Ground Cover Factor[5] (%)	Light Project Analysis	74	85

Notes:
1 All values are Minimum Average Roll Values (MARV) unless otherwise indicated.
2 Resiliency defined as percent of original thickness retained after 3 cycles of a 100 psi load for 60 seconds followed by 60 seconds without load...thickness measured 30 minutes after load removed by ASTM D1777.
3 Values for machine and cross machine directions, respectively, under dry or saturated conditions. Formerly test method ASTM D1682.
4 Porosity calculation based upon unit weight, thickness and specific gravity.
5 Ground Cover Factor represents "% shade" from Lumite Light Projection Test.
6 Tensile strength retained after 1000 hours in a Xenon ARC Weatherometer.

- During all periods of shipment and storage, the ECRM shall be protected from adverse weather, heavy winds or precipitation, direct sunlight, ultraviolet light, temperatures greater than 140°F, mud, dirt, dust, debris, and vandals. To the extent possible, the geotextile shall be maintained wrapped in a heavy duty protective covering. In the event of damage, the RA Contractor shall immediately make all repair and replacements at no additional cost to the Owner.

- All testing including laboratory and field services required during installation of the ECRM shall be provided by the RA Contractor.

Installation of the ECRM shall be as follows:

- The ECRM shall be installed in accordance with the manufacturers recommendations reviewed by the Engineer prior to installation. The standard manufacturer's installation criteria shall include the following details:

  - Longitudinal anchor trench
  - Initial channel anchor trench
  - Intermittent check slot
  - Terminal channel anchor trench
  - All anchor patterns.

Property	Standard	Criteria
Grab Tensile Strength	ASTM D4632	Minimum 100 lbs. (MD/CD)
Grab Tensile Elongation	ASTM D4632	Minimum 60%
Permittivity	ASTM D4491	Minimum of 1.9 sec^{-1}
Trapezoid Tear Strength	ASTM D4533	Minimum 35 lbs.
Puncture Strength	ASTM D4833	Minimum 55 lbs.
Mullen Burst Strength	ASTM D3786	Minimum 225 psi
UV Resistance	ASTM D4355 (after 150 hours)	70% strength retained

The RA Contractor will provide the Engineer with certified copies of the factory and laboratory test results prior to arrival of material on-site. In addition, the RA Contractor will provide the manufacturer's certification that the non-woven geotextile meets the chemical, physical, and manufacturing requirements.

The Engineer will review submittal information provided by the RA Contractor. Upon delivery of the rolls of geotextile, the Engineer will visually inspect the material.

During installation of the non-woven geotextile, the Engineer will determine that the geotextile is installed in accordance with the requirements of the Contract Documents and as shown on the Contract Drawings.

During the installation phase, the geotextile will be visually inspected for the following:

- Defects
- Rips
- Holes
- Flaws
- Deterioration
- Damage.

Any imperfections, such as those noted above, will be immediately repaired by the RA Contractor and reinspected.

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- All geotextile testing services as specified herein necessary for the RA Contractor to obtain an acceptable geotextile stabilization fabric shall be provided by the RA Contractor. All testing including laboratory and field services required during installation of the geotextile stabilization fabric shall be provided by the RA Contractor.

- Temporary securing pins shall be 3/16 in. in diameter, of steel, pointed at one end and fabricated with a head to retain a steel washer having an outside diameter of no less than 1.5 in or as recommended by the geotextile manufacturer. The pins shall be no longer than nine in.

Installation of the geotextile stabilization fabric shall be conducted as follows:

- Prior to installation of the geotextile stabilization fabric, the material on which the geotextile is to be installed will be free of organic matter, irregularities, protrusions, and any abrupt changes in grade that could damage the geotextile. The supporting layers shall be maintained in a smooth, uniform, and compacted condition during installation of the geotextile. The subgrade shall be inspected and accepted by the Engineer prior to placement of the geotextile.

- The geotextile stabilization fabric shall be placed in the manner and at the locations shown on the drawings. At the time of the installation, the geotextile shall be rejected if it has defects, rips, holes, flaws, deterioration, or damage incurred during manufacture, transportation, or storage.

- The geotextile shall be placed with the long dimension parallel to the line of the access road and shall be laid smooth and free of tension, stress, folds, wrinkles, or creases. The strips shall be placed to provide minimum overlaps of 3 feet. Overlap shall be increased if during fill placement excessive wandering of the unrolled geotextile is observed.

- Temporary pinning of the geotextile stabilization fabric into the underlying subgrade to help hold the geotextile in place shall be allowed. The temporary pins shall be removed as the overlying materials are placed to relieve high tensile stress which may occur during placement of material on the geotextile. The geotextile shall be placed so that the upper strip of geotextile will overlap the next lower strip by a minimum of 3 feet. Each securing pin shall be

% Passing	Sieve
100	2-in
25 - 40	No. 200

These analyses will be performed in accordance with ASTM D422.

- The RA Contractor shall submit testing methods (prior to conducting tests), test results, and a certification from the approved soils testing laboratory that the vegetative soil layer meets the requirements of this section. The results of all soils testing specified herein shall be submitted to the Engineer for review.
- Prior to installation of the vegetative soil layer, from the borrow source shall be tested in accordance with the following:

Parameter	Standard	Criteria
Particle Size Analysis	ASTM D422	Material proposed for the 6-in lift of vegetative soil layer: % Passing — Sieve 100 — 2-in 25-40 — No. 200
Compaction Characteristics	ASTM D698	Develop compaction characteristics

- During installation of the vegetative soil layer, material from the borrow source shall be tested in accordance with the following standards and frequencies:

Parameter	Standard	Minimum Frequency	Criteria
Particle Size Analysis	ASTM D422	Once per 3000 cy	6-in lift of vegetative soil layer: % Passing — Sieve 100 — 2 -in 25-40 — No. 200

- Compaction or consolidation achieved by traveling trucks, machines, and other equipment will not be accepted unless such procedures are reviewed by the Engineer and proper compaction criteria are achieved.

- Any damage to the completed surface of the vegetative soil layer, whether caused by erosion, the RA Contractor's work, or any other occurrences, shall be immediately repaired and maintained in good condition until completion of the work.

Bituminous concrete pavement

Installation of bituminous concrete pavement shall be conducted as follows:

- Install finished pavement to the grades and cross-sections as shown on the Contract Drawings.

- Subgrade

  - The subgrade shall be shaped to line and grade and compacted with self-propelled rollers.

  - Depressions which develop under rolling shall be filled with acceptable material and the area re-rolled.

  - Soft areas shall be removed and filled with acceptable materials and the area re-rolled.

  - Should the subgrade become rutted or displaced prior to the placing of the subbase it shall be reworked to bring to line and grade.

- Soil Stabilization Fabric

  - The soil stabilization fabric shall be placed on the subgrade prior to the depositing of the subbase.

    - The soil stabilization fabric shall be the full width of the subgrade and shall extend up the sides the depth of the subbase.

    - The fabric shall be lapped a minimum of 3 feet at all joints.

- Forms for Exposed Concrete Surfaces: Suitable panel-type material to provide continuous, straight, smooth, exposed surfaces.

- Reinforcing Materials: As follows:
  - Reinforcing Bars: ASTM A 615, Grade 60 deformed.
  - Plain Welded Wire Fabric: ASTM A 185.

- Concrete Materials: As follows:
  - Portland Cement: ASTM C 150, Type 1.
  - Aggregates: ASTM C 33.
  - Water: Potable.

- Admixtures: Provide admixtures that contain not more than 0.1 percent chloride ions.
  - Air-Entraining Admixture: ASTM C 260.
  - Water-Reducing, Retarding, and Accelerating Chemical Admixtures: ASTM C 494.

- Related Materials: As follows:
  - Water stops: PVC

- Mix Proportions and Design: Proportion mixes complying with mix design procedures specified in ACI 301.
  - Design mixes to provide normal weight concrete with the following properties:
    - 4000-psi, 28-day compressive strength; water-cement ratio, 0.45 maximum.
  - Slump Limits: Proportion and design mixes to result in concrete slump at point of placement as follows:
    - Not more than 4 in.
  - Adjust mix designs when material characteristics, job conditions, weather, test results, or other circumstances warrant. Do not use revised concrete mixes until laboratory test data and strength results have been submitted to and reviewed by the Engineer.

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- Joints: Locate and install construction, isolation, and control joints as indicated or required. Locate construction joints so they do not impair strength and appearance of structure. Place isolation and control joints in slabs-on-ground to stabilize differential settlement and prevent random cracking.

- Installation of Embedded Items: Set and build anchorage devices and other embedded items required for other work that is attached to or supported by cast-in-place concrete. Use setting diagrams, templates, and instructions provided by others for locating and setting.

  - Locate and support water stops to prevent displacement.

- Concrete Placement: Comply with ACI 304, "Guide for Measuring, Mixing, Transporting, and Placing Concrete," for placing concrete in a continuous operation within planned joints or sections. Do not begin concrete placement until other affected work is completed.

  - Consolidate placed concrete using mechanical vibrating equipment with hand rodding and tamping so that concrete is worked around reinforcement and other embedded items and into forms.

  - Protect concrete from physical damage or reduced strength due to weather extremes during mixing, placing, and curing.

    - In cold weather comply with ACI 306.
    - In hot weather comply with ACI 305.

  - Finish of Formed Surface: As follows:

    - Smooth-Formed Finish: Provide a smooth finish for concrete surfaces exposed to view and surfaces to be covered with a coating or covering material applied directly to concrete. Repair and patch defective areas, with fins and other projections completely removed and smoothed.

  - Curing: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. In hot, dry, and windy weather, apply an evaporation-control compound according to manufacturer's instructions after screening and bull floating, but before power floating and troweling.

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- When frequency of testing will provide fewer than five strength tests for a given class of concrete, conduct testing from at least five randomly selected batches or from each batch if fewer than five are used.

- When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, evaluate current operations and provide corrective procedures for protecting and curing the in-place concrete.

- Strength level of concrete will be considered satisfactory if averages of sets of three consecutive strength test results equal or exceed specified compressive strength and no individual strength test result falls below specified compressive strength by more than 500 psi.

- Test results will be reported in writing to the Engineer, ready-mix producer, and RA Contractor within 24 hours after tests. Reports of compressive strength tests shall contain the Project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7-day tests and 28-day tests.

- Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted but shall not be used as the sole basis for acceptance or rejection.

- Additional Tests: The testing agency will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure, as directed by the Engineer. Testing agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed.

Topsoil and seeding

Prior to installation of the topsoil layer and seeding, the following will be submitted to the Engineer for review:

Fertilizer will be a complete, prepared, and packaged material and will contain a minimum of 10% nitrogen, 10% phosphoric acid, and 10% potash. Each bag will bear the manufacturer's guarantee statement of analysis.

The mulch will be stalks of oats, wheat, rye, or other approved crops free from noxious weeds, mold, or objectionable material.

Field quality assurance will consist of the following:

- The Engineer may require additional testing of the topsoil material if changes in material are noted
- Inspection of topsoil, grass seed, fertilizer, and mulch material to verify that the materials meet the specified requirements. If any of the materials fail to meet these requirements, the materials will be rejected
- Inspection to verify that the areal extent of completed cover is covered by a minimum of 6 in of topsoil meeting the requirements. The topsoil shall then be seeded, mulched, and fertilized as required
- Inspection to verify that the finished grades conform to those shown in the engineering plans, reports, and specifications. Any irregularities shall be corrected before placement of grass seed, fertilizer, and mulch.
- The vegetative cap will be inspected quarterly during post-construction maintenance and monitoring, to verify that there are no areas of thinning vegetation.

Engineering Sampling

Sampling of dredged material/soil contaminated with PCBs less than 50 mg/kg that is excavated and staged as part of the excavation will be conducted by the Engineer using an ENSYS Inc. PCB RISc ® Soil Test field screening kit (EPA Method 4020). Sensitivity of the analytical results will be within 1 mg/kg PCB. An additional field sample will be collected and analyzed for every 20 cy of dredged material/soil within the initial excavation. Analytical results will be recorded and submitted to the Engineer for review. PCB field screening will follow the manufacturer's procedures regarding calibration, sample collection, testing, and reporting. The PCB RISc Soil Test System User's Guide is included as Exhibit C.

Confirmatory field screening and laboratory analysis of dredged material/soil will be conducted by the Engineer and utilized to confirm PCB

5.6. Documentation

Upon completion of construction, a set of As-built Drawings will be prepared by the RA Contractor to document site conditions and submitted to the Engineer for review. The original plans will serve as the basis for the As-built Drawings and will be marked up accordingly.

As required by the Consent Order, the Engineer will prepare a Certification Report signed by a Professional Engineer licensed to practice in New York State documenting that the project was completed in accordance with the approved Remedial Design. This certification will be based on review of daily field logs, material test reports and the As-built Drawings.

6. Post construction maintenance and monitoring activities

6.1. Introduction

The Remedial Design for the site includes the following major components:

- A 12 in vegetative soil cover placed over the site
- A gravel access road
- Erosion control mats placed along the southern Ley Creek bank from the edge of creek to the gravel access road
- Geotextile visual indicator between the southern edge of Ley Creek and a few feet south of the start of the slope increase south of the access road
- Surface water runoff control pipes, culverts, and catch basins
- Ground water monitoring wells
- Sanitary sewer manhole access paths

Following construction activities at the site, post construction maintenance and monitoring activities will be conducted. The following sections present a general outline of necessary maintenance and monitoring activities; specific maintenance and monitoring requirements will be identified in the Operation, Maintenance, and Monitoring Manual.

6.2. Vegetative cover

Inspections of the newly seeded cover will be conducted biweekly until vegetation is established on the site. Following establishment of vegetation, routine inspection of the site will be performed monthly during the first year following construction completion, except during winter conditions, and quarterly thereafter. The inspector will observe the

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monitoring program will be identified in the Operation, Maintenance, and Monitoring Mannual, and will be coincident with the RI and selected remedy for the Ley Creek Deferred Media.

The ground water monitoring wells selected for the post-Remedial Construction sampling will be inspected for signs of damage. If damage is detected, or if routine sampling indicates a problem with one or more of the wells, it may be necessary to re-develop or replace the well or wells.

6.6. Sanitary sewer manhole access paths

The eleven sanitary sewer manholes and access paths will be inspected at the same frequency as the access path, vegetative cover, drainage facilities, and monitoring wells. Severe cracks in the access path asphalt or manhole concrete cover will be repaired. The manhole covers will checked for vandalism.

6.7. Record keeping

An inspection checklist will be developed and filled out during routine inspections. The results of ground water monitoring will be summarized in annual reports. Also, copies of all records, reports, or other information relative to maintenance and monitoring activities at the site will be provided to NYSDEC by REALM in the annual reports.

7. Contingency plan

The contingency plan presented in this Section is applicable to the closure period following completion of the Remedial Construction. The contingency plan will be implemented in the event that any component of the Remedial Design fails to operate in accordance with the intent of the Remedial Design.

7.1. Freezing conditions

The Remedial Design considered freeze/thaw conditions, but in the event of unusual freeze/thaw activity, the heaved area of the cover should be scarified, recompacted, topsoil reinstalled, and the area reseeded. Freeze/thaw activity could also cause excessive rutting or pot hole formation in the site access road. If this occurs, the damaged portion of the road would be filled with a suitable granular material.

7.2. Heavy rains

Repeated heavy rainfall could cause erosion of the final cover. If this occurs, the eroded area would be scarified and additional cover material added, if necessary, and recompacted. Topsoil would then be applied and reseeded. Areas of persistent erosion may require utilization of an erosion control fabric or ditching and rip rap.

7.3. Surface water control culverts

Should flow in the surface water runoff control culverts become inhibited by the accumulation of excessive debris or soils from the erosion of the adjacent embankment, appropriate measures would be taken to repair or clean the culverts to maintain flow capacities.

The NYSDEC and NYSDOH may also be contacted as necessary. The current addresses and phone numbers are as follows:

Mr. George Harris
Division of Environmental Remediation
NYSDEC
50 Wolf Road
Albany, New York 12233-7010
(518) 457-9280

Mr. Ronald Heerkens
NYSDOH
Syracuse Regional Office
217 South Salina Street
Syracuse, New York 13202
(315) 426-7613

8. Anticipated construction schedule and sequence

8.1. Construction schedule

An anticipated schedule for Remedial Construction at the site is shown in Figure 8-1. It indicates that the total estimated time for Remedial Construction will be on the order of 27 weeks. It is anticipated that the construction will be completed from May 1999 through November 1999. If vegetation is delayed until the following spring, erosion control and siltation minimization measures will be installed and maintained in the interim. It should also be noted that the Contract Documents will require the RA Contractor to submit a time frame for completion of this project with the bid. The selected RA Contractor may propose a schedule which differs in construction sequence or duration of various tasks from that shown in Figure 8-1.

The anticipated schedule was prepared based on experience with similar projects. It was assumed that one month will consist of 22 work days, each with a duration of eight hours.

8.2. Construction sequence

The anticipated construction sequence for the Ley Creek PCB Dredgings Site will generally be, with modifications made by the RA Contractor, as follows:

- Mobilization
- Clearing and grubbing of the site including utility pole removal
- Test pitting/drainage swale evaluation program
- Excavation/transport/disposal (along with confirmatory sampling) of areas of dredged material/soil at or greater than 50 mg/kg PCBs
- North area excavation/transport/consolidation
- Rough grading
- Catch basin, drainage culvert, drainage pipe installation
- Sanitary sewer manhole modification including access path installation

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McDannell, Gary E. (Corps). Letter to James Hartnett (GM). August 28, 1998.

Mizerak, Wayne (NYSDEC). Letter to James Hartnett (GM). July 20, 1998(a).

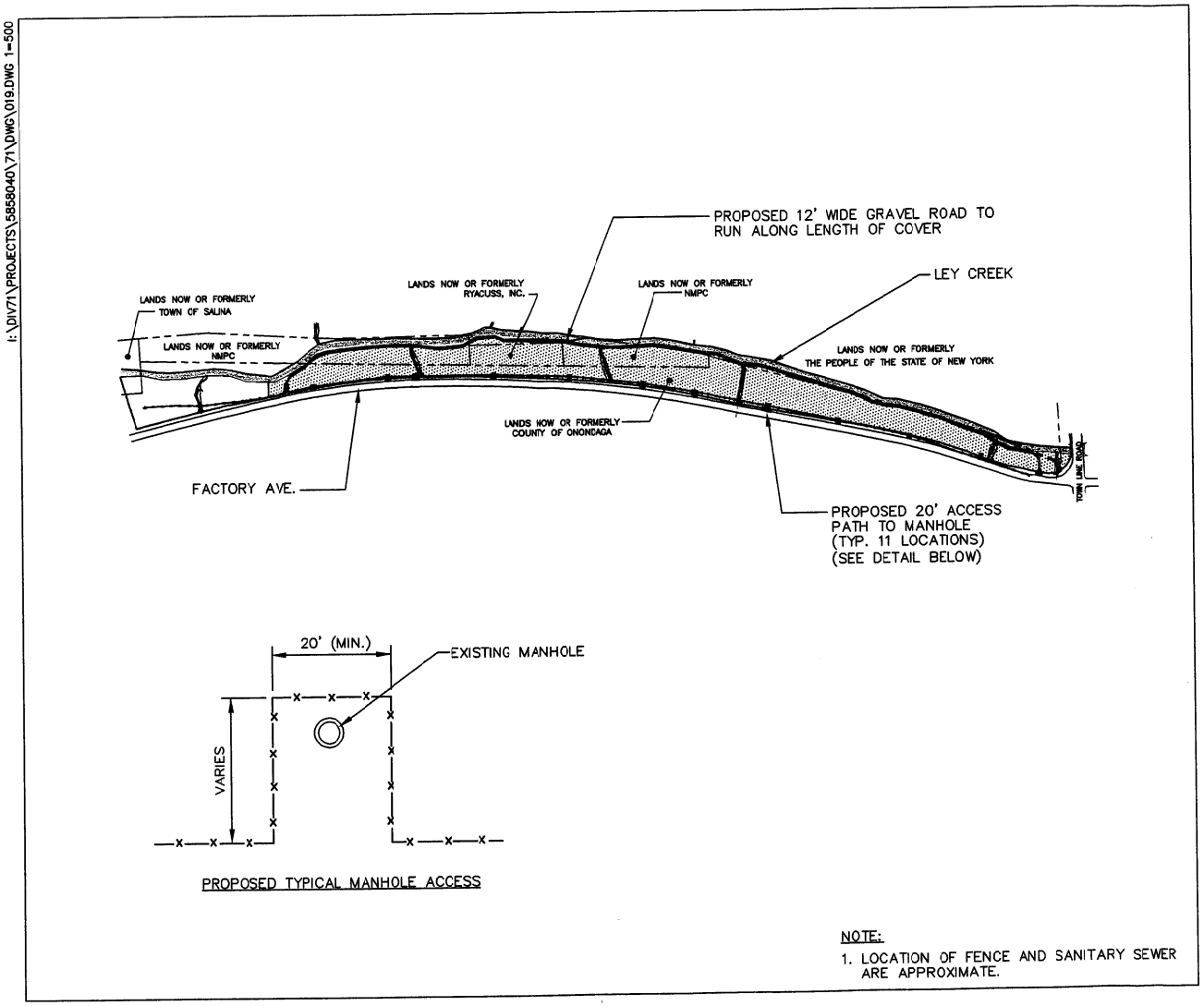
NYSDEC. "Record of Decision - Ley Creek PCB Dredgings Site Salina (T), Onondaga County, Site Number 7-34-044" March 28, 1997.

Schick, Robert W. (NYSDEC). Letter to William Kochem (GM). April 21, 1994(b).

FIGURES

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FIGURE 1



LEGEND

- GRAVEL ACCESS ROAD
- SANITARY SEWER
- PROPERTY BOUNDARY
- MANHOLE ACCESS LOCATION
- FENCE
- PROPOSED EXTENT OF SOIL COVER

GENERAL MOTORS CORPORATION
LEY CREEK DREDGED MATERIAL AREA
SYRACUSE, NEW YORK

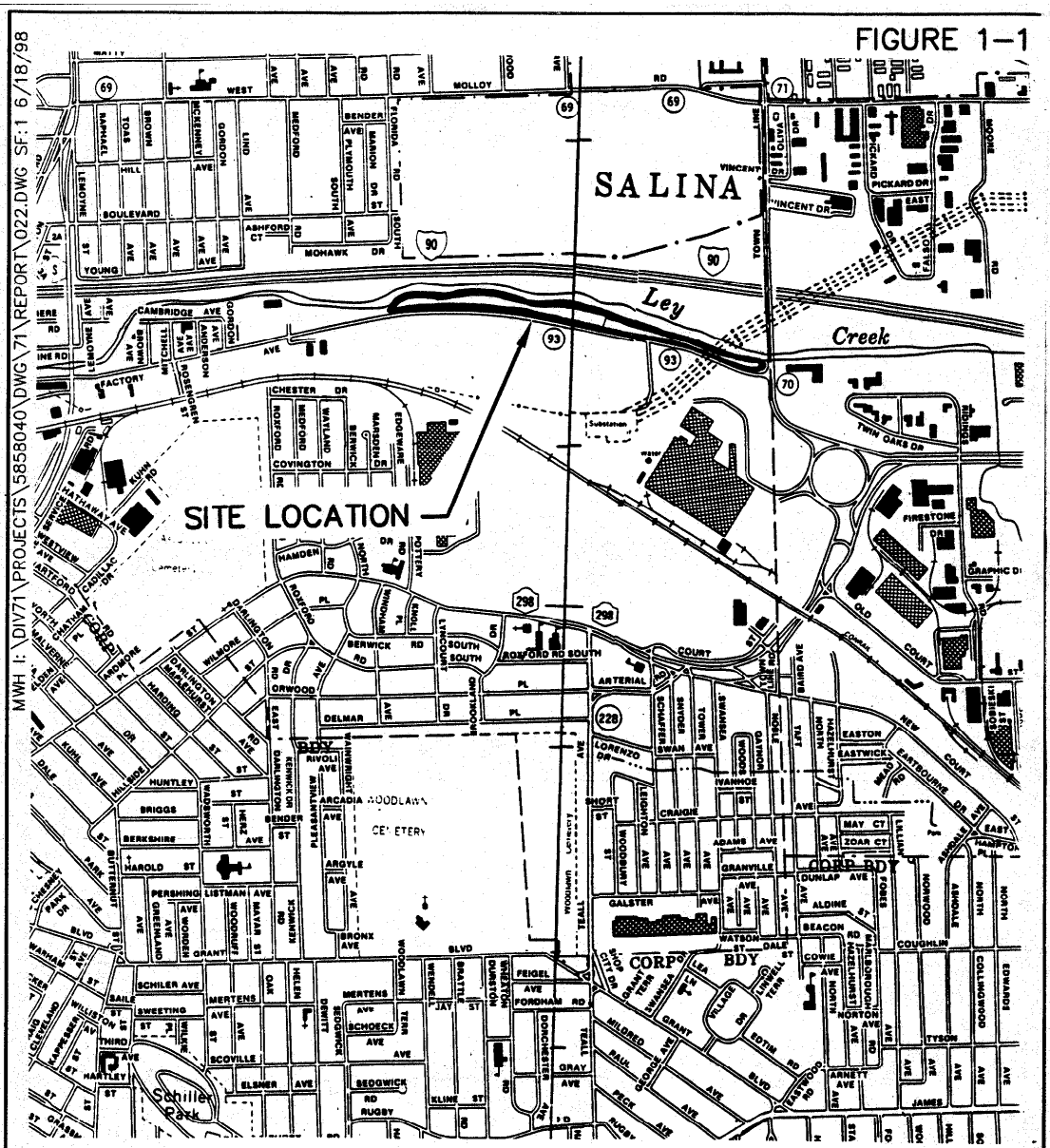
SITE PLAN

0 500 1000
SCALE IN FEET

DATE: APRIL 1998
FILE NO.: 5858.040-019

O'BRIEN & GERE ENGINEERS INC.

FIGURE 1-1





LEY CREEK PCB DREDGINGS SITE
SYRACUSE, NEW YORK
REMEDIATION AND LIABILITY
MANAGEMENT COMPANY, INC.

SITE LOCATION PLAN

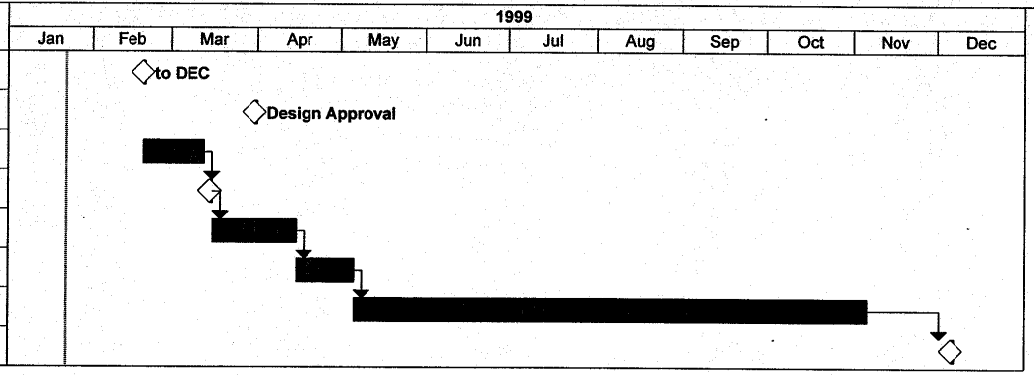
FILE NO. 5858.040-022

NOT TO SCALE

O'BRIEN & GERE ENGINEERS INC.

Figure 8-1
Ley Creek PCB Dredgings Site
Remediation Schedule

ID	Task Name
1	Submit Remedial Design Plans/Specs
2	DEC Approval of Design
3	Contractor Negotiations
4	Contract Awarded
5	Contractor Develops and Submits Plans
6	Mobilization
7	Field Work
8	Certification Report



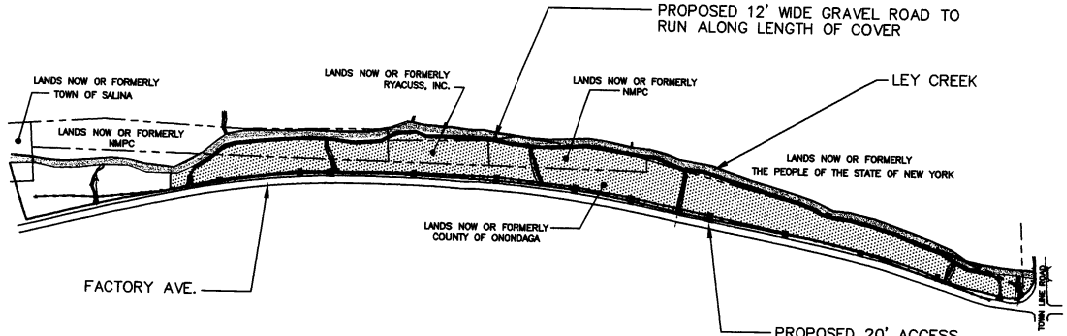
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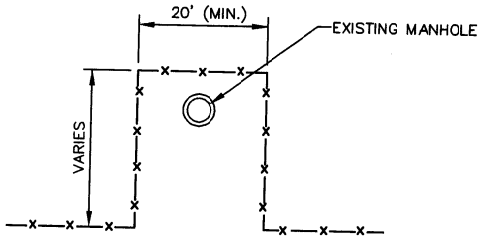
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APPENDICES

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PROPOSED TYPICAL MANHOLE ACCESS

NOTE:

1. LOCATION OF FENCE AND SANITARY SEWER ARE APPROXIMATE.

FIGURE 1

LEGEND

- GRAVEL ACCESS ROAD
- SANITARY SEWER
- PROPERTY BOUNDARY
- MANHOLE ACCESS LOCATION
- FENCE
- PROPOSED EXTENT OF SOIL COVER

GENERAL MOTORS CORPORATION
LEY CREEK DREDGED MATERIAL AREA
SYRACUSE, NEW YORK

SITE PLAN

0 500 1000
SCALE IN FEET

DATE: APRIL 1998
FILE NO.: 5858.040-019

O'BRIEN & GERE ENGINEERS INC.

Appendix A

Storm water runoff calculations

Appendix A

Storm Water Runoff Calculations

A storm water modeling program TR55 was utilized to calculate design runoff flows for the Ley Creek PCB Dredgings Site. Assumptions are as follows:

- 25-year, 24-hour design storm
- Drainage type = II (dredged material/soil geologic characteristics)
- Coverage = fallow (during construction) was used in the design scenario as worst case (maximum runoff); dense grass (following design) was used as baseline scenario
- One half of Factory Avenue width drains to the northern ditch
- Runoff from the norther portion of the site using the peak elevation as a division point will drain to Ley Creek

The following table lists the designated subareas and their respective areas, slopes, maximum drainage lengths, and peak runoff flows. Attached are figures which depict the subareas.

Subarea	Area (sq mi)	Max. Slope (ft/ft)	Drainage Length (ft)	Peak Runoff Flow (cfs)
1	0.0025	0.05	100	8
1A	0.00089	0.005	25	4
2	0.0028	0.05	100	8
2A	0.0008	0.005	25	3
3	0.0029	0.05	110	9
3A	0.0011	0.005	30	5
4	0.00056	0.05	40	2
4A	0.00069	0.005	25	3
5A	0.00061	0.005	25	3

Attached is the raw data from the two TR55 scenarios (During Construction and Following Construction). The scenario used for design was During Construction which is reflected above and is the worst case.

TABULAR HYDROGRAPH METHOD Version 2.00

Project : GM Ley Creek PCB Dredging Site User: Date: 05-28-98
County : Onondaga State: NY Checked: ____ Date: _____
Subtitle: Remedial Design - 25 yr storm - DURING CONSTRUCTION

Total watershed area: 0.013 sq mi Rainfall type: II Frequency: 25 years

	Subareas				
	I	IA	II	IIA	III
Area(sq mi)	0.00	0.00	0.00	0.00	0.00
Rainfall(in)	4.5	4.5	4.5	4.5	4.5
Curve number	86	98	86	98	86
Runoff(in)	3.00	4.26	3.00	4.26	3.00
Tc (hrs)	0.05*	0.01*	0.05*	0.01*	0.06*
(Used)	0.10	0.10	0.10	0.10	0.10
TimeToOutlet	0.00	0.00	0.00	0.00	0.00
Ia/P	0.07	0.01	0.07	0.01	0.07
(Used)	0.10	0.10	0.10	0.10	0.10

Time (hr)	Total Flow	Subarea Contribution to Total Flow (cfs)				
		I	IA	II	IIA	III
11.0	0	0	0	0	0	0
11.3	0	0	0	0	0	0
11.6	0	0	0	0	0	0
11.9	16	3	1	3	1	3
12.0	28	5	2	5	2	6
12.1	45P	8P	4P	8P	3P	9P
12.2	27	5	2	5	2	5
12.3	11	2	1	2	1	2
12.4	6	1	1	1	1	1
12.5	4	1	0	1	0	1
12.6	3	1	0	1	0	1
12.7	3	1	0	1	0	1
12.8	3	1	0	1	0	1
13.0	2	0	0	1	0	1
13.2	0	0	0	0	0	0
13.4	0	0	0	0	0	0
13.6	0	0	0	0	0	0
13.8	0	0	0	0	0	0
14.0	0	0	0	0	0	0
14.3	0	0	0	0	0	0
14.6	0	0	0	0	0	0
15.0	0	0	0	0	0	0
15.5	0	0	0	0	0	0
16.0	0	0	0	0	0	0
16.5	0	0	0	0	0	0
17.0	0	0	0	0	0	0
17.5	0	0	0	0	0	0
18.0	0	0	0	0	0	0
19.0	0	0	0	0	0	0
20.0	0	0	0	0	0	0
22.0	0	0	0	0	0	0
26.0	0	0	0	0	0	0

P - Peak Flow * - value(s) provided from TR-55 system routines

TABULAR HYDROGRAPH METHOD Version 2.00

Project : GM Ley Creek PCB Dredging Site User: Date: 05-28-98
County : Onondaga State: NY Checked: ____ Date: _____
Subtitle: Remedial Design - 25 yr storm - DURING CONSTRUCTION

Continuation of subarea information

	Subareas			
	IIIA	IV	IVA	VA
Area(sq mi)	0.00	0.00	0.00	0.00
Rainfall(in)	4.5	4.5	4.5	4.5
Curve number	98	86	98	98
Runoff(in)	4.26	3.00	4.26	4.26
Tc (hrs)	0.02*	0.03*	0.01*	0.01*
(Used)	0.10	0.10	0.10	0.10
TimeToOutlet	0.00	0.00	0.00	0.00
Ia/P	0.01	0.07	0.01	0.01
(Used)	0.10	0.10	0.10	0.10

Time	Subarea Contribution to Total Flow (cfs)			
(hr)	IIIA	IV	IVA	VA
11.0	0	0	0	0
11.3	0	0	0	0
11.6	0	0	0	0
11.9	2	1	1	1
12.0	3	1	2	2
12.1	5P	2P	3P	3P
12.2	3	1	2	2
12.3	1	0	1	1
12.4	1	0	0	0
12.5	1	0	0	0
12.6	0	0	0	0
12.7	0	0	0	0
12.8	0	0	0	0
13.0	0	0	0	0
13.2	0	0	0	0
13.4	0	0	0	0
13.6	0	0	0	0
13.8	0	0	0	0
14.0	0	0	0	0
14.3	0	0	0	0
14.6	0	0	0	0
15.0	0	0	0	0
15.5	0	0	0	0
16.0	0	0	0	0
16.5	0	0	0	0
17.0	0	0	0	0
17.5	0	0	0	0
18.0	0	0	0	0
19.0	0	0	0	0
20.0	0	0	0	0
22.0	0	0	0	0
26.0	0	0	0	0

P - Peak Flow * - value(s) provided from TR-55 system routines

TIME OF CONCENTRATION AND TRAVEL TIME Version 2.00

Project : GM Ley Creek PCB Dredging Site User: Date: 05-28-98
County : Onondaga State: NY Checked: ____ Date: _____
Subtitle: Remedial Design - 25 yr storm - DURING CONSTRUCTION

Subarea #1 - I

Flow Type	2 year rain	Length (ft)	Slope (ft/ft)	Surface code	n	Area (sq/ft)	Wp (ft)	Velocity (ft/sec)	Time (hr)
Sheet	2.5	100	0.05	B					0.053

Time of Concentration = 0.05*

Subarea #2 - IA

Flow Type	2 year rain	Length (ft)	Slope (ft/ft)	Surface code	n	Area (sq/ft)	Wp (ft)	Velocity (ft/sec)	Time (hr)
Sheet	2.5	25	.005	A					0.013

Time of Concentration = 0.01*

Subarea #3 - II

Flow Type	2 year rain	Length (ft)	Slope (ft/ft)	Surface code	n	Area (sq/ft)	Wp (ft)	Velocity (ft/sec)	Time (hr)
Sheet	2.5	100	.05	B					0.053

Time of Concentration = 0.05*

Subarea #4 - IIA

Flow Type	2 year rain	Length (ft)	Slope (ft/ft)	Surface code	n	Area (sq/ft)	Wp (ft)	Velocity (ft/sec)	Time (hr)
Sheet	2.5	25	.005	A					0.013

Time of Concentration = 0.01*

Subarea #5 - III

Flow Type	2 year rain	Length (ft)	Slope (ft/ft)	Surface code	n	Area (sq/ft)	Wp (ft)	Velocity (ft/sec)	Time (hr)
Sheet	2.5	110	0.05	B					0.057

Time of Concentration = 0.06*

* - Generated for use by TABULAR method

TIME OF CONCENTRATION AND TRAVEL TIME Version 2.00

Project : GM Ley Creek PCB Dredging Site User: Date: 05-28-98
County : Onondaga State: NY Checked: ____ Date: _____
Subtitle: Remedial Design - 25 yr storm - DURING CONSTRUCTION

Subarea #6 - IIIA

Flow Type	2 year rain	Length (ft)	Slope (ft/ft)	Surface code	n	Area (sq/ft)	Wp (ft)	Velocity (ft/sec)	Time (hr)
Sheet	2.5	30	.005	A					0.015

Time of Concentration = 0.02*

Subarea #7 - IV

Flow Type	2 year rain	Length (ft)	Slope (ft/ft)	Surface code	n	Area (sq/ft)	Wp (ft)	Velocity (ft/sec)	Time (hr)
Sheet	2.5	40	.05	B					0.026

Time of Concentration = 0.03*

Subarea #8 - IVA

Flow Type	2 year rain	Length (ft)	Slope (ft/ft)	Surface code	n	Area (sq/ft)	Wp (ft)	Velocity (ft/sec)	Time (hr)
Sheet	2.5	25	.005	A					0.013

Time of Concentration = 0.01*

Subarea #9 - VA

Flow Type	2 year rain	Length (ft)	Slope (ft/ft)	Surface code	n	Area (sq/ft)	Wp (ft)	Velocity (ft/sec)	Time (hr)
Sheet	2.5	25	.005	A					0.013

Time of Concentration = 0.01*

--- Sheet Flow Surface Codes ---

A Smooth Surface
B Fallow (No Res.)
C Cultivated < 20 % Res.
D Cultivated > 20 % Res.
E Grass-Range, Short
F Grass, Dense
G Grass, Burmuda
H Woods, Light
I Woods, Dense
J Range, Natural

--- Shallow Concentrated --- --- Surface Codes ---
P Paved
U Unpaved

- Generated for use by TABULAR method

TABULAR HYDROGRAPH METHOD Version 2.00

Project : GM Ley Creek PCB Dredging Site User: Date: 05-28-98
County : Onondaga State: NY Checked: ____ Date: _____
Subtitle: Remedial Design - 25 yr storm

Total watershed area: 0.013 sq mi Rainfall type: II Frequency: 25 years

	Subareas				
	I	IA	II	IIA	III
Area(sq mi)	0.00	0.00	0.00	0.00	0.00
Rainfall(in)	4.5	4.5	4.5	4.5	4.5
Curve number	61	98	61	98	61
Runoff(in)	1.08	4.26	1.08	4.26	1.08
Tc (hrs)	0.19*	0.01*	0.19*	0.01*	0.20*
(Used)	0.20	0.10	0.20	0.10	0.20
TimeToOutlet	0.00	0.00	0.00	0.00	0.00
Ia/P	0.28	0.01	0.28	0.01	0.28
(Used)	0.28	0.10	0.28	0.10	0.28

Time	Total	Subarea Contribution to Total Flow (cfs)				
(hr)	Flow	I	IA	II	IIA	III
11.0	0	0	0	0	0	0
11.3	0	0	0	0	0	0
11.6	0	0	0	0	0	0
11.9	6	0	1	0	1	0
12.0	14	1	2	1	2	1
12.1	25P	2P	4P	2P	3P	2P
12.2	17	2	2	2	2	2
12.3	9	1	1	1	1	2
12.4	6	1	1	1	1	1
12.5	4	1	0	1	0	1
12.6	0	0	0	0	0	0
12.7	0	0	0	0	0	0
12.8	0	0	0	0	0	0
13.0	0	0	0	0	0	0
13.2	0	0	0	0	0	0
13.4	0	0	0	0	0	0
13.6	0	0	0	0	0	0
13.8	0	0	0	0	0	0
14.0	0	0	0	0	0	0
14.3	0	0	0	0	0	0
14.6	0	0	0	0	0	0
15.0	0	0	0	0	0	0
15.5	0	0	0	0	0	0
16.0	0	0	0	0	0	0
16.5	0	0	0	0	0	0
17.0	0	0	0	0	0	0
17.5	0	0	0	0	0	0
18.0	0	0	0	0	0	0
19.0	0	0	0	0	0	0
20.0	0	0	0	0	0	0
22.0	0	0	0	0	0	0
26.0	0	0	0	0	0	0

P - Peak Flow * - value(s) provided from TR-55 system routines

TABULAR HYDROGRAPH METHOD Version 2.00

Project : GM Ley Creek PCB Dredging Site User: Date: 05-28-98
County : Onondaga State: NY Checked: ____ Date: _____
Subtitle: Remedial Design - 25 yr storm

Continuation of subarea information

	Subareas			
	IIIA	IV	IVA	VA
Area(sq mi)	0.00	0.00	0.00	0.00
Rainfall(in)	4.5	4.5	4.5	4.5
Curve number	98	61	98	98
Runoff(in)	4.26	1.08	4.26	4.26
Tc (hrs)	0.02*	0.09*	0.01*	0.01*
(Used)	0.10	0.10	0.10	0.10
TimeToOutlet	0.00	0.00	0.00	0.00
Ia/P	0.01	0.28	0.01	0.01
(Used)	0.10	0.28	0.10	0.10

Time	Subarea Contribution to Total Flow (cfs)			
(hr)	IIIA	IV	IVA	VA
11.0	0	0	0	0
11.3	0	0	0	0
11.6	0	0	0	0
11.9	2	0	1	1
12.0	3	0	2	2
12.1	5P	1P	3P	3P
12.2	3	0	2	2
12.3	1	0	1	1
12.4	1	0	0	0
12.5	1	0	0	0
12.6	0	0	0	0
12.7	0	0	0	0
12.8	0	0	0	0
13.0	0	0	0	0
13.2	0	0	0	0
13.4	0	0	0	0
13.6	0	0	0	0
13.8	0	0	0	0
14.0	0	0	0	0
14.3	0	0	0	0
14.6	0	0	0	0
15.0	0	0	0	0
15.5	0	0	0	0
16.0	0	0	0	0
16.5	0	0	0	0
17.0	0	0	0	0
17.5	0	0	0	0
18.0	0	0	0	0
19.0	0	0	0	0
20.0	0	0	0	0
22.0	0	0	0	0
26.0	0	0	0	0

P - Peak Flow * - value(s) provided from TR-55 system routines

TIME OF CONCENTRATION AND TRAVEL TIME Version 2.00

Project : GM Ley Creek PCB Dredging Site User: Date: 05-28-98
County : Onondaga State: NY Checked: ____ Date: _____
Subtitle: Remedial Design - 25 yr storm

Subarea #1 - I

Flow Type	2 year rain	Length (ft)	Slope (ft/ft)	Surface code	n	Area (sq/ft)	Wp (ft)	Velocity (ft/sec)	Time (hr)
Sheet	2.5	100	0.05	F					0.187

Time of Concentration = 0.19*

Subarea #2 - IA

Flow Type	2 year rain	Length (ft)	Slope (ft/ft)	Surface code	n	Area (sq/ft)	Wp (ft)	Velocity (ft/sec)	Time (hr)
Sheet	2.5	25	.005	A					0.013

Time of Concentration = 0.01*

Subarea #3 - II

Flow Type	2 year rain	Length (ft)	Slope (ft/ft)	Surface code	n	Area (sq/ft)	Wp (ft)	Velocity (ft/sec)	Time (hr)
Sheet	2.5	100	.05	F					0.187

Time of Concentration = 0.19*

Subarea #4 - IIA

Flow Type	2 year rain	Length (ft)	Slope (ft/ft)	Surface code	n	Area (sq/ft)	Wp (ft)	Velocity (ft/sec)	Time (hr)
Sheet	2.5	25	.005	A					0.013

Time of Concentration = 0.01*

Subarea #5 - III

Flow Type	2 year rain	Length (ft)	Slope (ft/ft)	Surface code	n	Area (sq/ft)	Wp (ft)	Velocity (ft/sec)	Time (hr)
Sheet	2.5	110	0.05	F					0.201

Time of Concentration = 0.20*

* - Generated for use by TABULAR method

TIME OF CONCENTRATION AND TRAVEL TIME Version 2.00

Project : GM Ley Creek PCB Dredging Site User: Date: 05-28-98
County : Onondaga State: NY Checked: ____ Date: _____
Subtitle: Remedial Design - 25 yr storm

Subarea #6 - IIIA

Flow Type	2 year rain	Length (ft)	Slope (ft/ft)	Surface code	n	Area (sq/ft)	Wp (ft)	Velocity (ft/sec)	Time (hr)
Sheet	2.5	30	.005	A					0.015

Time of Concentration = 0.02*

Subarea #7 - IV

Flow Type	2 year rain	Length (ft)	Slope (ft/ft)	Surface code	n	Area (sq/ft)	Wp (ft)	Velocity (ft/sec)	Time (hr)
Sheet	2.5	40	.05	F					0.090

Time of Concentration = 0.09*

Subarea #8 - IVA

Flow Type	2 year rain	Length (ft)	Slope (ft/ft)	Surface code	n	Area (sq/ft)	Wp (ft)	Velocity (ft/sec)	Time (hr)
Sheet	2.5	25	.005	A					0.013

Time of Concentration = 0.01*

Subarea #9 - VA

Flow Type	2 year rain	Length (ft)	Slope (ft/ft)	Surface code	n	Area (sq/ft)	Wp (ft)	Velocity (ft/sec)	Time (hr)
Sheet	2.5	25	.005	A					0.013

Time of Concentration = 0.01*

--- Sheet Flow Surface Codes ---

A Smooth Surface
B Fallow (No Res.)
C Cultivated < 20 % Res.
D Cultivated > 20 % Res.
E Grass-Range, Short
F Grass, Dense
G Grass, Burmuda
H Woods, Light
I Woods, Dense
J Range, Natural

--- Shallow Concentrated --- Surface Codes ---

P Paved
U Unpaved

- Generated for use by TABULAR method

Appendix B

Drainage culvert calculations

Appendix B

Drainage Culvert Calculations

Using the results from the TR55 storm water runoff model, the thirteen drainage culverts which will run along the drainage ditch between Factory Avenue and the site fence were sized. The culvert/pipe design program Flowmaster for Windows® was utilized with the following assumptions:

- Manning's n = 0.012 (asphalt coated corrugated metal)
- Drainage culvert A and B would not convey storm water runoff to one of the newly designed catch basins; the storm water runoff flow through drainage culverts A and B (conveyed west toward Town of Salina Garage property) would be less than the maximum design runoff flow
- The TR55 flow can be divided to the appropriate culvert using a linear relationship between flow and distance from extent of subarea to the associated catch basin

The following table list the designated culverts, the subarea in which each culvert will convey storm water runoff, the TR55 flow, the culvert size calculated by the Flowmaster for Windows® model using Manning's Method, and the design culvert size.

Drainage Culvert	Subarea	Flow (cfs)	Diameter Size (in)	Pipe Arch Design Diameter Size (in)
A (western access road)	None	NA	NA	15" x 21"
B (MH access path)	None	NA	NA	15" x 21"
C (MH access path)	1, 1A	6	16	15" x 21"
D (MH access path)	1, 1A	6	16	15" x 21"
E (MH access path)	1, 1A	6	16	15" x 21"
F (MH access path)	2, 2A	5.5	14	15" x 21"
G (MH access path)	2, 2A	5.5	14	15" x 21"
H (MH access path)	3, 3A	7	16	15" x 21"
I (MH access path)	3, 3A	7	16	15" x 21"
J (MH access path)	3, 3A	7	16	15" x 21"
K (MH access path)	4, 4A	2.5	12	15" x 21"
L (MH access path)	4, 4A	2.5	12	15" x 21"
M (eastern access road)	5A	3	12	15" x 21"

Note: NA = not applicable

As a factor of safety and for construction purposes, a uniform design drainage culvert size of 18 inch diameter

will be used.

The existing storm water culverts beneath Factory Avenue will contribute flow to the proposed catch basins and drainage pipes. As a worst case scenario, the flow through the Factory Avenue culverts was calculated assuming the culverts were discharging full. Thus, the culverts would be under head pressure at the inlet. At the outlet (catch basin), the flow would be free falling. The following expressions were used to calculate flow from the Factory Avenue culverts:

$Q = A * v$

$v = \text{square root } (H / (((1 + Ke) / 2 * g) + ((n^2 * L)/(2.21 * rH^{1.33}))$

Where: Q = flow (cfs)
A = area of elliptical culvert flowing full with dimensions 24 in x 36 in = 4.71 sf
v = velocity of flow
H = head at inlet = 0.01 ft (assumed)
Ke = minor loss coefficient (projecting concrete groove) = 0.15 (unitless)
g = gravitational acceleration = 32.2 ft/s^2
n = Manning's coefficient = 0.016 (unitless; concrete with rough joints)
L = length of culvert = 40 ft
rH = hydraulic radius = A / P = 0.59 ft
P = wetted perimeter for elliptical culvert flowing full with dimensions 24 in x 36 in = 8 ft

Velocity of flow through the Factory Avenue culverts is approximately 11.6 ft/s for each culvert. The flow through each Factory Avenue culvert is approximately 54.8 cfs. As an additional factory of safety, 60 cfs was used for design purposes.

The flows through the Factory Avenue culverts combined with the storm water runoff flows from the TR55 modeling were used to design the proposed drainage pipes that would extend from the proposed catch basins to Ley Creek. The following table lists the proposed drainage pipes along with pipe lengths, slope, combined flow, and design drainage pipe size. The drainage pipe sizes were calculated using Flowmaster for Windows® with the Manning's Method and the Kutter's Method. A Manning's n of 0.012 (asphalt coated corrugated metal) and a Kutter's coefficient of 0.010 (smooth pipe) was used, respectively.

Pipe	Length (ft)	Slope (ft/ft)	Flow (cfs)	Design Size (in)
1 (west)	160	0.005	72	36
2	185	0.005	73	36
3	195	0.005	74	36
4	95	0.005	65	36
5 (east)	115	0.005	63	42

O'BRIEN & GERE
ENGINEERS, INC.

November 4, 1997

Mr. Ray Smith
New York State OPRHP
Historic Preservation Field Services
P.O. Box 189 Peebles Island
Waterford, New York 12188

Re: Information request

File: 5858.040.382

Dear Mr. Smith:

O'Brien & Gere Engineers, Inc. (O'Brien & Gere) is requesting information regarding historic, cultural, or archaeological resources in the project area identified on the attached portions of the Syracuse East and Syracuse West, New York USGS Quadrangles. This request is a component of a hazardous waste site remedial impact evaluation being conducted by O'Brien & Gere for the southern bank of Ley Creek. This area was used several times in the past for the deposition of dredged material from Ley Creek by Onondaga County.

Thank you for your prompt attention to this matter. If you have any questions pertaining to this request, please call me at (315) 437- 6100.

Very truly yours,

O'BRIEN & GERE ENGINEERS, INC.

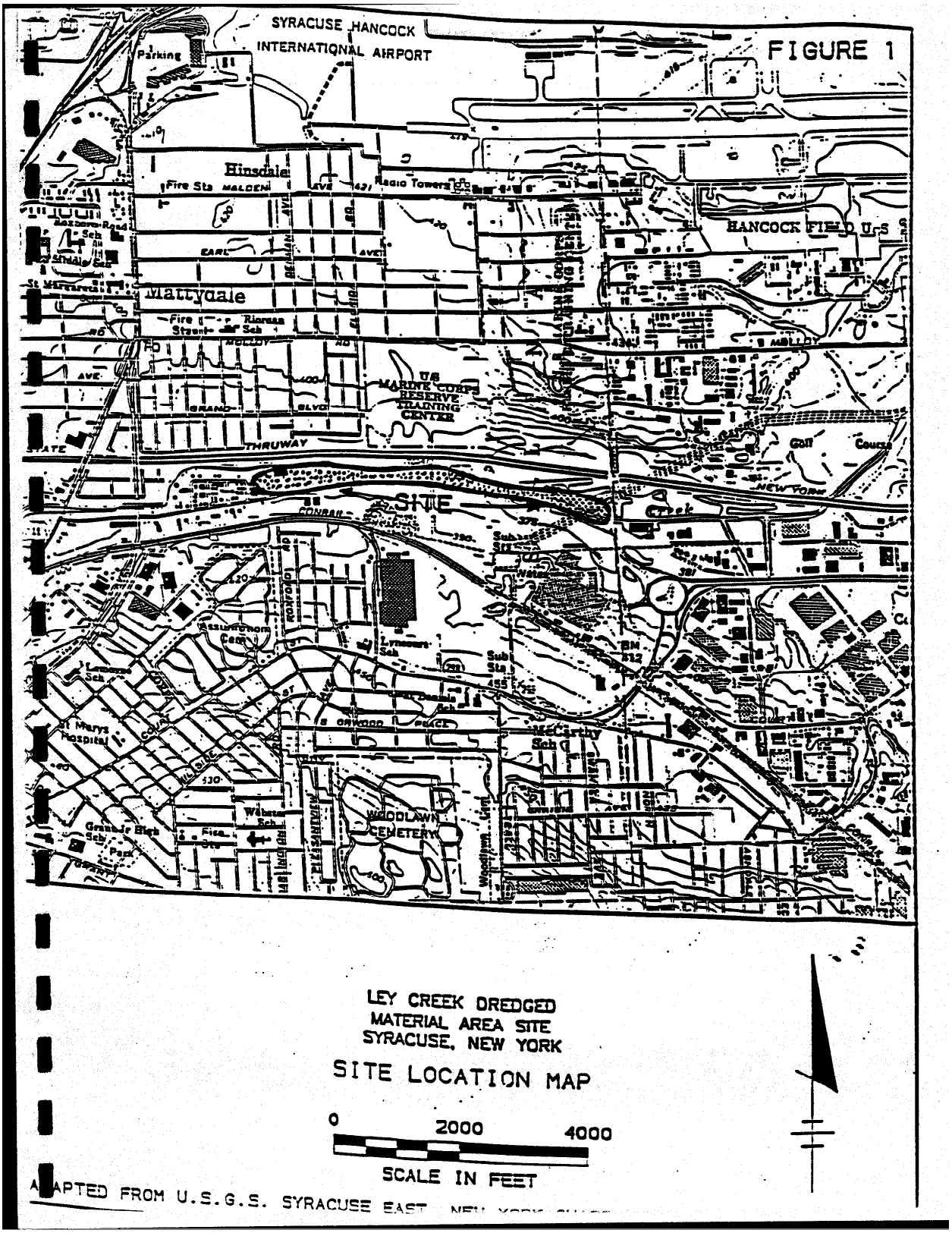
Anthony Esposito

Anthony Esposito
Senior Project Scientist

Attachment

cc: DM Crawford, P.E. - O'Brien & Gere

AE:pam J:\DIV1~PROJECTS\58530405_RPTS\WETLANDSL_OPRHP.WPD


FIGURE 1
SYRACUSE HANCOCK INTERNATIONAL AIRPORT
Parking
Hinsdale
Fire Sta
Radio Towers
HANCOCK FIELD U.S.
Mattydale
Fire Station
US MARINE CORPS RESERVE TRAINING CENTER
THRUWAY
Golf Course
SITE
Creek
Lyncourt Sch
St Marys Hospital
McCarthy Sch
WOODLAWN CEMETERY
LEY CREEK DREDGED MATERIAL AREA SITE
SYRACUSE, NEW YORK
SITE LOCATION MAP
0
2000
4000
SCALE IN FEET
ADAPTED FROM U.S.G.S. SYRACUSE EAST

Appendix C

Basis of design summary

Appendix C

Preliminary Basis of Design

Hot Spot Excavation

- Dredge materials/soils excavation/backfill volume calculations were based on Remedial Investigation dredge materials/soils analytical results. Dredge materials/soils which were found to contain PCBs at or greater than 50 mg/kg. Volumes below may be changed in the field as a result of confirmatory sampling.

- Excavation areas located within the consolidation area will not require backfill from off-site. During grading, material from the site will be used as backfill.

  Hot Spot Excavation and Disposal ~ 307.1 cy
  On-site fill ~ 307.1 cy
  Off site fill ~ 0 cy

Dredge Materials/Soils Consolidation/Relocation

- Volume of dredge materials/soils to be relocated from the north side of Ley Creek to the consolidation area on-site is 920cy (4 ft depth by 6,200 sf). Clean, off-site fill will be used as backfill for the north side excavation.

- Cuts and fills for the site:
  - Cut ~ 24,700 cy
  - Fill ~ 22,800 cy
- Net Cut ~ 1,900 cy

Cover System

- Slopes:
  - Max = 20% (1:5)
  - Min = 4% (1.25), per Part 360

- Components (top to bottom)
  - Erosion control mat (only in area between southern edge of Ley Creek and access road)
  - Vegetated top soil [6 inch]
  - Fill [6 inch]

  - Gravel [12 inch] (only for access road)

Surface Water Drainage

- Design storm = 25-year, 24-hour

- Design Flows:
  - Drainage subarea 1 = 8 cfs
  - Drainage subarea 1A = 4 cfs
  - Drainage subarea 2 = 8 cfs
  - Drainage subarea 2A = 3 cfs
  - Drainage subarea 3 = 9 cfs
  - Drainage subarea 3A = 5 cfs
  - Drainage subarea 4 = 2 cfs
  - Drainage subarea 4A = 3 cfs
  - Drainage subarea 5A = 3 cfs

  - Drainage through five culverts under Factory Avenue = 60 cfs/ea = 300 cfs

- Drainage culvert design:
  - Slope = 0.001 - 0.005
  - Manning's n = 0.012 (asphalt coated corregated metal)
  - Culvert size = 15" x 21" pipe arch for each of the 13 culverts

- Drainage pipe design:
  - Slope = 0.005
  - Manning's n = 0.012 (asphalt coated corregated metal)
  - Kutter's n = 0.010 (smooth pipe)
  - Pipe size = 36 inch diameter for each of the 4 pipes
  - Peak velocity = 8.5 ft/s - 10.5 ft/s

- Drainage Pipe Design
  - Slope = 0.005
  - Manning's n = 0.012
  - Pipe size = 42 in diameter for one pipe
  - Peak velocity = 9.10 ft/sec

Monitoring well modifications

- Monitoring well modification: wells will be modified such that they are flush with the final grade. Therefore, it may be necessary to shorten or extend the well depending on the final grades at the specific well location. The following table shows approximate linear lengths to modify the well. Changes may be made to the modification lengths in the field as final grades change.

Well	Existing Ground Elev.	Existing Well Elev.	Final Ground Elev.	Action
OBG-1	377.5	379.5	373.5	shorten well 6ft
OBG-2	376	378	373.5	shorten well 5.5ft
OBG-3D	377	380	373	shorten well 3ft
OBG-7C	378	380	376	shorten well 4ft

MW-8	380	382	379.5	shorten well 2.5ft
MW-9	375	377	379.5	extend well 2.5ft
MW-9D	375	378	379.5	extend well 1.5ft
MW-10	378.5	380.5	379	shorten well 1.5 ft
MW-12	382	384	379.5	shorten well 4.5ft
MW-13	379	381	380	shorten well 1ft

Site Access

- Site access
  - Gravel road access width = 12 ft
  - Maximum grade = 20%
  - Drainage slope = 0.025
- Site security
  - Fence: 6 ft chain link
  - Gates: Proposed vehicle swing security gates (15 ft wide span) at two entrance/exit access road locations
    Existing vehicle swing security gates (12 ft wide span)

Appendix D

State Historic Preservation Office Correspondence

O'BRIEN & GERE
ENGINEERS, INC.

April 21, 1998

Mr. Wayne Mizerak, P.E.
Bureau of Western Remedial Action
Division of Environmental Remediation
New York State Department of Environmental Conservation
50 Wolf Road
Albany, New York 12233-7010

Re: Ley Creek PCB Dredgings Site

File: 5858.040 #2

Dear Wayne:

In accordance with our discussions at the project meeting held on April 8, 1998 for the Ley Creek PCB Dredgings site remedial design, we are submitting the enclosed two letters from the New York State Office of Parks, Recreation, and Historic Preservation (NYS OPRHP) sent in response to O'Brien & Gere's requests (also attached) that the Ley Creek PCB Dredgings site be reviewed with respect to cultural resources. NYS OPRHP reviewed the site in accordance with the National Historic Preservation Act and the New York State Parks, Recreation, and Historic Preservation Law.

NYS OPRHP concluded that the project would have no impact on cultural resources in or eligible for inclusion in the National Register of Historic Places. EPA's *CERCLA Compliance with Other Laws Manual* (Part II; August 1989) indicates that no further investigation is needed, if, at any point, the conclusion is reached that cultural resources are not present or will not be affected. Therefore, we presume that EPA's requirement for compliance with the National Historic Preservation Act, as discussed in EPA's January 8, 1998 letter to NYSDEC, has been satisfied and that a Stage 1A Cultural Resources Survey is not necessary.

Please give Jim Hartnett or me a call to advise us if you concur with our presumption. Copies of this letter and attachments are also being sent to the EPA due to the designation of this site as a subsite of the Onondaga Lake NPL site.

Very truly yours,

O'BRIEN & GERE ENGINEERS, INC.

Maureen Salanger

Maureen Salanger, P.E.
Senior Project Engineer

MS:sazl:\DIV71\PROJECTS\5858040\2_CORRES\SBLTR220.WPD

Enclosures

cc: Robert K. Davies, Esq. - NYSDEC (w/enc.)
Alison A. Hess, CPG - USEPA (w/enc.)
George A. Shanahan, Esq. - USEPA (w/enc.)
James Hartnett - GM (w/enc.)
William E. Kochem - GM (w/enc.)
Barry R. Kogut, Esq. - Bond, Schoeneck & King (w/enc.)
Douglas M. Crawford, P.E. - O'Brien & Gere (w/enc.)
Anthony Esposito - O'Brien & Gere (w/enc.)

NEW YORK STATE
Bernadette Castro
Commissioner

New York State Office of Parks, Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island, PO Box 189, Waterford, New York 12188-0189 518-237-8643

February 9, 1998

Anthony Esposito
O'Brien & Gere Engineers, Inc.
5000 Brittonfield Parkway
PO Box 4873
Syracuse, NY 13221-4873

Dear Mr. Esposito:

RE: EPA
Hazardous Waste Remedial Impact
Syracuse, Onondaga County
97PR2672

Thank you for requesting the comments of the State Historic Preservation Office (SHPO). We have reviewed the project in accordance with Section 106 of the National Historic Preservation Act of 1966.

Based upon this review, it is the SHPO's opinion that your project will have No Effect upon cultural resources in or eligible for inclusion in the National Register of Historic Places.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Ruth L. Pierpont

Ruth L. Pierpont
Director, Historic Preservation
Field Services Bureau

RLP:cm

New York State Office of Parks, Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island, PO Box 189, Waterford, New York 12188-0189 518-237-8643

...YORK STATE
...dette Castro
Commissioner

December 3, 1997

Anthony Esposito
O'Brien & Gere Engineers, Inc.
5000 Brittonfield Parkway
P.O. Box 4873
Syracuse, NY 13221-4873

Dear Mr. Esposito:

RE: SEQRA
Hazardous Waste Remedial Impact
Syracuse, Onondaga County
97PR2672

Thank you for requesting the comments of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the project in accordance with the New York State Parks, Recreation and Historic Preservation Law, Section 14.09.

Based upon this review, it is the OPRHP's opinion that your project will have No Impact upon cultural resources in or eligible for inclusion in the State and National Registers of Historic Places.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Ruth L. Pierpont

Ruth L. Pierpont
Director, Historic Preservation
Field Services Bureau

RLP:cm

2/4/98 Ltr. M Salanger

O'BRIEN & GERE
ENGINEERS, INC.

January 30, 1998

Ms. Ruth L. Pierpont
New York State OPRHP
Historic Preservation Field Services
P.O. Box 189 Peebles Island
Waterford, New York 12188

Re: OPRHP #97PR2672

File: 5858.040.382

Dear Ms. Pierpont:

O'Brien & Gere Engineers, Inc. (O'Brien & Gere) is requesting that the project included in OPRHP Project Review # 97PR2672 be reassessed under the National Historic Preservation Act (16 U.S.C. 470). Based on your December 3, 1997 response letter (attached), the project would have no impact upon cultural resources in or eligible for inclusion in the State or National Registers of Historic Places. As noted in this letter, the project was reviewed in accordance with the New York State Parks, Recreation, and Historic Preservation Law, Section 14.09. It is our understanding that, unless specifically outlined in the response letter, this review is not in compliance with the National Historic Preservation Act. The proposed project is required to be in compliance with this Act.

Thank you for your prompt attention to this matter. If you have any questions pertaining to this request, please call me at (315) 437- 6100.

Very truly yours,

O'BRIEN & GERE ENGINEERS, INC.

Anthony Esposito

Anthony Esposito
Senior Project Scientist

Attachments

cc: DM Crawford, P.E. - O'Brien & Gere

AE:pem\\:\DIV1\PROJECTS\5858040\5 RPTS\WETLANDSL. OPRHP.WPD

Exhibits

Exhibit A

ROD excerpt - Summary of the Preferred Remedy

can be used as the basis for the final decision. A remedy is cost effective if the cost of the remedy is proportional to its' overall effectiveness. The costs for each alternative are presented in Table 3.

8. Community Acceptance. Concerns of the community regarding the RI/FS reports and the Proposed Remedial Action Plan have been evaluated. The "Responsiveness Summary" included as Appendix A presents the public comments received and the Department's response to the concerns raised. No significant public comments were received at the public meeting, however, extensive written comments were received from General Motors, Onondaga County, Syracuse China/Pfaltzgraff and the New York State Thruway Authority. In general these comments were supportive of the selected remedy, while raising several specific concerns with certain aspects of the project, such as flood protection and possible impacts to the property owners resulting from the remedy. These concerns should either be addressed by the ongoing negotiation between GM and the various property owners or, for the more technical issues, will be addressed during the design of the remedy.

SECTION 7: SUMMARY OF THE PREFERRED REMEDY

Based upon the results of the RI/FS, and the evaluation presented in Section 7, the NYSDEC has selected **Alternative 8: Excavation and Off Site Disposal of Dredged Material /Soil > 50 mg/kg PCBs, Regrading of Material in the Floodway with a Low Permeability Cover, 12-inch Vegetated Soil Cover Over the Remaining Material, Groundwater Monitoring, Deed Restrictions, Fencing and Maintenance Access Provisions** as the remedy for this site. This selection is based upon this alternative's ability to meet New York State Standards, Criteria and Guidance, be protective of human health and the environment, and offer the best balance of the five remaining evaluation criteria presented in Section 7.

This selection is based upon the evaluation of the eight alternatives developed for this site. Alternative 8 will be protective of human health and the environment, as discussed in Sections 3.3 and 3.4, by removing PCB contamination above hazardous waste levels from the site and consolidating the remaining materials out of the floodway. These remaining contaminated areas, approximately 17 acres, exceeding the remedial goals will be covered with a minimum of a twelve (12) inch vegetated soil cover, with the exception of the areas in the floodway where this cover will consist of a geomembrane or clay layer overlain with the twelve (12 inch vegetated soil cover or the gravel access road. This will prevent exposures to the PCBs below 50 mg/kg which will remain on the site. While Alternatives 3 and 5 would offer greater long term protection, their respective costs would be excessive in comparison to the increased effectiveness and the risk presented by the remaining contamination. Alternative 8 will be effective in the short term, since much of the contaminated material will remain undisturbed. Alternative 8 will also address the volume and toxicity of the most highly contaminated material and reduce the mobility of the remaining contaminants present at the site, however, not to as high a degree as the removal or treatment alternatives. Alternative 8 is significantly lower in cost than the removal and treatment

alternatives and since it equally satisfies the other criteria, including the threshold criteria, it is the preferred alternative.

The area in which the remedy will be located is a Class 2 freshwater wetland. The original deposition of the PCB dredge material occurred before the September 1, 1975 Article 24 regulation regarding the filling in of wetlands. The consolidation of the contaminated PCB soils will occur in areas that are designated as wetland. However, the NYSDEC Division of Fish, Wildlife and Marine Resources was consulted and has determined that while Alternative 8 will result in the continued loss of several acres of regulated freshwater wetland along the shore of Ley Creek, the potential reduction in PCB contamination to Ley Creek and Onondaga Lake outweighs the loss of wetlands. This will be consistent with the intent of Article 24, Environmental Conservation Law (ECL) Section 663.5 and will comply with Executive Order 11990: Protection of Wetlands.

The preferred remedy also will comply with the Fish and Wildlife Coordination Act, 16 U.S. C. 661, which requires consultation with state and federal wildlife agencies when wetlands/water resources are impacted, the Endangered Species Act, 16 U.S. C. 1531, which requires consultation with the U. S. Fish and Wildlife Service regarding endangered or threatened species and/or their habitat and any substantive requirements of Section 404 of the Clean Water Act for discharge of dredged or fill material in a wetland.

The estimated present worth cost to implement the remedy will be $6,671,453. The cost to construct the remedy is estimated to be $5,249,798. The estimated average annual operation and maintenance cost for 30 years will be $90,671.

The elements of the selected remedy are as follows:

1. A remedial design program to verify the components of the conceptual design and provide the details necessary for the construction, operation and maintenance, and monitoring of the remedial program. Uncertainties identified during the RI/FS, specifically the identification and characterization of any PCB contamination which may be associated with known or suspected drainage swale(s) which historically conveyed surface runoff from the GM; Fisher Guide Site. This sampling will be conducted as a pre-design activity for this site. The investigation will involve subsurface sampling in the area of the swale encountered during the sewer installation as well as in areas of identified historic swales which may have drained the GM site, to determine the nature and extent of any subsurface PCB contamination, in the area which will be addressed by the remedy. Based upon this sampling, appropriate modifications to the proposed alternative, will be implemented prior to or in conjunction with, the construction of the remedy to avoid the necessity of future disturbance of the remediated site.

2. Excavation and removal of dredge material/soils that contain PCBs at concentrations exceeding 50 ppm to a permitted hazardous waste landfill. It is estimated that up to 5000 cubic yards could be excavated from the areas identified on Figure 2.

3. Consolidation and covering of the remaining PCB contaminated dredge materials where concentrations are less than 50 mg/kg but exceed the remedial level of 1 mg/kg at the surface and 10 mg/kg for subsurface areas. The dredged materials will be removed, at a minimum, from the first twenty five feet of the floodway area to restore this area to appropriate elevation, with the excavated material consolidated in the area shown on Figure 2. After restoration to floodway elevations, any remaining materials above the remedial level remaining in the floodway will be covered with a geomembrane or clay and then twelve inches of soil or the gravel access road (see Figure 3 and 4). The floodway is the area defined by the Federal Emergency Management Agency August 23,1982 Flood Boundary and Floodway Map for the Town of Salina (Community Panel Number 360591 0007). In areas to be addressed outside of the floodway the dredged material will be graded and covered with a vegetated soil cover which will consist of twelve (12) inches of soil, with a permeability equal to or less than the material to be covered. Figure 5 shows the approximate 17 acre area that will be covered.

4. Dredged material/soils in the vicinity of boring B-19, located on the north bank of Ley Creek (See Figure 2), will be excavated from an area of approximately 6200 square feet to a depth of 3 feet to achieve the remedial levels for the site. The excavated material is expected to be less than 50 ppm and will be consolidated with the rest of the material on the south bank.

5. A hydraulic analysis and floodplain assessment to assure compliance with Executive Order 11988 (Floodplain Management) will be completed during the remedial design for the consolidated capped materials to insure that the material to be left in the floodplain and floodway will not result in any significant change in flood elevations and to ensure that there will not be any adverse impact to the remedy from a 100 or 500 year flood. If necessary, based on this analysis, additional material will be consolidated out of the floodway/flood-plain. Rip rap or other stabilization/flood protection techniques will also be applied as determined necessary during the design, to assure the integrity of the cover during flood events.

6. To provide Onondaga County crews access to maintain Ley Creek as a part of the existing drainage district, a gravel access road will be provided adjacent to the southern bank of the Creek to allow for future maintenance and/or dredging. The four existing drainage swales from Factory Avenue will be graded back, covered with the vegetated cover and the flow channel lined with a half pipe or formed concrete spillway where they pass through the area of covered dredge spoils.

Gravel access pathways and asphalt working pads will be constructed to allow maintenance crews access to the sewer for routine maintenance activities, without coming into contact with potentially contaminated soil. Gates will be provided in the fence to provide direct access to the above maintenance locations to avoid having to travel over the covered area. During the remedial design consideration will be given to the removal of dredge material from the existing sewer right of way, if additional material will be needed to achieve final cover contours.

7. Access agreements and deed restrictions will have to be negotiated with Onondaga County and other impacted property owners to allow the implementation of the remedy. The deed restrictions will be used to preclude activities which could potentially expose contaminated materials and to insure the integrity of the cover is maintained.

The area where PCBs will remain will be fenced and all gates locked, with keys provided to appropriate Onondaga County agencies. The fence identified for this remedy is intended to limit accesss to the site in order to assure the integrity of the cover system is maintained. However, alternative means of limiting access or activities which could result in damage to the cover (i.e.use of ATVs) may be proposed as part of the design. The agreement negotiated for access to implement the remedy will also have to address the potentially increased costs to Onondaga County which may be associated with sewer repair or installation and future widening of Factory Avenue in the areas where PCBs remain covered at the site.

8. Since the remedy will result in dredge materials/soils with elevated levels of PCBs remaining untreated, but covered at the site, a long term monitoring program will be instituted. In addition, yearly reviews will be conducted to allow the effectiveness of the selected remedy to be evaluated and to determine whether the remedy continues to be protective of human health and the environment. This long term monitoring program will be a component of the operations and maintenance for the site and will be developed in accordance with New York State Standards, Criteria and Guidance.

9. The remedial design would include provision for the completion of a Stage 1A Cultural Resources Survey, and any additional investigations required, to be consistent with the requirements of the National Historic Preservation Act (16 U.S.C. 470).

10. An operation and maintenance program would be implemented to maintain the site and the integrity of the cover.

11. Further evaluation of the groundwater beneath the dredged material, as well as, surface water and sediments in Ley Creek would be included in the scope of work for the RI/FS for the General Motors; Fisher Guide Site.

Exhibit B

Predisposal characterization data

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Ley Creek PCB Dredging Site
Proj. Desc: Syracuse, NY

Job No.: 5858.010.517
Certification NY No.: 10155

Sample: J2746
Samp. Description: OBG3,B122.5B,B127B
Units: mg/L

Collected: 07/28/98
Received: 07/28/98

Matrix: Leachate
%Solids:
Number of analytes: 8

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
TCLP Arsenic	<.5	1311/6010	07/28/98	07/31/98	072998W2	6	
TCLP Barium	.7	1311/6010	07/28/98	07/31/98	072998W2	6	
TCLP Cadmium	<.1	1311/6010	07/28/98	07/31/98	072998W2	6	
TCLP Chromium	<.5	1311/6010	07/28/98	07/31/98	072998W2	6	
TCLP Lead	<.5	1311/6010	07/28/98	07/31/98	072998W2	6	
TCLP Mercury	<.0005	1311/7470	07/30/98	07/30/98	072998W1	1	
TCLP Selenium	<.1	1311/6010	07/28/98	07/31/98	072998W2	6	
TCLP Silver	<.5	1311/6010	07/28/98	07/31/98	072998W2	6	

Notes:

Date leachate created: 07/28/98

Estimated value

Authorized: Thomas Alexander
Date: August 4,1998

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories,Inc.

Analytical Results Wet Chemistry

Client: General Motors Corporation
Project: Ley Creek PCB Dredging Site
Proj. Desc: Syracuse, NY

Job No.: 5858.010.517
Certification NY No.: 10155

Sample: J2746
Samp. Description: OBG3,B122.5B,B127B

Collected: 07/28/98
Received: 07/28/98 11:05

Matrix: Solid

Parameter	Result	Units	Method	Prepared	Analyzed	QC Batch
Flashpoint	>60.	deg. C	EPA 1010		08/04/98	080498S20
Total releasable H2S	<5.0	mg/Kg Orig. wt.	EPA 9030		08/04/98	080398S25
Total releasable HCN	<.25	mg/Kg Orig. wt.	EPA 9010A	08/03/98	08/03/98	080398S25
pH	7.0	STD units	EPA 9045C		08/04/98	080498S11

Notes:

pH analyzed outside 15 minute holding time

-Estimated value

Authorized: Thomas Alexander
Date: August 5,1998

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: TCLP 8240

Client: General Motors Corporation
Project: Ley Creek PCB Dredging Site
Proj. Desc: Syracuse, NY

Job No.: 5858.010.517
Certification NY No.: 10155

Sample: J2747
Samp. Description: B122.5B
Instrument: HP5970 GC/MS#2
Units: mg/L
Number of analytes: 13

Collected: 07/28/98
Received: 07/28/98
Prepared: 08/03/98

Matrix: Leachate
QC Batch: 080498W1
%Solids:
Purge volume: 5 ml

Parameter	Result	Surrog Limits	Dilution	Analyzed	Not
Vinyl chloride	<.10		10	08/04/98	
1,1-Dichloroethene	<.050		10	08/04/98	
Chlorobenzene	<.050		10	08/04/98	
1,2-Dichloroethane	<.050		10	08/04/98	
Chloroform	<.050		10	08/04/98	
Benzene	<.050		10	08/04/98	
Trichloroethene	<.050		10	08/04/98	
2-Butanone	<.10		10	08/04/98	
Tetrachloroethene	<.050		10	08/04/98	
Carbon tetrachloride	<.050		10	08/04/98	
Dibromofluoromethane (surrogate)	102.%	80-127	10	08/04/98	
Toluene-d8 (surrogate)	98.%	92-120	10	08/04/98	
Bromofluorobenzene (surrogate)	101.%	77-117	10	08/04/98	

Notes:

Outside control limits J-Estimated value

Authorized: Thomas Alexander
Date: August 4, 1998

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results
Method: TCLP 8270

Client: General Motors Corporation
Project: Ley Creek PCB Dredging Site
Proj. Desc: Syracuse, NY

Job No.: 5858.010.517
Certification NY No.: 10155

Sample: J2746
Samp. Description: OBG3,B122.5B,B127B
Instrument: HP5972A GCMS#5
Units: mg/L
Number of analytes: 18

Collected: 07/28/98
Received: 07/28/98
Prepared: 07/29/98

Matrix: Leachate
QC Batch: 072798W4
%Solids:
Sample Size: .1 L

Parameter	Result	Surrog Limits	Dilution	Analyzed
Pyridine	<.50		1	08/04/98
1,4-Dichlorobenzene	<.10		1	08/04/98
2-Methylphenol	<.10		1	08/04/98
(3+4)-Methylphenol	<.10		1	08/04/98
Hexachloroethane	<.10		1	08/04/98
Nitrobenzene	<.10		1	08/04/98
Hexachlorobutadiene	<.10		1	08/04/98
2,4,6-Trichlorophenol	<.10		1	08/04/98
2,4,5-Trichlorophenol	<.10		1	08/04/98
2,4-Dinitrotoluene	<.50		1	08/04/98
Hexachlorobenzene	<.10		1	08/04/98
Pentachlorophenol	<.10		1	08/04/98
2-Fluorophenol (surrogate)	<.50		1	08/04/98
Phenol-d5 (surrogate)	100.%	50-111	1	08/04/98
2,4,6-Tribromophenol (surrogate)	102.%	42-126	1	08/04/98
Nitrobenzene-d5 (surrogate)	121.%	# 72-106	1	08/04/98
2-Fluorobiphenyl (surrogate)	104.%	55-123	1	08/04/98
Terphenyl-d14 (surrogate)	104.%	53-113	1	08/04/98
	129.%	21-150	1	08/04/98

Notes:

-Date leachate created: 07/28/98

- Outside control limits J-Estimated value

Authorized: Thomas Alexander
Date: August 4,1998

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

Exhibit C

ENSYS PCB RISc ® Soil Test System Rapid Immunoassay Screen User's Guide

ENSYS INC.
ENVIRONMENTAL PRODUCTS

For information only
Consent was guided from kit when actually Running Samples.

PCB RISC® SOIL TEST SYSTEM

RAPID IMMUNOASSAY SCREEN

User's Guide

IMPORTANT NOTICE

This method correctly identifies 95% of samples that are PCB-free and those containing 1 ppm or greater of PCBs. A sample that develops less color than the standard is interpreted as positive. It contains PCBs. A sample that develops more color than the standard is interpreted as negative. It contains less than 1 ppm PCBs.

This test system should be used only under the supervision of a technically qualified individual who is capable of understanding any potential health and environmental risks of this product as identified in the product literature. The components must only be used for the analysis of soil samples for the presence of polychlorinated biphenyls. After use, the kits must be disposed of in accordance with applicable federal and local regulations.

TROUBLESHOOTER GUIDE

READ ALL INSTRUCTIONS BEFORE PROCEEDING WITH THE TEST

WASH STEP

Lack of vigorous washing may result in false positives or negatives depending on whether the wash error was committed on standard or sample tubes. Solution: Make sure to wash four times vigorously, washing the whole set of 12 tubes at once.

PIPET CALIBRATION

An out-of-calibration pipet may result in false positives or negatives depending on whether the amount is greater or less than the specified transfer volume. *Solution:* Check the calibration at least daily and after any extreme mechanical shock (such as dropping). An indication that the pipet is out of calibration is if the gold barrell is loose and will turn. (When set on 50 µl there should be about a 1/4 of an inch between the white plunger and the end of the clear pipet tip.)

AIR BUBBLES IN THE PIPET

The presence of air bubbles in the pipet tip when transferring extracts may result in false positives or negatives depending on whether the error was committed on standard or sample tubes. *Solution:* Quickly examine the pipet tip each time an aliquot is withdrawn and go back to the source and take another aliquot to displace the bubble if necessary.

MIXING

Lack of thorough mixing, when instructed, can cause inconsistent results. *Solution:* Observe the times in the instructions and mix with sufficient force to ensure that the liquid is homogenous.

TIMING

It is important to follow the timing steps in the instructions carefully. The incubation step in the antibody tubes can vary a bit without harm to the tests. The color development step timing is critical and should be no less than 2 minutes and no greater than 3 minutes.

WIPING THE TUBES

Wiping of the tubes should be done before they are read in the spectrophotometer because smudges and fingerprints on the tubes can give potentially false negative readings.

MIXING LOT #'S

Never mix lots! Each kit's components are matched for optimal performance and may give inaccurate results with the components from other kits with different lot #'s. Also, NEVER mix components from different types of kits (ex: Petro kit buffer can not be used with a PAH kit).

STORAGE AND OPERATING TEMPERATURES

Temperature requirements are very important and should be strictly adhered to. This test kit should be stored at less than 80°F/27°C and operated between 40°F/4°C and 90°F/32°C.

SHELF-LIFE

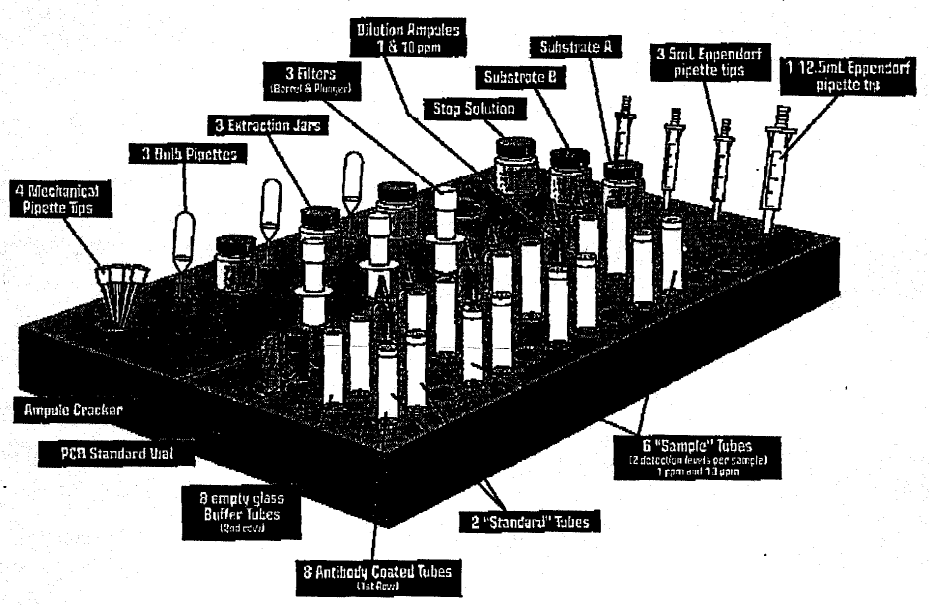
Each kit label contains the kit expiration date. To achieve accurate results, kits must be used prior to expiration.

WORKSTATION SET-UP

READ ALL INSTRUCTIONS BEFORE PROCEEDING WITH THE TEST

WORKSTATION SET-UP

- Mechanical pipet tips
- Filter barrels & plungers
- Ampule cracker
- Glass PCB buffer tubes
- Substrate A
- Eppendorf pipet tips
- Bulb pipets
- PCB standard
- Antibody coated tubes
- Substrate B
- Extraction jars
- 1 & 10 ppm dilution ampules
- Stop Solution



Workstation shows components for 3 samples tested at 2 levels

TEST PREPARATION

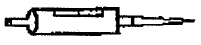
READ ALL INSTRUCTIONS BEFORE PROCEEDING WITH THE TEST

READ BEFORE PROCEEDING

- Do not attempt to run more than 12 tubes, two of which must be standards.
- Items that you will need that are not provided in the test kit include: a permanent marking pen, laboratory tissue (or paper towels), a liquid waste container, and disposable gloves.
- This User's Guide was written for analyzing soil samples for PCBs at 1 and 10 ppm. See table on page 10 for sensitivity to various aroclors.

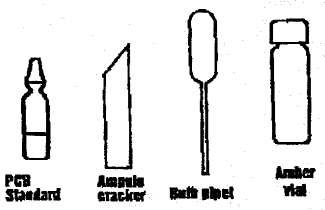
TEST PREPARATION

- Label all Eppendorf repeater tips. Tips can be reused for future analyses. Label the first 5mL tip "A", the second 5mL tip "B" and the third 5mL tip "Stop".
- Label the 12.5 mL tip "Buffer".


Eppendorf Tip

STANDARD PREPARATION

- Open PCB Standard ampule by slipping ampule cracker over top, and then breaking tip at scored neck. Transfer solution to empty vial with Bulb Pipets.
- Label vial with current date. Standard is usable for 2 weeks. Always cap tightly when finished using standard.
- A new PCB Standard should be opened for every 4 samples.

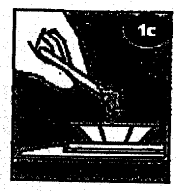

PCB Standard
Ampule cracker
Bulb pipet
Amber vial

PHASE 1

EXTRACTION & PREPARATION OF THE SAMPLE

READ ALL INSTRUCTIONS BEFORE PROCEEDING WITH THE TEST

WEIGH SAMPLE

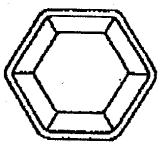


1a. Place unused weigh boat on pan balance.

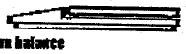
1b. Press ON/MEMORY button on pan balance. Balance will beep and display 0.0.

1c. Weigh out 10 ± 0.1 grams of soil.

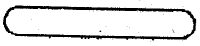
1d. If balance turns off prior to completing weighing, use empty weigh boat to retare, then continue.



Weigh Boat



Pan balance



Wooden spatula

EXTRACT PCBS



2a. Uncap extraction jar and place on a flat surface. Without contacting solvent puncture foil seal with ampule cracker or sharp object. Peel the remainder of the seal off extraction jar.

2b. Using wooden spatula, transfer 10 grams of soil from weigh boat into extraction jar.

2c. Recap extraction jar tightly and shake vigorously for one minute.

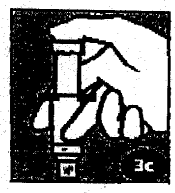
2d. Allow to settle for one minute.

Repeat steps **1a - 2c** for each sample to be tested.



Extraction jar

FILTER SAMPLE

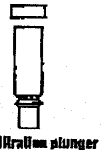


3a. Disassemble filtration plunger from filtration barrel.

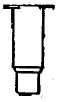
3b. Insert bulb pipet into top (liquid) layer in extraction jar and draw up sample. Transfer at least ½ bulb capacity into filtration barrel. Do not use more than one full bulb.

3c. Press plunger firmly into barrel until adequate filtered sample is available (place on table and press if necessary).

Repeat steps **3a - 3c** for each sample to be tested.



Filtration plunger



Filtration barrel



Bulb pipet

READ TO AVOID COSTLY MISTAKES

READ ALL INSTRUCTIONS BEFORE PROCEEDING WITH THE TEST

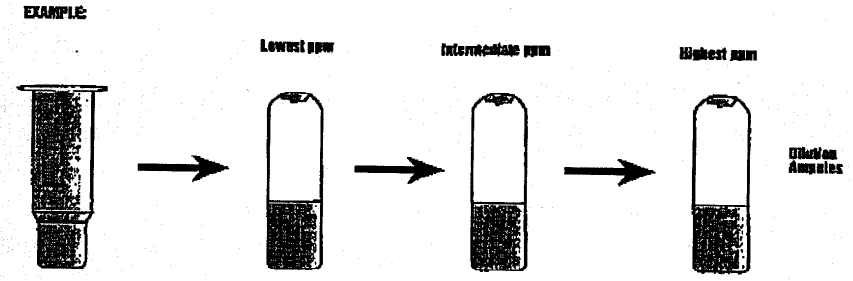
SAMPLE DILUTION PROGRAM

1. The sample dilution procedure on the next page is for standard detection levels. The following diagram represents the sample dilution procedure for all other detection levels.

2. Your kit may include extra dilution ampules to reach high detection levels.

3. **EVERY AMPULE PROVIDED MUST BE USED!**

   If there are any questions concerning the dilution procedure please call Technical Services before running the samples to help avoid costly mistakes.
   1-800-242-7472 or 919-941-5509.



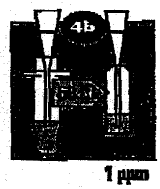
NOTE: Your Kit may include additional ampules in order to achieve your test levels. Always transfer filtered sample to the dilution ampule labeled with the lowest PPM level and then transfer from this ampule to the next higher level dilution tube.

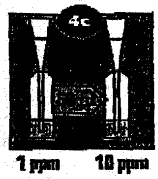
PHASE 2
SAMPLE & STANDARD PREPARATION
READ ALL INSTRUCTIONS BEFORE PROCEEDING WITH THE TEST

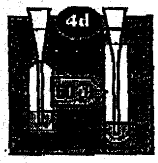
READ BEFORE PROCEEDING

- Label the plastic antibody coated tubes with a permanent marking pen.
- When using the mechanical pipet always withdraw and dispense below the liquid level.
- "Shake tubes" means to thoroughly mix the contents with special care not to spill or splash.

DILUTE SAMPLES AND STANDARDS









4a. Set the Eppendorf Repeater on 4, assemble the "Buffer" tip and fill with Buffer.

4b. Dispense 1 mL of Buffer into each glass buffer tube.

4c. Open 1 and 10 ppm dilution ampules by slipping ampule cracker over top, and then breaking top at scored neck.

4d. Withdraw 60 µL of filtered sample using mechanical pipet and dispense below the liquid level in "1 ppm" dilution ampule. Gently shake ampule from side to side for 5 seconds to mix thoroughly.

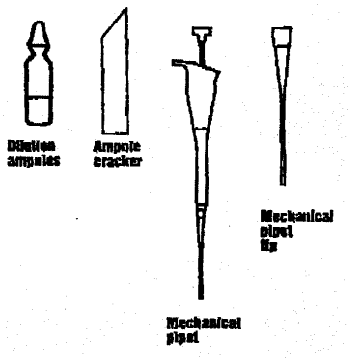
4e. Withdraw 60 µL from the "1 ppm" dilution ampule using mechanical pipet and dispense below the liquid level in "10 ppm" dilution ampule. Gently shake ampule from side to side for 5 seconds to mix thoroughly.

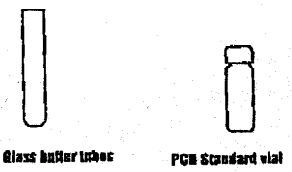
4f. Transfer 60 µL from each dilution ampule into glass buffer tubes. Always wipe tip after dispensing into buffer tube.

4g. Change pipet tip and repeat **4d - 4f** for each sample.

4h. Assemble new pipet tip on mechanical pipet and transfer 60 µL from Standard vial into two glass buffer tubes. Immediately replace cap on PCB Standard vial.

4i. Shake all glass buffer tubes for 5 seconds.





PHASE 3
THE IMMUNOASSAY
READ ALL INSTRUCTIONS BEFORE PROCEEDING WITH THE TEST

TRANSFER FROM DILUTION TUBE TO ANTIBODY COATED TUBE



5a. Set timer for 10 minutes.

5b. Working left to right in the workstation:

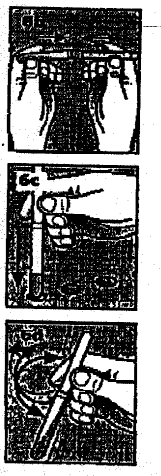
1. Fit all antibody coated tubes firmly on top of all corresponding glass buffer tubes.
2. Start timer and immediately invert all connected tube pairs so that the liquid is poured into the antibody coated tubes. Return the tube pairs to the appropriate workstation row making sure the larger (antibody coated) tube is on the bottom.

5c. Invert all tube pairs several more times making sure the pair is returned to the workstation with the larger (antibody coated) tube on the bottom.

5d. Disconnect and discard the smaller (dilution) tubes. It is not important to worry about drops of liquid adhering to lips of tubes.

5e. Place conjugate tubes behind antibody tubes in workstation. Remove grey caps and discard.

TRANSFER OF CONJUGATE TO ANTIBODY COATED TUBES



AFTER 10 MINUTES, IMMEDIATELY:

6a. Set timer for 5 minutes.

6b. Working left to right in the workstation:

Start timer and immediately:

Dissolve the conjugate pellets by horizontally connecting the antibody coated tubes and conjugate tubes and tilt the liquid up to pour it onto the conjugate.

6c. Return the connected tubes to the appropriate workstation row making sure the larger (antibody coated) tube is on the bottom. It is important that this step is completed within one minute for all tubes.

6d. In order to adequately mix solution, invert all connected tube pairs several more times making sure that the pair is returned to the workstation with the larger (antibody coated) tube on the bottom.

6e. Disconnect and discard the conjugate tubes. It is not important to worry about the loss of liquid adhering to lip of tubes.

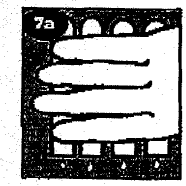
PHASE 4
INTERPRETATION

READ ALL INSTRUCTIONS BEFORE PROCEEDING WITH THE TEST

READ BEFORE PROCEEDING
WASH PROCEDURE

- An accurate test requires a virgorous wash accomplished by directing a strong stream into the antibody coated tubes.
- The wash solution is a harmless, dilute solution of detergent.

WASH





7a. After the 5 minute incubation (a total of 15 minutes), empty antibody coated tubes into liquid waste container.

7b. Wash antibody coated tubes by vigorously filling and emptying a total of 4 times.

7c. Tap antibody coated tubes upside down on paper towels to remove excess liquid. Residual foam in the tubes will not interfere with test results.

Note: When running up to 12 antibody coated tubes, tubes can be washed in two groups - one group immediately following the other group.



Wash bottle

PHASE 3
THE IMMUNOASSAY

READ ALL INSTRUCTIONS BEFORE PROCEEDING WITH THE TEST

COLOR DEVELOPMENT

8a. Set the Eppendorf Repeater on 2, assemble the "A" tip and fill with Substrate A (TMB, yellow label).

8b. Dispense once (200 µL) into each antibody coated tube.

8c. Set timer for exactly 2 1/2 minutes.

8d. Assemble "B" tip, fill with Substrate B, start timer, and dispense once (200 µL H_2O_2, green label) into each antibody coated tube.

8e. Shake all tubes for 5 seconds. Solution will turn blue in some or all antibody coated tubes.

8f. Assemble "Stop" tip, fill with Stop Solution (red label), and stop reaction at end of 2 1/2 minutes by dispensing once (200 µL) into each antibody coated tube.

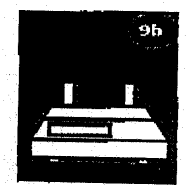


AROCLOR SENSITIVITY

Aroclor	Lowest Detection Level
1248	1.0 ppm
1254	0.5 ppm
1260	0.5 ppm
1242	2.0 ppm
1232	4.0 ppm
1016	4.0 ppm

PHASE 4
ANALYSIS OF RESULTS
READ ALL INSTRUCTIONS BEFORE PROCEEDING WITH THE TEST

SELECT STANDARD



9a. Wipe outside of all antibody coated tubes.

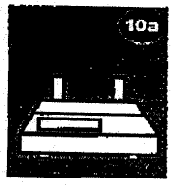
9b. Place both Standard tubes in photometer.

9c. Switch tubes until the photometer reading is negative or zero. Record reading.

If reading is greater than - 0.3 in magnitude, results are outside QC limits. Retest the sample(s).

9d. Remove and discard tube in right well. The tube in the left well is the conservative standard.

MEASURE SAMPLE



10a. Place 1 ppm tube in right well of photometer and record reading.

If photometer reading is negative or zero, PCBs are present.

If photometer reading is positive, concentration of PCBs is less than 1 ppm.

10b. Place 10 ppm tube in right well of photometer and record reading.

If photometer reading is negative or zero, PCBs are present.

If photometer reading is positive, concentration of PCBs is less than 10 ppm.

QUALITY CONTROL

READ ALL INSTRUCTIONS BEFORE PROCEEDING WITH THE TEST

System Description

Each PCB RISc Soil 12 Test Case contains enough material to perform 12 test samples, each at two detection levels.

The PCB RISc Soil Test is divided into four phases. The instructions and notes should be reviewed before proceeding with each phase.

Hotline Assistance

If you need assistance or are missing necessary Test System materials, call toll free: 1-800-242-RISC (7472).

Validation and Warranty Information

Product claims are based on validation studies carried out under controlled conditions. Data has been collected in accordance with valid statistical methods and the product has undergone quality control tests of each manufactured lot.

PCB-free soil and soil containing 1 ppm or greater of PCBs were tested with the EnSys PCB RISc analytical method. The method correctly identified 95% of these samples. A sample that has developed less color than the standard is interpreted as positive. It contains PCBs. A sample that has developed more color than the standard is interpreted as negative. It contains less than 1 ppm PCBs.

The company does not guarantee that the results with the PCB RISc Soil 24 Test Case will always agree with instrument-based analytical laboratory methods. All analytical methods, both field and laboratory, need to be subject to the appropriate quality control procedures.

EnSys, Inc. warrants that this product conforms to the descriptions contained herein. No other warranties, whether expressed or implied, including warranties of merchantability and of fitness for a particular purpose shall apply to this product.

EnSys, Inc. neither assumes nor authorizes any representative or other person to assume for it any obligation or liability other than such as is expressly set forth herein.

Under no circumstances shall EnSys, Inc. be liable for incidental or consequential damages resulting from the use or handling of this product.

How It Works

Standards, Samples, and color-change reagents are added to test tubes, coated with a chemical specific to PCBs. The concentration of PCBs in an unknown Sample is determined by comparing its color intensity with that of a Standard.

Note: PCB concentration is inversely proportional to color intensity; the lighter the color development of the sample, the higher the concentration of PCBs.

Quality Control

Standard precautions for maintaining quality control:

- Do not use reagents or test tubes from one Test System with reagents or test tubes from another Test System.
- Do not use the Test System after any portion has passed its expiration date.
- Do not attempt the test using more than 12 antibody coated tubes (two of which are Standards) at the same time.
- Do not exceed incubation periods prescribed by the specific steps.
- Always follow the procedure in this user's guide.
- Use EPA Method 8080 or Code of Federal Regulations Title 40, Part 136, Appendix A, Method 680 to confirm results.

Storage and Handling Precautions

- Wear protective gloves and eyewear.
- Store kit at room temperature and out of direct sunlight (less than 80°F).
- Keep aluminized pouch (containing unused antibody coated tubes) sealed when not in use.
- If Stop Solution or liquid from the extraction jar comes into contact with eyes, wash thoroughly with cold water and seek immediate medical attention.
- Standard Solution contains PCBs. Test samples may contain PCBs. Handle with care.

REPEATER-PIPET & MECHANICAL PIPET

READ ALL INSTRUCTIONS BEFORE PROCEEDING WITH THE TEST

HOW TO OPERATE THE REPEATER PIPET

To Set Or Adjust Volume

To determine the pipetting volume, the dial setting (1-5) is multiplied by the minimum pipetting volume of the tip.

To Assemble Pipet Tip

Slide filling lever down until it stops. Then raise the locking clamp and insert the tip until it clicks into position. Be sure the tip plunger is fully inserted into the barrel before lowering the locking clamp to affix the tip in place.

To Fill Tip

With tip mounted in position on pipet, immerse end of tip into solution. Slide filling lever upward slowly.

To Dispense Sample

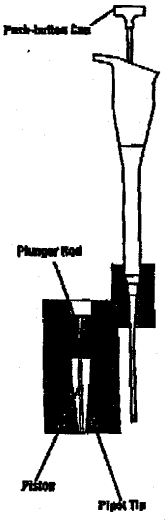
Check the volume selection dial to ensure pipetting volume. Place tip inside test tube so that tip touches the inner wall of tube. Completely depress the pipetting lever.

To Eject Tip

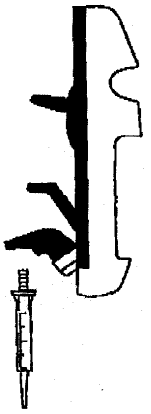
Empty tip of any remaining solution into appropriate container. Raise locking clamp upward, and remove the tip.

For additional information regarding operation and use of repeater, please refer to your Repeater pipet manual.

Mechanical Pipet



Repeater Pipet



HOW TO OPERATE THE MECHANICAL PIPET

To Set Or Adjust Volume

Remove push-button cap and use it to loosen volume lock screw. Turn lower part of push-button to adjust volume up or down. Meter should read "060". Tighten volume lock screw and replace push-button cap.

To Assemble Pipet Tip

Slide larger mounting end of pipet tip onto end of pipet. Holding tip in place, press push-button until plunger rod enters pipet tip. Ensure no gap exists between piston and plunger rod.

To Withdraw Sample

With tip mounted in position on pipet, press push-button to first stop and hold it.

Place tip at bottom of liquid sample and slowly release push-button to withdraw measured sample. Ensure that no bubbles exist in liquid portion of sample. If bubbles exist, dispense sample and re-withdraw sample.

To Dispense Sample

Place tip into dispensing vessel (immersing end of the tip if vessel contains liquid) and slowly press push-button to first stop. (Do not push to second stop or tip will eject).

Remove tip from vessel and release push-button.

To Eject Tip

Press push-button to second stop. Tip is ejected.

For additional information regarding operation and use of pipet, please refer to your pipet manual.

3/5/96

ON-SITE QUALITY CONTROL/QUALITY ASSURANCE RECOMMENDATIONS EnSys RISC® TEST SYSTEM

Please read the following before proceeding with field testing.

SAMPLING

The result of your screening test is only as valid as the sample that was analyzed. Samples should be homogenized thoroughly to ensure that the 10 grams you remove for field testing is representative of the sample as a whole. All other applicable sample handling procedures should be followed as well.

PRIOR TO TESTING SAMPLES

Carefully follow the instructions in the User's Guide included with every test kit. This is the key element in obtaining accurate results. In addition, store your unused test kits at room temperature and do not use them past their expiration date (see label on each test kit).

INTERNAL TEST QC

Two standards are analyzed with each sample to provide internal test system quality control. With both standards inserted in the photometer, a valid test is indicated when the magnitude of the displayed number (irrespective of the sign, + or -) is less than the value given in the User's Guide. Test runs resulting in a greater number should be repeated to ensure valid conclusions.

QA/QC

The validity of field test results can be substantially enhanced by employing a modest, but effective QA/QC plan. EnSys recommends that you structure your QA/QC plan with the elements detailed below. These have been developed based on the data quality principles established by the U.S. Environmental Protection Agency.

A. **Sample Documentation**
   1. Location, depth
   2. Time and date of collection and field analysis

B. **Field analysis documentation** - provide raw data, calibration, any calculations, and final results of field analysis for all samples screened (including QC samples)

C. **Method calibration** - this is an integral part of EnSys RISC® immunoassay tests; a duplicate calibration is performed for each set of samples tested (see the instructions in the User's Guide)

D. **Method blank** - analyze methanol from the extraction jar.

E. **Site-specific matrix background field analysis** - collect and field analyze uncontaminated sample from site matrix to document matrix effect

F. **Duplicate sample field analysis** - field analyze duplicate sample to document method repeatability; at least one of every 20 samples should be analyzed in duplicate

G. **Confirmation of field analysis** - provide confirmation of the quantitation of the analyte via an EPA-approved method different from the field method on at least 10% of the samples; choose at least two representative samples testing above the action level; provide chain of custody and documentation such as gas chromatograms, mass spectra, etc.

H. **Performance evaluation sample field analysis (optional, but strongly recommended)** - field analyze performance evaluation sample daily to document method/operator performance

I. **Matrix spike field analysis (optional)** - field analyze matrix spike to document matrix effect on analyte measurement

FURTHER QUESTIONS?

EnSys technical support personnel are always prepared to discuss your quality needs to help you meet your data quality objectives.

SDI

STRATEGIC DIAGNOSTICS INC.
U.S. Price Schedule: Remediation Products

Application Format Guide	D TECH	EnSys	EnviroGard	Ohmicron
Technology	latex particle	coated tube	coated tube	magnetic particle
Data Format	qualitative & semi-quantitative	semi-quantitative	semi-quantitative	quantitative & semi-quantitative
Sample Throughput	1 - 4 samples / run	1 - 10 samples / run	1 - 14 samples / run	1 - 50 samples / run
Analysis Time	20 minutes / run	30 minutes / run	30 minutes / run	60 minutes / run

[1] SW-846 Draft method status. Proposed method status expected with Update IV.

EPA SW-846 Method Designations		D TECH	EnSys	EnviroGard	Ohmicron
4010	PCP		Soil & Water		Soil
4015	2,4-D			Soil & Water	Soil & Water
4020	PCB	Soil	Soil & Oil	Soil	Soil
4030	TPH		Soil	Soil	Soil (SCHC)
4035	PAH		Soil (APAH)	Soil (APAH)	Soil (APAH) Soil (CPAH)
4040	Toxaphene			Soil	
4041	Chlordane			Soil	
4042	DDT			Soil	
4050	TNT	Soil & Water			Soil & Water
4051	RDX	Soil & Water			
4670	Triazines				Water [1]
8510	RDX		Soil [1]		
8515	TNT		Soil		

SPECIAL ORDER ITEMS:
Products denoted as "Special Order Items" may be subject to significant availability lead times, minimum order quantities, &/or special pricing considerations. Please call SDI Customer Services to discuss availability & pricing.

ORDERING: STRATEGIC DIAGNOSTICS INC. 111 Pencader Drive, Newark, DE 19702 U.S.A.
Phone: (800) 544-8881 or (302) 456-6789 Fax: (302) 456-6782

TERMS & CONDITIONS:

- All prices are F.O.B. Newark, DE. Prices are subject to change without notice.
- Payment terms are net 20 days from date of invoice on approved accounts.
- A 1.5% per month service charge will be applied to all past due notices.
- All returns require a preapproved Return Goods Authorization (RGA) number.
- Refunds or credits are not provided on unused or expired kits.

WARRANTY TERMS & CONDITIONS:

- SDI's products are manufactured under strict quality control guidelines and are warranted to be free from defects in materials and workmanship. New instruments and related non-expendable items are warranted for one year from date of shipment against defective materials or workmanship under normal use and service.
- Warranty obligation is limited to repair or replacement of the defective product or to refund of the purchase price, at the discretion of SDI. Other warranties, express or implied, are disclaimed. SDI's liability under any warranty claim shall not exceed the refund of the purchase price paid by the customer. Under no circumstances shall SDI be liable for special, indirect or consequential damages.

SDI

SDI Products for Remediation Applications

4/28/98

Immunoassay Test Kit Product Line Guide

Application Format Guide	D TECH	EnSys	EnviroGard	RaPID Assay
Technology	latex particle	coated tube	coated tube	magnetic particle
Data Format	qualitative & semi-quantitative	semi-quantitative	semi-quantitative	quantitative & semi-quantitative
Sample Throughput	1 - 4 samples / run	1 - 10 samples / run	1 - 14 samples / run	1 - 50 samples / run
Analysis Time	20 minutes / run	30 minutes / run	30 minutes / run	60 minutes / run

Application Matrix & Detection Limits

Analyte	Application	D TECH	EnSys	EnviroGard	RaPID Assay
PCB	Soil Water Wipes Concrete/Cable Oil	0.5 ppm n/a 10 µg/wipe n/a n/a	0.5 ppm 50 ppb* 5 µg/wipe 0.5 ppm 3 ppm	< 1 ppm < 1 ppm < 10 µg/wipe n/a n/a	< 0.5 ppm 0.2 ppb < 5 µg/wipe 0.5 ppm n/a
BTEX	Soil Water	2.5 ppm 0.6 ppm	n/a n/a	2 ppm 0.1 ppm	0.9 ppm 0.09 ppm
TPH	Soil Water	25 ppm (as Jet A) 6ppm (as Jet A)	10 ppm (as fuel) n/a	5 ppm (as HHO) 0.1 ppm (as HHO)	10 ppm (as fuel) 1 ppm (as fuel)
PAH	Soil Water	0.6 ppm 8 ppb	1 ppm 15 ppb*	< 1 ppm < 2 ppb	0.2 ppm 0.9 ppb
Carcinogenic PAH	Soil Water	n/a n/a	n/a n/a	n/a n/a	10 ppb 0.2 ppb
TNT	Soil Water	0.5 ppm 5 ppb	0.7 ppm 0.9 ppb*	n/a n/a	0.25 ppm 0.07 ppb
RDX	Soil Water	0.5 ppm 5 ppb	Non-immunoassay 0.8 ppm 3.8 ppb*	n/a n/a	n/a n/a
PCP	Soil Water	n/a n/a	0.5 ppm 5 ppb	n/a n/a	0.1 ppm 0.06 ppb
Pesticides	Kits available for numerous pesticide analytes in soil & water matrices. Contact SDI for the MDL's for various analytes.				

* Protocol Not Validated.

STRATEGIC DIAGNOSTICS INC. - 111 PENCADER DRIVE, NEWARK, DE 19702 - Phone: (800) 544-8881 - Fax: (302) 456-6782

[redacted]

Exhibit D

Vegetation mix

07/22/98 WED 10:51 FAX 518 457 3972 ENCON BWRA 001

cc: DMC
DTF
MDM
MS

File 5858 040

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
50 Wolf Road, Albany, New York 12233

John P. Cahill
Commissioner

telex

TO: Maureen Sallinger, O'Brien and Gere

FROM: Wayne Mizerak, DEC Albany

DATE: July 22, 1998

RE: Ley Creek Site

Number of Pages 4 **(including cover page)**

For verification or problems contact Tracey DeMarco at

Remedial Action Section A
Bureau of Western Remedial Action
Division of Hazardous Waste Remediation

phone: 518/457-4343
fax: 518/457-3972

Maureen,

Attached are some recommendations for seed mix, seed application, and maintenance of the resulting vegetative cover. If there are any questions, please call me at the above number.

Wayne Mizerak

From: Emmy Thomee
To: NYSDEC0.Remediat.wjmizera
Date: 7/22/98 8:38am
Subject: Landfill Cap Planting Recommendattions for Landfill Caps - from USFWS

Wayne - Got these which apply to Upstate NY. I will run a copy down to you. However, it does not include the precise recommendations on site prep. (soil, use of herbicides before seeding, seed bed prep.); seed application (timing, type of seeder drill and depth to plant, landroller, hydroseeder/mulcher type, bulldozer, running parallel to ground contours to prevent erosion); or management of the cap (time and frequency of mowing to what height for first three seasons to establish plantings and reduce weed invasion) which the New Jersey version does.

USFWS recommends they be called before work is started, at 607/753-9334. The contractor can get the above information from them then.

The details should be included in, or appended to the design document.

Thank you very much, Emmy

CC: REG71.Cortland.rjnolan

The U. S. Fish and Wildlife Service generally recommends the following seed mixture for planting on landfill caps and other relatively dry areas which are being developed in upstate New York. The Service is willing to assist in the development of more specific recommendations and we recommend that the New York Field Office be contacted prior to any work being initiated. Our phone number is (607) 753-9334.

The selection of vegetative cover is based on two primary objectives. First, to select vegetation that will stabilize the landfill cap soil cover, not negatively impact the deeper layers of the cap, will grow well in the site locality and will require minimum fertilization (legumes eliminate the need for nitrogen - the primary constituent in most fertilizers) and maintenance. Second, to have the selected vegetation provide good wildlife habitat with an emphasis on migratory birds.

The plants selected, minimum seeding rates (maintain proportion if rates are increased) and specific purpose for inclusion follow:

SPECIES	POUNDS PER ACRE
White Clover (*Trifolium repens*)	5
"Lancer perennial pea (*Lathyrus latifolius*)	20
Perennial ryegrass (*Lolium perenne*)	10
Timothy grass (*Phleum pratense*)	5
Orchard grass (*Dactylis glomerata*)	5
Smooth bromegrass (*Bromus inermis*)	5

Planting should occur in early spring, no later than June 1st in most cases. The soil pH should be between 5 and 8.

White Clover (*Trifolium repens*) is a thick growing perennial legume which has a relatively shallow root system (for clover), exhibits good soil holding characteristics and is relatively tolerant of drought conditions. It adds diversity to the legume portion of the seed mixture recommended and provides forage and cover for grassland birds.

"Lancer perennial pea (*Lathyrus latifolius*) is a legume which is used for erosion control, often on steep areas. It has excellent drought tolerance, and provides a thick, viney mat which helps resist erosion and provides good bird habitat. There is also a high aesthetic value to this species since it blooms continuously for 6 - 8 weeks. The blooms are attractive to butterflies, honey bees, and hummingbirds and also should result in a good seed crop for birds. Seeding rate and proportion of the total is set to make this the primary cover type.

Perennial ryegrass (*Lolium perenne*) is a early season, fast growing grass which is used in this mixture as a nursery crop for the other species which are slower growing. For the first several years it should produce a good source of seeds for migratory birds. Seeding rate is set to fulfill this species roll as a nursery crop.

Postal® Fax Note 7671	Date	# of pages ▶
To Emmy Tierney	From Kay Nolan	
Co./Dept. Albany	Co.	
Phone #	Phone # 607 753-3095 x 224	
Fax #	Fax # (607) 753-8532	

7 P.002

Timothy grass (*Phleum pratense*) is a good soil holder which works well in legume mixtures. It produces large clumps near its base which provide nesting habitat for ground nesting birds.

Orchard grass (*Dactylis glomerata*) is a persistent long lived bunch grass which is adapted to well drained soils. It does well in legume mixtures and like the Timothy and Smooth bromegrass will provide habitat for ground nesting birds.

Smooth bromegrass (*Bromus inermis*) is a long lived sod forming perennial grass which works well in well drained fine textured soils. It has good seed heads and forms a dense near-ground cover which is good for erosion control and food and cover for ground nesting birds.

Seeding rates for the last three species are set to provide a diversity of cover and food source for nesting birds while meeting the need to protect the cap soil cover.

Exhibit E

Wetland Mitigation Proposal

Worldwide Facilities Group
Environmental Services
Remediation Team

James F. Hartnett
Program Manager

February 5, 1999

Mr. Wayne Mizerak
Division of Environmental Remediation
New York State Department of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7010

Re: Ley Creek PCB Dredgings Site

Dear Wayne,

As you are aware, General Motors Corporation (GM) and its subsidiary Remediation and Liability Management Company (REALM) are evaluating alternatives to mitigate wetland impacts associated with the remediation of the Ley Creek PCB Dredgings Site in Syracuse, New York. The remedy for the site, which has been approved by the New York State Department of Environmental Conservation (NYSDEC) and the United States Environmental Protection Agency (USEPA), includes removal of certain PCB-contaminated dredged material, site regrading, and construction of a soil cover over the site. As part of the remedial design, REALM and its engineering consultant, O'Brien and Gere Engineers, Inc., are evaluating alternatives for mitigation of wetland impacts associated with the remedy.

Following your suggestion, we contacted Syracuse China to evaluate the possibility of addressing the wetland mitigation issue by participating in the wetland mitigation efforts to be undertaken in connection with the Syracuse China landfill remediation. Discussions regarding this option indicated that technical and legal concerns would likely make this option necessarily complicated and therefore not preferable. In view of this, we contacted Bob Torba (NYSDEC Region 7) to evaluate other potential wetland mitigation options.

During our discussions with Mr. Torba, we identified a potential wetland mitigation option related to a wetland restoration project located in the area where Ley Creek enters Onondaga Lake. Our understanding is that wetland mitigation requirements which were triggered by the construction of the Intermodal Transportation Center (ITC) and P&C Stadium were satisfied by monetary contributions to partially finance this project. We would also like to resolve any pending wetland mitigation issues by participating in the funding of this wetland restoration project for the reasons discussed below.

GM Powertrain • Remediation Project Office • Route 37 East • P.O. Box 460 • Massena, NY 13662
Phone (315) 764-2239 • GM 8-344-2239 • FAX (315) 764-2312 • GM 8-344-2312

Wetland Restoration Project Description

According to Mr. Torba, the ultimate goal of this wetland restoration project is to restore 10 acres of wetlands on a 25 acre plot owned by Onondaga County on the shore of Onondaga Lake at the mouth of Ley Creek. The project is being approached in a phased manner, with the first phase being the assessment of sediment quality. If the sediment quality is acceptable, a one acre test plot is scheduled to be planted in the spring of 1999 and monitored for three years to evaluate the most appropriate vegetation to plant in the remaining 9 acres. Funding for the sediment sampling and analysis is being provided by ITC as mitigation for wetland impacts associated with the construction of their new facility near Onondaga Lake. (The ITC construction resulted in the loss of three acres of wetland and the ITC provided $90K to the NYSDEC for wetland restoration at the mouth of Ley Creek.) Additional funding for the program, including construction and planting of the 1-acre test plot is being provided by the following sources: $92,000 from the County of Onondaga associated with resolution of reported SPDES permit violations arising out of operation of the Metropolitan Sewage Treatment Plant; $25,000 from Syracuse China for wetland losses associated with past onsite landfilling operations; and $1,000 from the County to address wetland impacts associated with the construction of the P&C Stadium train platform.

Wetland Mitigation Requirements for Our Program

The current remedial design for the Ley Creek PCB Dredgings Site will affect 1.4 acres of wetlands along Ley Creek (see O'Brien and Gere Wetland Assessment Report dated May 1998). These wetlands are low quality fringe wetlands dominated by the nuisance weed, common reed (Phragmites). Although low in habitat quality, due to the lack of vegetation diversity, the wetlands do provide some functions for stormwater retention, sediment retention, and nutrient/toxicant retention. However, their shallow depths and narrow widths limit the ability to provide these functions due to the short residence times of water actually held within them.

In our previous discussions on the Remedial Design issues, NYSDEC and USEPA have indicated that the wetland mitigation should occur within the Ley Creek or Onondaga Lake basin and that the acreage required for mitigation would correspond to the type of wetland created or enhanced. For example, creation of a diverse emergent or emergent/scrub-shrub wetland would require 0.7 acres for mitigation, but enhancement of existing wetland would need to cover 2.8 acres for mitigation.

Wetland Mitigation Proposal

We are committed to resolving the issue of wetland mitigation in the context of implementing the ROD-selected remedial alternative at the Ley Creek PCB Dredgings site and would like to do so through a program that provides significant environmental benefit with minimal administrative burden from both our viewpoint as well as that of the NYSDEC/USEPA.

We have examined the available options for wetland mitigation. Restoration of the impacted wetland on-site is not feasible because of space limitations resulting from the requirement to construct an access road along Ley Creek for use by the Onondaga County Department of Drainage and Sanitation for creek channel maintenance purposes. Teaming with Syracuse China/Pfaltzgraf to combine wetland restoration efforts has substantial impediments, primarily in the coordination of the mitigation effort and the establishment of each party's respective obligations for the project.

A third option is the purchase of upland property along Ley Creek to create 0.7 acres of new wetlands. However, the identification of suitable property and the subsequent purchase of property along Ley Creek would be a time-consuming and resource-intensive process. In addition, a 0.7 acre created fringe wetland would not provide the environmental benefit that would be provided by a 10-acre wetland on the shore of Onondaga Lake at the mouth of Ley Creek.

In view of the foregoing, we propose adopting a fourth option - providing financial support for the wetland restoration project on the shore of Onondaga Lake at the mouth of Ley Creek. O'Brien and Gere has estimated the cost of creating a 0.7 acre scrub-shrub wetland to be approximately $30,000. Therefore, we propose paying $30,000 to NYSDEC for this project to satisfy our wetland mitigation obligations under federal and state law due to the implementation of the ROD-selected remedial alternative. Payment would be made within 30 days after the effective date of the RD/RA Order on Consent for the Site. This money could be used by NYSDEC for the wetland restoration project on the shore of Onondaga Lake at the mouth of Ley Creek or any other environmental benefit project it considers appropriate.

We believe this option to be the best method of mitigating wetland impacts at the site for the following reasons:

- Wetland restoration at this site is not practicable;
- Expansion of wetland mitigation on Syracuse China property may not be technically feasible and would require extensive negotiations;
- Purchase of upland property along Ley Creek is difficult and the prospects are uncertain in terms of available property for sale and suitability for use as wetland area;
- NYSDEC is involved in an environmental benefit project in need of additional funding;
- Funding of wetland projects have been accepted as wetland mitigation for other sites in the Ley Creek watershed; and
- Creation of a 10 acre wetland of diverse vegetation would provide greater functions and values to the Ley Creek system than a 0.7 acre fringe wetland.

We hope that you find the proposed action acceptable so that we can complete the Remedial Design for the required remedy. I will call you in early February so that we can discuss this proposal in further detail.

Sincerely,

James F. Hartnett
Remedial Program Manager

cc: Ley Creek PCB Dredgings Site Distribution Lists (attached)
R. Torba - NYSDEC Region 7

Ley Creek PCB Dredgings Site Distribution List - Government Agencies

1 copy (or 5 copies if plan or report - 1 unbound and 1 on computer diskette):

Wayne Mizerak, P. E.
Division of Environmental Remediation
New York State Department of Environmental Conservation
50 Wolf Road
Albany, New York 12233-7010

1 copy (or 2 copies if plan or report):

Robert Montione
Bureau of Environmental Exposure Investigation
New York State Department of Health
2 University Place
Albany, New York 12203

1 copy (or 2 copies if plan or report):

Regional Director
Region 7, New York State Department of Environmental Conservation
615 Eire Blvd. West
Syracuse, New York 13204-2400

1 copy (excluding plans or reports):

George A. Shanahan, Esq.
Assistant Regional Counsel
U.S. Environmental Protection Agency, Region II
290 Broadway
New York, New York 10007-1866

1 copy (or 1 copy if plan or report):

Robert Nunes
Onondaga Lake Project Manager
U.S. Environmental Protection Agency, Region II
290 Broadway, 20th Floor
New York, New York 10007-1866

1 copy (or transmittal letter only if plan or report):

Scott Crisafulli, Esq.
Onondaga Lake Unit, NYSDEC
50 Wolf Road
Albany, New York 12233-5550

Ley Creek PCB Dredgings Site Distribution List - Internal Distribution

All Reports and Gov't Correspondence:

William J. McFarland

General Motors Corporation
Worldwide Facilities Group
Remediation Team
M. C. 482-310-004
485 West Milwaukee
Detroit, MI 48202
Phone: 313-556-0801 GM 8-346-0801
Fax: 313-556-0803 GM 8-346-0803

Don Schiemann, Esq.

General Motors Corporation
GM Legal Staff - Environmental and Energy Practice Area
M. C. 482-112-149
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William E. Kochem

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James F. Hartnett

General Motors Corporation - Remediation Team
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Doug Crawford
Maureen Markert

O'Brien and Gere Engineers Inc.
5000 Brittonfield Parkway
P.O. Box 4873
Syracuse, NY 13221
Phone: 315-437-6100
Fax: 315-637-7554

Barry R. Kogut, Esq.

Bond, Schoeneck and King, LLP
One Lincoln Center
Syracuse, New York 13202-1355
Phone: 315-422-0121
Fax: 315-422-3598

Exhibit F

New York State Department of Environmental Conservation
Division of Environmental Remediation
Bureau of Western Remedial Action, Room 348
50 Wolf Road, Albany, New York 12233-7010
Phone: (518) 457-4343 FAX: (518) 457-3972

John P. Cahill
Commissioner

June 30, 1999

REALM, Inc.
c/o General Motors Corporation
RT 37 E, Box 460
Massena, NY 13662
Attn: James Hartnett

Re: Ley Creek Dredging Site, Site No. 7-34-044

Dear Mr. Hartnett:

Enclosed is the March 30, 1999 letter from Maureen Markert to me listing the documents proposed to be designated as the remedial design for the Ley Creek PCB Dredgings Site, Site No. 7-34-44. The remedial design (RD), as specified, is approved by the Department subject to the requirements listed below:

- This approval is specifically conditioned upon, and is not effective until, REALM, Inc. enters into a Remedial Design/Remedial Action (RD/RA) consent order with the Department.

- The submission to the Department and the Department's approval of four (4) remaining aspects of the RD, pursuant to the terms of a remedial RD/RA consent order to be executed by the parties:

  - a time schedule to implement the RD;
  - an approvable wetlands mitigation plan;
  - the details of the final Operation and Maintenance Plan for the completed remedy;
  - the site and community Health and Safety Plan to be prepared by the contractor.

- The negotiation of other construction details.

General guidelines for the completion of the above remaining aspects of the RD are provided in the referenced RD documents.

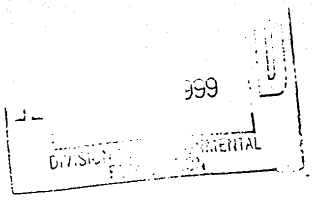
If there are any questions, please call myself or Wayne Mizerak at 518-457-4343.

Sincerely,

Robert W. Schick, P.E.
Chief, Remedial Section A
Bureau of Western Remedial Action
Division of Environmental Remediation

Enclosure

O'BRIEN & GERE
ENGINEERS, INC.



March 30, 1999

Mr. Wayne D. Mizerak
Bureau of Western Remedial Action
Division of Environmental Remediation
New York State Department of Environmental Conservation
50 Wolf Road; Room 222
Albany, New York 12233-7010

Re: Ley Creek PCB Dredgings Site
Remedial Design
File: 5858.040 #2

Dear Mr. Mizerak:

In accordance with our conversations on March 26, 1999 and March 29, 1999, the following documents comprise the final Remedial Design for the Ley Creek PCB Dredgings site:

- February 1999 Remedial Design (RD) Report – With this letter, we are distributing three copies of the final Remedial Design Report which incorporates the revised pages submitted to you in my letter dated March 22, 1999. Additionally, per your request, we have added one appendix and one exhibit to the RD Report. My letter dated April 21, 1998 regarding the New York State Office of Parks, Recreation, and Historic Preservation correspondence is included as Appendix D to the RD Report, and Jim Hartnett's letter dated February 5, 1999 regarding REALM's wetland mitigation proposal is included as Exhibit E to the RD Report.
- February 1999 Contract Drawings – With this letter, we are distributing three copies of the final contract drawings which incorporate signed copies of the revised sheets submitted to you in my letter dated March 22, 1999.
- February 1999 Technical Specifications and Special Provisions - With this letter, we are distributing three copies of the final technical specifications and special provisions which incorporate the revised pages submitted to you in my letter dated March 22, 1999.
- February 1999 Hydraulic Analysis and Floodplain Assessment Report (distributed with my letter dated February 19, 1999)
- January 1998 Wetland Delineation Report – With this letter, we are distributing three copies of the January 1998 Wetland Delineation Report.
- May 1998 Wetland Assessment Report - With this letter, we are distributing three copies of the May 1998 Wetland Assessment Report.
- May 14, 1998 Letter from NYSDEC Wildlife Resources Center – With this letter, we are distributing three copies of the NYSDEC Wildlife Resources Center letter regarding endangered species.
- May 18, 1998 Letter from United States Department of the Interior - With this letter, we are distributing three copies of the United States Department of the Interior letter regarding endangered species.
- June 18, 1998 Revised Former Drainage Swale Evaluation – With this letter, we are distributing three copies of the revised former drainage swale evaluation submittal.
- August 28, 1998 Letter from the Army Corps of Engineers – With this letter, we are distributing three copies of the Corps letter authorizing remediation activities under Nationwide Permit #38.

Please call me with any questions.

Very truly yours,

O'BRIEN & GERE ENGINEERS, INC.

Maureen Markert

Maureen S. Markert, P.E.
Senior Project Engineer

I:\DIV71\PROJECTS\58580040\2_CORRES\finaldist2.doc
Enclosures

cc: Carol Conyers, Esq. - NYSDEC (cover letter only)
Ronald Heerkens - NYSDOH (1 copy of Appendix D, Exhibit E)
Kenneth Lynch, Esq. - NYSDEC Region 7 (1 copy enclosures, 1 copy Appendix D, Exhibit E)
Robert Nunes - USEPA (2 copies of Appendix D, Exhibit E)
George A. Shanahan, Esq. - USEPA (cover letter only)
Don Schiemann, Esq. - GM (1 copy of Appendix D, Exhibit E)
James F. Hartnett – REALM/GM (1 copy of Appendix D, Exhibit E)
William E. Kochem - GM (1 copy of Appendix D, Exhibit E)
Barry R. Kogut, Esq. - Bond, Schoeneck & King (1 copy of Appendix D, Exhibit E)
Douglas M. Crawford, P.E. - O'Brien & Gere (1 copy of Appendix D, Exhibit E)

Exhibit G

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

April 6, 1999

By E-Mail and
Regular Mail

Wayne Mizerak
Bureau of Western Remedial Action
Division of Hazardous Waste Remediation
New York State Department
Of Environmental Conservation
50 Wolf Road
Albany, NY 12233

Re: March 22, 1999 Letter to Robert Schick from Maureen S. Markert
Ley Creek Dredging Sub-Site, Onondaga Lake NPL Site

Dear Mr. Mizerak:

We have reviewed the March 22, 1999 letter to Robert Schick from Maureen S. Markert which is a response to NYSDEC's comments in your March 10, 1999 letter and EPA's comments in my March 5, 1999 letter regarding the RD for the Ley Creek PCB Dredgings Sub-Site. This is to inform you that the consultant has adequately addressed EPA's comments.

With respect to the response to NYSDEC's comment concerning wetlands mitigation, EPA wishes to express its intention to assist in addressing this issue in a timely manner. Although EPA has communicated preliminary concerns about GM's proposal, as discussed in the February 5, 1999 letter from Jim Hartnett, to mitigate wetlands impact at Ley Creek by partially funding the proposed wetlands project in the area where Ley Creek enters Onondaga Lake, EPA is interested in further evaluating the feasibility of this option and requests that it be provided an opportunity to review any draft sampling plans that are being developed to investigate this area. Principally because of the concern that soils and sediments in this area are significantly contaminated and that the area may not be a suitable location to establish new wetlands, EPA recommends that GM and REALM continue to investigate other off-site options for wetlands mitigation. Although EPA generally prefers that any needed wetlands mitigation take place on-site, EPA agrees that restoration of on-site wetlands at the Ley Creek Sub-Site is not feasible because of space limitation caused by the proposed access road along the Creek and likely disturbances to the wetlands resulting from creek maintenance activities.

Should you have any questions on any of the above, please contact me at (212) 637-4254.

Sincerely,

Robert Nunes
Remedial Project Manager

cc: C. Conyers, NYSDEC
J. Cantilli, DEPP/WPB

Exhibit H

5858.040

WORK PLAN

Management Plan for County Maintenance Work

General Motors Corporation
Syracuse, New York

James R. Heckathorne, P.E.
Vice President

July 1998

O'BRIEN & GERE ENGINEERS, INC.

5000 Brittonfield Parkway
P.O. Box 4873
Syracuse, New York 13221

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1. Introduction

1.1. Background

The Ley Creek PCB Dredgings Site (site), identified as site #7-34-044 on the New York State Department of Environmental Conservation (NYSDEC) Registry of Inactive Hazardous Waste sites, is located along the south bank of Ley Creek in the Town of Salina, Onondaga County, New York. The site is approximately 19 acres in size and is bounded by Factory Avenue to the south, Ley Creek to the north, and Townline Road to the east; the western site boundary is approximately 4300 feet west of Townline Road. A sanitary sewer line, owned and maintained by the Onondaga County Department of Drainage and Sanitation (OCDDS) is located along the southern boundary of the site. A site plan is attached as Figure 1. The 48-inch sanitary sewer line was reportedly installed in the 1930's and is a U-shaped monolithic concrete pipe with a concrete cap. Eleven manholes exist along the portion of the sanitary line at the site.

Dredgings from Ley Creek were generated during channel improvements performed by OCDDS and were staged on the site. Polychlorinated biphenyls (PCBs) were detected in the dredgings.

A Remedial Investigation/Feasibility Study (RI/FS) was conducted by O'Brien & Gere Engineers, Inc. (O'Brien & Gere) on behalf of General Motors Corporation (GM), in accordance with an Administrative Order on Consent (#A7-0239-90-07) between GM and NYSDEC and the RI/FS Work Plan (O'Brien & Gere Engineers, 1992), which was approved by NYSDEC on June 3, 1992. The results of the RI were documented in the September 1993 Revised RI Report (O'Brien & Gere Engineers, 1993) and the FS Report was prepared by O'Brien & Gere in October 1996 (O'Brien & Gere 1996) based on the results of the RI. The FS Report evaluated several remedial alternatives and detailed the proposed remedial action for the site.

Based on the results of the RI/FS, NYSDEC prepared a Proposed Remedial Action Plan (PRAP) for the site in February 1997. Following public comment, the site remedy was documented in the March 1997 Record of Decision (ROD). The United States Environmental Protection Agency (USEPA) concurred with the ROD-selected remedy in its letter dated February 9, 1998 to the NYSDEC Commissioner John Cahill.

2. Summary of the remedial action

2.1. Description

Eight remedial alternatives were developed in the FS, and based on a detailed evaluation of the alternatives, the following remedial action was chosen in the ROD:

- removal and off-site disposal of dredged material/soil containing greater than 50 mg/kg PCBs,
- regrading and placement of a low permeability cover on those portions of the site in the floodway,
- placement of a vegetative soil cover over the remaining portions of the site which exceed the remedial criteria,
- ground water monitoring,
- deed restrictions, and
- fencing and maintenance access provisions.

This remedial action is discussed in greater detail below.

2.2. Removal of dredged material/soil and cover installation

Dredged material/soil containing greater than 50 mg/kg PCBs will be excavated and disposed off-site. The remaining material with concentrations greater than 1 mg/kg PCBs (surface) and 10 mg/kg PCBs (subsurface) will be handled as follows:

- PCB-contaminated dredged material/soil will be regraded out of the floodway south of Ley Creek to appropriate elevations. The area will then be covered with a geomembrane or clay layer overlain by a 12-inch vegetative soil cover.

- Material relocated from the floodway will be consolidated south of the floodway and north of a buffer zone which runs 25 feet north of the sewer line.

3. Site maintenance procedures

3.1. Summary of expected maintenance work

GM understands that OCDDS, OCDOT, or their contractors will be performing periodic inspection and maintenance of the storm water culverts or pipes, sanitary sewer, and creek channel/drainage district. The expected non-intrusive and intrusive maintenance activities to be performed on-site are described below. Potential exposure to PCB-containing materials is anticipated only for intrusive activities. For intrusive activities, it will be the responsibility of the County and its contractors to develop, adopt, and enforce a project-specific health and safety plan (HASP) for their respective employees, in accordance with 29 CFR Section 1910. The site-specific HASP included in Appendix A has been developed by O'Brien & Gere as an example of the minimum health and safety procedures.

3.1.1. Unrestricted site activities

Unrestricted site activities are those activities which when performed should not involve access to fenced areas of the site or exposure to PCB-contaminated materials. The following inspection and maintenance activities may be performed at the site by OCDDS, OCDOT, or their contractors following the implementation of the remedial action:

- Storm water Culverts or Pipe Inspection/Flushing - Storm water culverts or pipes may be visually inspected periodically by OCDOT personnel in the Factory Avenue right-of-way for the presence of sediment or debris. If sediment or debris is impeding flow, flushing of the storm water culverts or pipes may be performed. Storm water culverts or pipes may be accessed from Factory Avenue outside of the fenced area.

- Sewer Inspection/Flushing - Sewers will be visually inspected periodically by OCDDS personnel, using manholes for access. Sewer flushing and cleaning may be performed, as necessary. Site fencing shall extend around sanitary sewer manholes and access paths, such that manholes may be directly accessed from Factory Avenue without access to the fenced area.

Susan Edwards - EDMSPROD-#141960-v1-EXECUTED_-_GM_LEY_CREEK_DREDGINGS-RD_RA_ORDER.TIF Page 221

access the area for inspection. Dewatering of excavations may be required.

- Subsurface Repair of Sanitary Sewer Piping - Repair of sewer piping may be performed by OCDDS personnel by removing surface and subsurface soil to access the area in need of repair. Dewatering of excavations may be required.

Prior to performing intrusive maintenance activities, OCDDS or their contractors shall inform the project managers as listed in Section 4. All persons performing intrusive activities shall have at a minimum 40-hour hazardous waste training in accordance with Occupational Safety and Health Administration (OSHA) 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response (HAZWOPER). All persons performing intrusive maintenance activities shall have read and understood this document and acknowledged this in writing. A copy of the acknowledgment form is attached as Figure 2. Copies of these signed forms shall be forwarded to GM's project manager before commencing these activities. Access to the vegetated cover portions of the site shall be limited to locked access gates, for which OCDDS will be given keys. OCDDS project managers shall limit personnel and equipment activity in the area of the soil cover by utilizing access roads, as appropriate.

Area control. During intrusive activities, the potential for encountering soils with detectable concentrations of PCBs is anticipated. Work areas at the site shall be delineated in three specific zones: a "Work Zone," a "Decontamination Zone" and a "Clean Zone." Entrance into work and decontamination zones shall be limited to personnel which have received HAZWOPER training. These zones shall be delineated using means such as temporary fencing or stakes and surveyors' tape. The operation of each zone and other area control measures are discussed in the HASP.

Dredged material /soil excavation. The first foot of disturbed clean soil cover material shall be staged separately from excavated dredged material/soil for reuse in soil cover restoration as feasible. In order to mitigate contact with the clean soil cover, excavated dredged material/soil, which is potentially PCB-contaminated, shall be placed on polyethylene sheeting or its equivalent and covered or placed in watertight containers as close as is reasonable to the excavation, in a manner which will minimize erosion of the staged pile. Staged dredged material/soil shall be used as backfill upon completion of construction activities, and the soil cover shall be restored by the County to the extent possible with original cover material. In the event that all of the excavated dredged material/soil can not be used as backfill, the remaining dredged material/soil shall be staged in DOT-approved 55-gallon drums or other suitable container(s) for future characterization and disposal by GM. OCDDS or its contractors shall

personnel/equipment. Use of water sprays and polyethylene sheeting to cover disturbed soil are examples of dust control methods. Measures to control runon/runoff may include physical measures such as berms around excavation areas or other devices to prevent clean water from contacting PCB-contaminated material, and temporary covers (*e.g.*, polyethylene sheeting over the excavation and/or excavated materials). Work scheduling efforts, such as minimizing the areas of excavation that are open at any one time, may also be employed to control runon/runoff.

Decontamination. Equipment in contact with potentially PCB-containing material shall be decontaminated in the Decontamination Zone prior to entering the Clean Zone. Decontamination procedures shall be performed in accordance with the HASP. Dry decontamination may be performed when the intrusive maintenance activities do not involve exposure to saturated subsurface soil or water which are potentially PCB-contaminated. Upon completion of dry decontamination procedures, visual inspection of equipment shall be conducted. If during visual inspection, residual dredged material/soil or staining is still observed on the equipment, wet decontamination shall be performed.

Wet decontamination shall be performed by OCDDS or its contractors on a concrete decontamination pad and collection sump. OCDDS or its contractors shall bring clean water on-site or utilize Ley Creek water for wet decontamination. Decontamination fluids which are directed to the collection sump (max capacity 55-gallons) shall be collected and stored in suitable on-site containment vessels (drums, tanks, etc.). The type of container utilized shall depend on the amount of decontamination water generated. Provisions to prevent freezing of water shall be employed during cold-weather activities. GM's project manager shall be contacted and informed of the amount of water held on-site and the type of containment vessel used. GM will be responsible for characterization and proper disposal of decontamination water, upon notification of completion of County activities by OCDDS or its contractor.

During dry and wet decontamination procedures, PPE, polyethylene sheeting, and other potentially PCB-contaminated material must be containerized in DOT approved 55-gallon drums or other suitable containers. GM's project manager shall be contacted regarding the amount of PCB-contaminated material (*e.g.*, contaminated soil, water, and wastewater) stored on-site. The characterization and disposal of potentially PCB-contaminated material shall be GM's responsibility.

Documentation. Upon completion of intrusive maintenance activities, a record of intrusive maintenance activities form must be completed and signed. A copy of this form is attached as Figure 4.

- Medical surveillance
- Site awareness training
- Mobilization and demobilization of PCB-related equipment
- Personal protective equipment
- Area control measures
- Air monitoring
- Runoff control
- Decontamination
- Potentially PCB-contaminated material containerization
- Additional site related notification and coordination
- Permitting costs related to PCBs
- Consultant costs related to PCBs
- PCB transportation and disposal costs
- Dredging costs related to PCBs
- Treatment and/or disposal of PCB-contaminated water or soil
- Other PCB-related costs.

Invoices for the maintenance work conducted shall contain a cost breakdown for each of the items listed above.

4. Project management

A project management team has been identified to oversee the implementation of maintenance work at the site. Non-intrusive maintenance activities shall be communicated by the County verbally or in writing to GM's project manager at least 1 day prior to the activities. Intrusive maintenance activities shall be communicated verbally or in writing to GM's project manager and NYSDEC's project manager at least 2 weeks prior to the activities, except in emergencies, when notification shall be provided as soon as practicable. Addresses and phone numbers for these individuals are listed below.

Additionally, the individuals listed below shall be recognized as the general contact for the County, the project manager responsible for OCDDS maintenance activities, and the project manager for OCDOT maintenance activities. During emergency situations, notifications of project managers or regulatory personnel shall be conducted in accordance with the HASP. Any changes to the project managers listed in this plan shall be made in writing to the other project managers.

GM's Project Manager

- Mr. William E. Kochem, Jr.
  General Motors Corporation
  North American Operations
  Property Management Group
  Syracuse Plant
  1 General Motors Drive
  Syracuse, NY 13206
  (315) 432-5314

OCDDS's Project Manager

- Mr. Steve Martin
  Onondaga County Dept. of
  Drainage and Sanitation
  650 Hiawatha Blvd West
  Syracuse, NY 13204-1194
  (315) 435-2260

References

Hammond, Rick (NYSDEC). Telephone Communication with Maureen Salanger (O'Brien & Gere), September 22, 1997

O'Brien & Gere Engineers, Inc. "Work Plan; Remedial Investigation/Feasibility Study; Ley Creek Dredged Material Area." February 1992.

O'Brien & Gere Engineers, Inc. "Remedial Investigation; Ley Creek Dredged Material Area." September 1993.

O'Brien & Gere Engineers, Inc. "Feasibility Study; Ley Creek Dredged Material Area." October 1996.

FIGURES

Figure 2

Acknowledgment Form

I hereby acknowledge that I have read and understand the Management Plan for County Maintenance Work, prepared on behalf of General Motors Corporation by O'Brien & Gere Engineers, Inc. (April 1998) and I will abide by its terms.

Signature	Organization	Date

Figure 3

Record of Restricted, Non-Intrusive Maintenance Activities

Date/Time _____

Personnel On-Site | **Organization**

_____ | _____

_____ | _____

_____ | _____

_____ | _____

_____ | _____

Activities Performed

_____

_____

_____

_____

_____

_____

Was prior notification of work given?	Y / N
Was remedial cover damaged during work?	Y / N
Were fencing and gates intact?	Y / N
Were gates locked upon exiting?	Y / N

General Notes

_____

_____

_____

_____

_____

_____

Signature of On-site Supervisor _____

Figure 4

Record of Intrusive Maintenance Activities

Date/Time _____

Personnel On-Site | **Organization**

_____ | _____

_____ | _____

_____ | _____

_____ | _____

_____ | _____

Activities Performed

_____

_____

_____

_____

_____

_____

Area where intrusive maintenance activities were performed _____

_____

Amount of dredged material/soil staged on-site _____

Amount of construction water staged on-site _____

Amount of water sent to sanitary sewer system _____

Was prior notification of work given to GM? Y / N

Were fencing and gates intact? Y / N

Were gates locked upon exiting? Y / N

General Notes

_____

_____

_____

_____

Signature of On-site Supervisor _____

APPENDICES

Appendix A

Site Specific Health and Safety Plan

5858.040

HEALTH AND SAFETY PLAN

Health and Safety Plan for County Maintenance Work at the Ley Creek PCB Dredgings Site

General Motors Corporation
Syracuse, New York

July 1998

O'BRIEN & GERE ENGINEERS, INC.

5000 Brittonfield Parkway
P.O. Box 4873
Syracuse, New York 13221

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1. Introduction

1.1. Objectives

This Health and Safety Plan (HASP) has been prepared by O'Brien & Gere Engineers, Inc. (O'Brien & Gere) on behalf of General Motors Corporation (GM). This HASP describes the recommended on-site health and safety procedures that O'Brien & Gere has identified to be appropriate for intrusive site maintenance and repair activities to be performed by Onondaga County Department of Drainage and Sanitation (OCDDS) or their contractors to limit their potential for exposure to polychlorinated biphenyl (PCB) contaminated material. Maintenance and repair shall include, but not be limited to: cleaning; repair; replacement; inspection; and/or installation of sewer, drainage district, and storm water facilities; and all other related activities which the County deems necessary and appropriate. The HASPs to be prepared by OCDDS and its contractors should reflect these provisions; however, the ultimate responsibility for the HASPs to be used will be the employer for those employees performing work at the site.

This HASP is specifically intended for the conduct of intrusive site activities within the scope of work defined in the Management Plan for County Maintenance Work (Work Plan) (O'Brien & Gere 1998). This HASP identifies the minimum health and safety requirements for on-site workers with respect to the protection from PCB containing materials. Each contractor is responsible for making its own evaluation of site risks and assessing the need for additional protective measures.

It will be the responsibility of OCDDS to ensure that its employees or contractors perform intrusive site activities in accordance with the procedures described herein and 29 CFR Part 1910. The requirements and guidelines in this HASP are based on a review of available information and an evaluation of potential on-site hazards. This HASP shall be reviewed by OCDDS's and its contractor's Site Safety and Health Coordinator (SSHC) and project managers for applicability. The SSHCs are responsible for monitoring activities and for enforcing compliance with the provisions of the

Mr. William E. Kochem, Jr.
General Motors Corporation
North American Operations
Property Management Group
Syracuse Plant
1 General Motors Drive
Syracuse, NY 13206
Phone: (315) 432-5314

- Conducting training/rehearsal sessions for employees, as appropriate, before work starts and whenever conditions change (including on-site control and emergency response procedures);
- Ensuring that employees have, use, and properly maintain specified personal protective, monitoring, decontamination, and other health and safety equipment;
- Maintaining a high level of site safety awareness among employees and communicating pertinent matters to them promptly.
- Informing subcontractors of potential site health and safety hazards that have been identified and of site emergency response procedures;
- Ensuring that specified monitoring is conducted;
- Ensuring proper decontamination of employees and personal protective equipment (PPE);
- Initiating immediate response actions in the event of an emergency or unsafe condition, and coordinating those actions with employees and subcontractors;
- Notifying GM's project manager promptly of an emergency or serious unsafe act or condition or exception to the procedures in this HASP;
- Recommending improved health and safety measures; and
- Ensuring that work conducted by its employees or subcontractors complies with applicable safety regulations including, but not limited to, 29 CFR 1910.

with concentrations greater than 1 mg/kg PCBs (surface) and 10 mg/kg PCBs (subsurface) will be managed as follows:

- PCB-contaminated dredged material/soil will be regraded out of the floodway south of Ley Creek to appropriate elevations. The area will then be covered with a geomembrane or clay layer overlain by a 12-inch vegetative soil cover.

- Material relocated from the floodway will be consolidated south of the floodway and north of a buffer zone which runs 25 feet north of the sewer.

- Remaining areas within the site with PCB concentrations exceeding the 1 mg/kg PCB (surface) and 10 mg/kg PCB (subsurface) criteria will be covered with a 12-inch vegetative soil cover.

In addition to dredged material/soil removal and cover placement, ground water monitoring, fencing, and access provisions will be implemented. Ground water monitoring will be conducted by GM to document PCB concentrations in shallow ground water. Deed restrictions will be used to protect the integrity of the vegetative soil cover.

Fencing will be installed to control access to the site, and fencing will extend around sanitary sewer manholes to allow direct access from Factory Avenue without access to the vegetated soil cover area. In order to assist in the conduct of maintenance activities, the following actions will be taken: 1) storm water culverts will be lined or piped and access will be provided outside of the fenced area of the site; 2) sanitary sewer manholes will be modified to match final grade and asphalt work pads will be installed around each manhole; and 3) an access road will be constructed on the south bank of Ley Creek.

Figure 1 shows the conceptual site plan following implementation of the remedial action.

2. Maintenance and repair activities

The maintenance and repair activities covered by this HASP include intrusive maintenance activities to be conducted at the site by OCDDS or its contractors. Intrusive maintenance activities that may occur include subsurface inspection or testing of sanitary sewer piping or manholes and subsurface repair of sanitary sewer piping. These activities are discussed in Section 3 of the Work Plan (O'Brien & Gere 1998).

3. Area control measures

3.1. Working zones

Intrusive activities at the site will be conducted in three distinct working zones: a "Work Zone" a "Decontamination Zone and Facilities", and a "Support (or Clean) Zone".

The Work Zone shall be utilized for isolation of contaminated materials during the soil removal processes. The Work Zone will be delineated with colored fence barriers. The Work Zone encompasses areas in which contact with potentially PCB-contaminated materials may occur. Thus, the Work Zone will be limited to essential personnel for soil removal and decontamination work.

The Decontamination Zone(s) is to include the materials and facilities necessary for personnel who exit the Work Zone to remove possible contamination from clothing and equipment. This will consist of equipment drop and wash stations, wash and rinse tubs, lined disposal containers and benches or chairs (see Section 5 for decontamination procedures). Personnel who are to enter a Work Zone must don the appropriate PPE in the Decontamination Zone (Decon Zone), and enter through the "Entry and Exit Point", the one opening on the perimeter of the Work Zone.

The Support Zone is located at the end of the Decon Zone opposite the Entry and Exit Point. Adequate supplies of drinking liquids (*e.g.*, Gatorade or equivalent and potable water) and adequate rest and sanitary facilities are to be located in the Support Zone, along with extra equipment and supplies. Eating, drinking and smoking are only permitted in the Support Zone (and not permitted in the Work or Decon Zones).

3.2. Work area access and security

To minimize the number of workers requiring decontamination, only essential, trained (per Section 6) project personnel and decontamination staff are to enter the Work and Decon Zones, and only after donning

4. Potential hazards and personal protective equipment

4.1. General discussion of potential hazards

PCBs. PCBs have been detected in dredged material/ soil at the site. Upon completion of the remedial action, dredged material/soil which has less than 50 mg/kg PCB will remain on-site under a vegetative soil cover. Due to the presence of the vegetative soil cover following remediation, exposure to PCB-contaminated materials would not be expected during non intrusive activities. Exposure to PCBs can occur during intrusive activities through ingestion, inhalation, or external contact. Occupational exposures suggest that PCBs might cause liver cancer or reproductive and developmental effects. External (skin) contact to PCBs is known to cause skin irritation and chloracne. Ingestion of PCBs may occur through the consumption of contaminated food or poor hygiene practices. The risk of inhalation exposure to PCBs on the site is through the inhalation of PCB-contaminated airborne particulates. These exposures will be controlled by the use of air monitoring and engineering controls and PPE as discussed in the following subsections.

Heat Stress. Wearing PPE puts a worker at considerable risk of developing heat stress. This can result in health effects ranging from transient heat fatigue to serious illness or death. Heat stress is caused by a number of interacting factors, including environmental conditions, clothing, workload, and the individual characteristics of the worker. Because heat stress is probably one of the most common illnesses at hazardous waste sites, regular monitoring and other preventative precautions are vital.

Some workers have a predisposition towards susceptibility of heat stress. Such factors include lack of physical fitness, lack of acclimatization, age, dehydration, obesity, alcohol and drug use, infection, sunburn, and chronic disease.

Proper monitoring is required to reduce the chance of heat stress. Heart rate, oral temperature, and body water loss should all be monitored periodically. If the heart rate exceeds 110 beats/minute or the oral temperature exceeds 99.6 °F, work cycles should be shortened by one-third.

4.3 Air monitoring

When performing intrusive maintenance activities, air monitoring shall be performed for airborne particulate matter, which is potentially PCB-contaminated. Real-time monitoring shall be performed in the work area, to protect site personnel, using equipment such as the MIE RAM-1 or equivalent, which records levels of dust from 1 $\mu g/m^3$ to 200 mg/m^3. If the airborne particulate concentration exceeds the nuisance dust level (respirable fraction) of 5 mg/m^3 in the Work Zone, half-face respirators with HEPA filters must be worn by workers exposed to the particulate matter (Level C protection as discussed in Section 4.2 of this HASP). The calculated airborne PCB-contaminated particulate concentration associated with this action level (see Appendix A) is well below the PEL for PCBs, 0.001 mg/m^3.

Upon switching to Level C protection, monitoring shall be conducted down -wind at the limits of the Work Zone to protect personnel in the Decon and Support Zones. If at the limits of the Work Zone, the action level (5 mg/m^3 particulates) is reached, the Work Zone shall be extended until particulate levels are detected below the action level. If the action level is exceeded down-wind at the fence line, work activities shall be discontinued and engineering controls shall be utilized to reduce the generation of airborne particulates. Once the levels of airborne particulates down-wind at the fence line decreases below the 5 mg/m^3 action level, work may resume.

4.4 Dust minimization/migration control

During intrusive maintenance activities in which dredged material/soil potentially containing PCBs is disturbed, measures shall be taken to control migration of PCBs from the site. Engineering controls shall be employed to minimize the spread of PCBs through dust migration. Use of water sprays and polyethylene sheeting to cover disturbed soil are examples of dust control methods. Work scheduling efforts such as minimizing the areas of excavation that are open at any one time may also be employed to the generation of airborne particulate. OCDDS or their contractors shall utilize engineering controls other means to minimize the amount of potentially PCB-contaminated material generated during maintenance activities.

5. Decontamination procedures

Equipment in contact with potential PCB-contaminated material shall be decontaminated in the Decontamination Zone prior to entering the Clean Zone. Personnel who wear protective clothing or utilize equipment in the Work Zone must use proper decontamination procedures. Upon exiting the Work Zone, the decontamination stations, listed below for wet and dry decontamination, will be established. Every worker is to pass through each station in the order shown when exiting the Work Zone. Different procedures are defined for wet and dry decontamination; they are discussed below.

Dry decontamination shall be performed, as described below when the intrusive maintenance activities do not involve exposure to saturated subsurface soil or water which are potentially PCB-contaminated.

Dry Decontamination Stations:

Station 1: Equipment Drop
A plastic drop cloth will be positioned onto which equipment used on-site (*e.g.*, hand tools, containers, clipboards, etc.) will be placed.

Station 2: Outer Garments, Boots, Gloves and Equipment
While on polyethylene sheeting, outer garments, boots, gloves and equipment shall be brushed to remove residual dredged material/soil and staining.

Station 3: Equipment and PPE Visual Inspection
Equipment and PPE shall be inspected for cleanliness. If during visual inspection, residual dredged material/soil or staining is still observed, wet decontamination shall be performed beginning at Station 2 described below. If during visual inspection the equipment and PPE is deemed "clean", then dry decontamination will be continued.

Station 4: Outer Boot and Glove Removal
Outer boots and gloves shall be removed and placed in a DOT approved 55-gallon drum or suitable container.

The respirator is removed while avoiding touching the face with fingers. The respirator is to be cleaned with soap and water. Cartridges are to be changed at least once for each shift.

Station 6: Inner Glove Removal
A container with a plastic liner will be positioned so that inner gloves can be removed and disposed of in this area.

Station 7: Clean-up
Wash hands and face, or shower, as much as facilities and time permit.

Field equipment will be cleaned with a wash solution and a brush if necessary. The wash solution will be a mixture of detergent and water. Decontamination of larger field equipment will be cleaned with a pressure washer and a brush if necessary on the decontamination pad. Decontamination fluids will be contained and managed in accordance with the Work Plan (O'Brien & Gere, 1998).

6. Training program

Personnel engaged in intrusive maintenance and repair activities on this project are required to adhere to the training requirements dictated in 29 CFR 1910.120. This includes successful completion of a 40-hour or 24-hour course on health and safety issues for hazardous waste operations and 24 hours of supervised field experience, depending on the degree of activity and exposure anticipated. Attendance at an annual 8-hour refresher course for training is also required. For personnel engaged in supervisory activities on the project, completion of an additional 8-hour course for supervisors is also required.

Personnel must provide proof of successful completion of the required course(s) and submit proof to the project manager, prior to being allowed to participate in any on-site project activities.

7. Medical surveillance program

Workers engaged in site activities, with potential exposures above permissible exposure limits (PELs) for thirty days or more, must participate in an annual medical surveillance program as mandated by 29 CFR 1910.120. Due to the fact that on-site personnel have a limited potential for exposure to PCBs above the PEL (as supported by the calculation of exposure included as Appendix A), this requirement may not be applicable to the site. OCDDS or its contractors' SSHC shall evaluate their respective employees exposures and assess the applicability of the medical surveillance program.

8. On-site emergency

8.1. Notification

In the event of an emergency at the site, GM's project manager shall be contacted within 24 hours of identification of the emergency by the OCDDS project manager.

8.2. Directions to hospital

From Factory Avenue turn right onto Townline Road. Get on GM Circle. Go to Route 298 West (Court Street). Continue west on Court Street until you reach the intersection of Court Street and N. Salina Street, Turn left on N. Salina Street until you intersect Prospect Avenue. Turn left onto Prospect Avenue until you reach St. Joseph's Hospital at 301 Prospect Street, between Townsend Road and N. State Street. **Emergency number (315) 448-5101.** Directions to the hospital are shown in Figure 2.

8.3. Emergency decontamination

Decontamination during an emergency situation must be performed as closely as possible to specified procedures without interfering with the immediate health and safety concerns of the workers as is deemed necessary at the time of the emergency.

- Equipment may be removed without cleaning
- Clothing may be cut off with or without regard to cleaning

References

O'Brien & Gere Engineers, Inc. "Work Plan; Remedial Investigation/Feasibility Study; Ley Creek Dredged Material Area." February 1992.

O'Brien & Gere Engineers, Inc. "Remedial Investigation; Ley Creek Dredged Material Area." September 1993a.

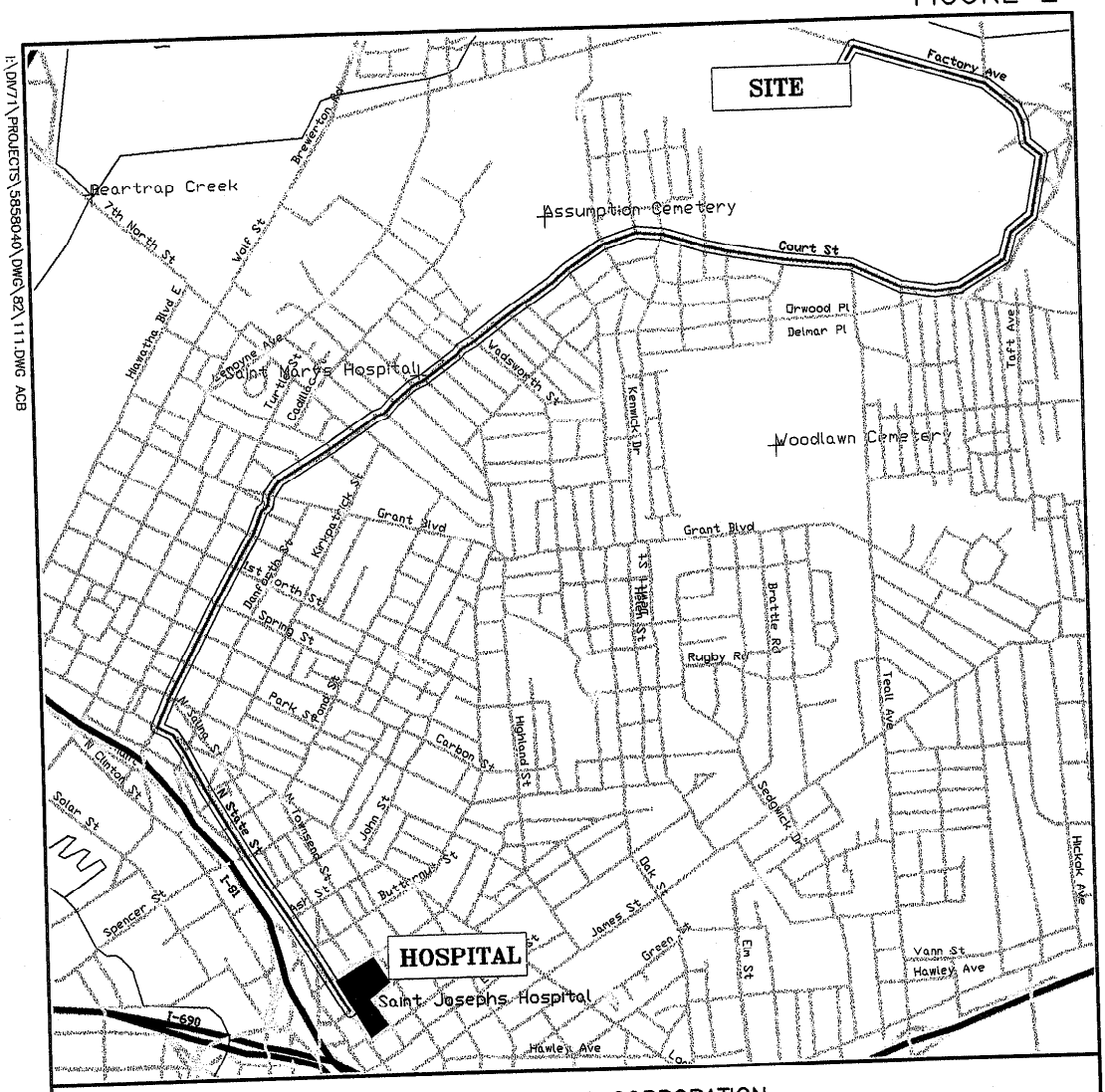
O'Brien & Gere Engineers, Inc. "Feasibility Study; Ley Creek Dredged Material Area." October 1996.

O'Brien & Gere Engineers, Inc. "Management Plan for County Maintenance Work" April 1998.

- Maximum PCB concentration in dredged material/soil = 50 mg/kg
- Exposure limit for particulate = 5 mg/m^3 (respirable factor)

  50 mg/kg x 5 mg/m^3 x 10^{-6} kg/mg = .00025 mg/m^3
- The PEL for PCBs is 0.001 mg/m^3
- Based on the action level of 5 mg/m^3 (particulate), the PEL for PCBs will not be reached.

FIGURE 2



GENERAL MOTORS CORPORATION
SYRACUSE, NEW YORK

LEY CREEK PCB DREDGINGS SITE

DIRECTIONS TO HOSPITAL

QUADRANGLE LOCATION

0 2000 4000

SCALE IN FEET

SOURCE: SYRACUSE EAST & WEST, U.S.G.S. QUADRANGLE MAPS.

O'BRIEN & GERE ENGINEERS INC.

Appendix A

PCB-contaminated Particulate Inhalation Exposure Calculation

Exhibit I

New York State Department of Environmental Conservation
Division of Environmental Enforcement
50 Wolf Road
Albany, New York 12233-5550

Telephone: (518) 457-7821
Fax: (518) 457-7819

John P. Cahill
Commissioner

VIA REGULAR MAIL

August 5, 1998

Louis Mendez, Esq.
Onondaga County Civic Center
421 Montgomery Street, 10th Floor
Syracuse, New York 13202

James Hartnett
Remediation and Liability Management Co.
c/o GM Remediation Project Office
Route 37 East, PO Box 460
Massena, New York 13662

Re: General Motors Corporation
Ley Creek PCB Dredgings Site (Site No. 7-34-044)
Management Plan for County Maintenance Work

Dear Gentlemen:

Pursuant to Barry Kogut's request dated July 24, 1998, please be informed that the County's maintenance work, if performed in accordance with the terms and conditions of the July 1998 version of the Management Plan, will not violate the state superfund prohibitions set forth in 6 NYCRR § 375-1.2(e).

Please contact me if either of you have questions regarding this matter. Thank you.

Sincerely,

Robert K. Davies
Senior Attorney

cc: Barry Kogut
Bill Daigle
Bob Schick
Wayne Mizerak

RECEIVED
BOND SCHOENECK & KING
AUG 0 8 1998

Exhibit J

EXHIBIT J

FORM OF
DECLARATION OF
COVENANTS AND RESTRICTIONS

TO WHOM IT MAY CONCERN:

This Declaration of Covenants and Restrictions is being recorded to comply with an Order on Consent (Index # D7-0008-97-06) entered into between Remediation and Liability Management Company, Inc. ("REALM") and the New York State Department of Environmental Conservation ("Department") to design and implement a remedial action at the Ley Creek PCB Dredgings Site (hereinafter the "Order on Consent").

Background

A section of Ley Creek runs parallel with Factory Avenue in an area north of a former manufacturing facility which was operated by the Inland Fisher Guide Division of the General Motors Corporation. Beginning in 1970, Onondaga County conducted channel improvements by dredging the sediments of Ley Creek in an effort to control periodic flooding. During the dredging operations, sediment was excavated and deposited in piles primarily along the south bank of Ley Creek between Ley Creek and Factory Avenue (the "Site"). Attached as Figure 1 is a copy of a Site Map.

This Site is an inactive hazardous waste disposal site, as that term is defined at the Environmental Conservation Law Section 27-1301(2) and it is listed in the Registry of Inactive Hazardous Waste Disposal Sites in New York State as Site Number 7-34-044. The Site has been placed on the Registry, because polychlorinated biphenyl ("PCB") contamination has been detected in the dredgings.

The Site has been given Classification "2" pursuant to Section 27-1305(4)(b) of the Environmental Conservation Law. The classification means the Department considers the Site to present a "significant threat to the public health or environment" for which action is required. On February 6, 1997, the Department, in consultation with the New York State Department of Health, issued a Proposed Remedial Action Plan ("PRAP") for the Site which consisted of the excavation and off-site disposal of dredge materials/soils with PCB concentrations greater than or equal to 50 ppm and the consolidation and covering of the remaining volume of materials with PCB concentrations exceeding 1 ppm at the surface and 10 ppm subsurface.

On March 28, 1997, following a period of public comment, the Department selected a final remedial alternative for the Site in a Record of Decision ("ROD"). By letter dated February 9, 1998 from EPA's Region II Administrator, Jeanne M. Fox, the EPA concurred with the Department's ROD.

On **[insert date]**, the **[insert name of Grantor]** conveyed to REALM its ownership interest in property within the Site which is described in the legal description set forth in Schedule A to this Declaration.

REALM's Obligations under Order on Consent

REALM and the Department entered into the Order on Consent to implement the ROD-approved remedial alternative at the Site in July of 1999. A copy of the Order on Consent can be reviewed at the Department's offices at 50 Wolf Road, Albany, New York by contacting George Harris of the Department's Division of Environmental Remediation or by contacting Carol Conyers, Esq. at the Department's Division of Environmental Enforcement.

This Declaration of Covenants and Restrictions is being filed in accordance with paragraph XII of the Order to give all parties who may acquire any interest in property within the Site notice of the Order.

WHEREFORE, the undersigned has signed this Declaration of Covenants and Restrictions to comply with the Order on Consent.

REMEDIATION AND LIABILITY MANAGEMENT COMPANY, INC.

By:_____
Name:
Title:
Date:

STATE OF MICHIGAN)
) ss:
COUNTY OF WAYNE)

On the _____ day of _____ before me, the undersigned, a notary public in and for said state, personally appeared _____, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that he/she executed the same in his/her capacity, and that by his/her signature on the instrument the individual, or the person upon behalf of which the individual acted, executed the instrument.

_____
Notary Public

Schedule A

Legal Description