IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION

THE ATTORNEY GENERAL OF THE STATE OF MICHIGAN and MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY,
Plaintiffs,

File No. 5:06-cv-0013

v

Honorable Robert Holmes Bell

GRAND TRUNK WESTERN RAILROAD INCORPORATED; KRAFT FOODS GLOBAL, INC. (F/K/A KRAFT FOOD NORTH AMERICA, INC., F/K/A GENERAL FOODS CORPORATION); EMHART INDUSTRIES, INC. (USM); HOOVER GROUP, INC. (AS SUCCESSOR ENTITY TO HOOVER UNIVERSAL, INC.) (AE DIVISION); THE O'BRIEN CORPORATION; BAYER CROPSCIENCE, INC. (F/K/A AVENTIS CROPSCIENCE USA, INC., CORPORATE SUCCESSOR TO STAUFFER CHEMICAL COMPANY); GENERAL ELECTRIC COMPANY; FORT JAMES OPERATING COMPANY (RESPONDING FOR JAMES RIVER CORPORATION OF VIRGINIA); ARK WRIGHT, INC.; EATON CORPORATION; METALDYNE MACHINING AND ASSEMBLY COMPANY, INC. (ON BEHALF OF EDON MACHINE); RIEKE CORPORATION; HONEYWELL, INC. (AS SUCCESSOR TO SINCLAIR AND VALENTINE COMPANY, INC.); THE LEISURE GROUP, INC., FORD MOTOR COMPANY; CLARK EQUIPMENT COMPANY; INX INTERNATIONAL INK CO. (F/K/A ACME PRINTING INK COMPANY); FERRO CORPORATION; TOMKINS INDUSTRIES, INC. (F/K/A BATH FIXTURES CORPORATION AND PHILLIPS INDUSTRIES, INC.); HLI OPERATING COMPANY, INC. (F/K/A MOTOR WHEEL CORPORATION); BAYER HEALTHCARE, INC. (F/K/A MILES, INC.); ACHESON INDUSTRIES, INC.; E.I. DUPONT DE NEMOURS AND COMPANY; KYSOR INDUSTRIAL CORPORATION; UIS, INC. (F/K/A INTERKAL, INC.); and THE VALSPAR CORPORATION,
Defendants

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CONSENT DECREE

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FIGURE 1 - Description and Map of Annex Source Area

FIGURE 2 - Description and Map of Paint Shop Source Area

FIGURE 3 - Description and Map of Raymond Road Source Area

CONSENT DECREE

The Plaintiffs are The Attorney General of the State of Michigan and the Michigan Department of Environmental Quality (MDEQ).

The Defendants are members of the Verona Well Field Site Remedial Design/Remedial Action (RD/RA) Group (Defendants) (members are listed in Attachment 1).

This Consent Decree (Decree) requires the preparation, performance, design, and/or operation of:

(a) the Paint Shop Evaluation;

(b) the Enhanced System at a level necessary to protect the City of Battle Creek (City) water production of up to thirty (30) million gallons per day;

(c) a plan to monitor for contaminants as specified in the Groundwater Monitoring Plan (GWMP), the Verona Well Field Management Plan (VWFMP), and any applicable permit or Substantive Requirements Document;

(d) the contingency plan set forth in the Group Contingency Plan (Attachment 7);

(e) the Northern Blocking Well Line and the Southern Blocking Well Line system, as either may be required to prevent migration of all contamination above the Revised ROD Criteria reaching the Northern Blocking Well Line or the Southern Blocking Well Line and originating at the Annex Source Area, the Paint Shop Source Area, and the Raymond Road Source Area;

(f) the groundwater containment system at the Annex Source Area; and

(g) the MDEQ-approved scope of work for the Source Area Enhancements at the Annex Source Area (Air Sparging SOW) at the Verona Well Field Battle Creek Superfund Site, Battle Creek, Michigan.

As presently contemplated; (i) the current Northern Blocking Well Line and Southern Blocking Well Line system will be expanded by extending the Southern Blocking Well Line to the northeast to prevent migration of groundwater Contamination above the Operational Compliance Criteria from the Paint Shop Source Area and, as necessary, by expanding the capacity of the pumping, piping, controls and treatment system and adding one or more extraction wells in one or more stages to protect city well field production up to thirty (30) MGD; (ii) one or more groundwater extraction wells will be added to the groundwater containment system at the Annex Source Area to improve containment and collection of contaminated groundwater at the Annex Source Area; and (iii) in accordance with the MDEQ-approved Air Sparging SOW, an Air Sparging system will be installed and operated for three hundred sixty-five (365) days to expedite treatment of contaminated groundwater as a Source Area Enhancement at the Annex Source Area. If improvements are constructed in phases, these phases will be implemented in response to increased City water supply production. Any phasing of construction will be as specified and approved by MDEQ pursuant to work plans or design build documents developed pursuant to this Decree.

This Decree was negotiated to implement as between the State and the Defendants the principles set forth in a certain interim commitment (Interim Commitment) dated

September 26, 2000 between the Defendants and the City to which the State and the United States Environmental Protection Agency (USEPA) provided commitment letters. When relevant, the Interim Commitment may be used to assist in the interpretation of this Decree.

The State and the Defendants agree not to contest (a) the authority or jurisdiction of the Court to enter this Decree or (b) any terms or conditions set forth herein

The entry of this Decree is neither an admission or denial of liability with respect to any issue dealt with in this Decree nor an admission or denial by the Defendants of any factual allegations or legal conclusions stated or implied herein. Entry of this Decree is not a waiver or release of rights, defenses, authority or remedies except as expressly provided in this Decree. Further, the MDEQ recognizes that the response activities the Defendants have taken and will take, are in part voluntary and may go beyond the requirements of the USEPA June 29, 1991 Record of Decision, the September 29, 2003 Explanation of Significant Differences, and the February 19, 1992 and May 5, 1992 Section 106 Orders (the "Unilateral Administrative Orders" or the "UAOs") which also address in significant part Contamination at the Relevant Facility and are in consideration of the resolution of the issues addressed in this Decree.

The Parties agree, and the Court by entering this Decree finds, that the response activities set forth herein are necessary to enhance the existing remedy, to control future releases, and to protect public health, safety, and welfare, and the environment.

NOW, THEREFORE, before the taking of any testimony, and without this Decree constituting an admission of any of the allegations in the Complaint or as evidence of the same, and upon the consent of the Parties, by their attorneys, it is hereby ORDERED, ADJUDGED AND DECREED:

I. JURISDICTION

1.1 This Court has jurisdiction over the subject matter of this action pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9601 *et seq*, specifically Section 113, 42 U.S.C. § 9613, the Supplemental Jurisdiction Statute, 28 U.S.C. 1367, and Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act (NREPA), 1994 PA 451, as amended, MCL 324.20101 *et seq*. This Decree concerns the performance by the Defendants of certain response activities and resolution of the State's Past and Future Response Activity Costs and natural resource damages (NRD) at the Verona Well Field Battle Creek Superfund Site, Calhoun County, Michigan.

1.2 This Court also has personal jurisdiction over the Defendants. The Defendants waive all objections and defenses that they may have with respect to jurisdiction of the Court or to venue in this District.

1.3 The Court determines that the terms and conditions of this Decree are reasonable, adequately resolve the environmental issues raised and properly protect the interests of the people of the State of Michigan.

1.4 The Court shall retain jurisdiction over the Parties and subject matter of this action to enforce this Decree and to resolve disputes arising under this Decree, including those that may be necessary for its construction, execution or implementation, subject to Section XVI (Dispute Resolution).

II. PARTIES BOUND

2.1 This Decree shall apply to and be binding upon the Defendants and the State, and their successors and assigns. All of the Defendants are jointly and severally liable for the performance of all activities specified in this Decree and for any penalties that may arise from violations of this Decree except for any matter solely related to soil contamination at the Paint Shop Source Area or groundwater within the Paint Shop Source Area and originating in the Paint Shop Source Area for which the Grand Trunk Western Railroad Incorporated (GTWRR) has sole liability, but not excepting the Defendants' joint and several obligation to perform Source Area Enhancements. Any change in ownership or corporate or legal status of any members of the Defendants, including, but not limited to, any transfer of assets or of real or personal property, shall in no way alter any of the Defendants' responsibilities under this Decree. The GTWRR, which presently owns certain parcels of property within the Relevant Facility, shall provide the MDEQ with written notice prior to the transfer of its ownership of any part of the Relevant Facility and shall provide a copy of this Decree to any subsequent owners or successors prior to the transfer of any ownership rights. The GTWRR shall also comply with the requirements of Section 20116 of the NREPA, MCL 324.20116.

2.2 The Defendants shall provide a copy of this Decree to all contractors, subcontractors, laboratories and consultants that are retained to conduct any portion of the response activities to be performed pursuant to this Decree within four (4) weeks after the date of entry of this Decree or upon such retention.

2.3 Notwithstanding the terms of any contract that the Defendants may enter with respect to the performance of response activities pursuant to this Decree, the Defendants are responsible for compliance with the terms of this Decree and shall ensure that their contractors, subcontractors, laboratories, and consultants perform all response activities in conformance with the terms and conditions of this Decree.

2.4 The signatories to this Decree certify that they are authorized to execute this Decree and to legally bind the Parties they represent.

2.5 The City is an intended third party beneficiary of the provisions of Paragraphs 6.1, 6.12, 6.14, 8.1-8.3, 9.1, 9.2, 10.4, 11.1, 11.2 (subject to payment of reasonable copying expenses), and 13.3 of this Decree, plus any other paragraphs of this Decree necessary to provide the rights specified in the listed paragraphs.

III. STATEMENT OF PURPOSE

In entering into this Decree, it is the mutual intent of the Parties to:

(a) identify and conduct the level of monitoring necessary to ensure that the fate of Contamination can be defined and monitored and that breakthrough in or around the Northern and/or Southern Blocking Well Lines can be detected if it occurs;

(b) identify, construct, monitor, maintain, operate, and otherwise implement additional response activities that may be necessary to prevent migration of groundwater Contamination above the Operational Compliance Criteria from the Paint Shop Source Area at the approximate Verona Well Field /GTWRR property boundary as necessary to meet the applicable Operational Compliance Criteria;

(c) design, construct, monitor, maintain, operate, and otherwise implement the Enhanced System to prevent migration of groundwater Contamination above the Operational Compliance Criteria by operating the Southern Blocking Well Line and Northern Blocking Well Line as necessary to meet the applicable Operational Compliance Criteria so that the City will have sufficient protection of the groundwater at the Verona Well Field (VWF) to allow the City to achieve a maximum production capacity of drinking water (that meets or exceeds Revised ROD Criteria) from the VWF of up to thirty (30) MGD;

(d) design, construct, monitor, maintain, operate, and otherwise implement response activities that may be necessary to prevent migration of groundwater Contamination above the Operational Compliance Criteria at the Annex Source Area as necessary to meet the applicable Operational Compliance Criteria;

(e) perform all necessary response activities to achieve Revised ROD Criteria at the Relevant Facility;

(f) settle the MDEQ's claim for NRD by undertaking and completing Source Area Enhancements at the Annex Source Area pursuant to an MDEQ-approved Air Sparging SOW with a cost estimate as calculated pursuant to Paragraph 6.1(e) of this Decree, and payment of $300,000 brought forward at a 5% annual rate from July 1, 2000

to the Effective Date of this Decree to the State of Michigan pursuant to Section XIV (Reimbursement of Costs and Payment of Natural Resource Damages);

(g) settle the MDEQ's claims for Past Response Activity Costs and Future Response Activity Costs by the Defendants' payment of response activity costs and interest (as described in Section XIV [Reimbursement of Costs and Payment of Natural Resource Damages]); and

(h) minimize litigation.

The Defendants began to implement and completed certain obligations under this Decree prior to its Effective Date.

IV. DEFINITIONS

4.1 "Thirty (30) MGD" means the City's production of drinking water from the Verona Well Field over a month that averages thirty (30) million gallons per day for that month and which shall be computed on a calendar month basis.

4.2 "Annex Source Area" means the area shown on Figure 1 attached.

4.3 "CERCLA" means the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. §§ 9601 through 9675.

4.4 "City" means the city of Battle Creek, Michigan.

4.5 "Contaminants of Concern" (COCs) for groundwater and soil are those chemical substances set forth in Attachment 5.

4.6 "Contamination" means the presence of hazardous substances as such hazardous substances are defined in Part 201, Environmental Remediation, of the NREPA, 1994 PA 451, as amended, MCL 324.20101 *et seq.*

4.7 "Coordinated GWMP" means the coordinated groundwater monitoring plan for the Verona Well Field and for the Annex, Paint Shop, and Raymond Road Source Areas threatening the City's drinking water production wells. The Coordinated GWMP is a component part of the Verona Well Field Management Plan, and is set forth in Attachment 8.

4.8 "Davis Oil Source Area" means the property located at 890 Emmett Street, presently used in the operation of a gasoline service station and convenience store.

4.9 "Day" means a calendar day.

4.10 "Defendants" means the Verona Well Field Site RD/RA Group as listed in Attachment 1 and their successor entities.

4.11 "Effective Date" means the date this Decree is entered by the Court.

4.12 "Enhanced System" means the design, construction, monitoring, implementation, operation and maintenance of enhancements to and including the present Northern Blocking Well Line and Southern Blocking Well Line groundwater remedy at the Verona Well Field and which go beyond the requirements of the ROD. It includes all construction, utilities, equipment, controls, manuals, and staffing, together with all of the necessary permitting, operating and maintenance activities that are needed to protect

drinking water supply production up to thirty (30) MGD and to meet Operational Compliance Criteria at the Points of Operational Compliance and all other requirements of Paragraphs 6.1(a), (b), and (c).

4.13 "Facility" means the Annex Source Area, the Paint Shop Source Area, the Raymond Road Source Area, Davis Oil Source Area, and any area, place, or property where Contamination has been released, deposited, disposed of, or otherwise comes to be located, which originated at and is emanating, or has emanated, from any of these source areas, and is present at concentrations that exceed the lower of the Revised ROD Criteria or the cleanup criteria for unrestricted residential use under Part 213, Leaking Underground Storage Tanks, of the NREPA.

4.14 "Federal Decree" means the consent decree between the United States and the Defendants which specifies what the Defendants must do to comply with and implement the ROD. The Federal Decree shall not be considered a part of this Decree except as provided for in Paragraph 13.3.

4.15 "Future Response Activity Costs" means costs lawfully incurred and paid after May 25, 2002, and related to the State's development of this Decree and its oversight, enforcement, monitoring, and documentation of compliance with this Decree and any costs incurred and paid by the State to perform response activities pursuant to Section IX (Emergency Response) and Paragraph 23.1 (MDEQ's Performance of Response Activities as They Relate to Defendants' Obligations Pursuant to This Decree) associated with the Relevant Facility. Future Response Activity Costs include, but are

not limited to, costs lawfully incurred and paid to monitor response activities at the Relevant Facility; observe and comment on field activities; review and comment on Submissions; collect and evaluate samples; purchase equipment and supplies to perform monitoring activities; perform response activities; attend and participate in meetings; prepare cost reimbursement documentation; and enforce, monitor, and document compliance with this Decree.

4.16 "Groundwater Monitoring Plan" or "GWMP" means the Defendants' GWMP as approved by the MDEQ and USEPA, and any MDEQ and USEPA-approved revisions to the GWMP. The GWMP identifies the level and type of monitoring needed to monitor the performance and effectiveness of the Remedial Action and the general progress toward cleanup throughout the Relevant Facility, including meeting the performance objectives of Section VI (Defendants' Performance of Response Activities) of this Decree. The Defendants' GWMP is that portion of the Coordinated GWMP (Attachment 8) that is to be performed by the Defendants.

4.17 "Long-Term Requirements" means the requirements that are needed to assure the effectiveness and integrity of the Remedial Action, including, but are not limited to: (i) ensuring that any permanent markers or land use and resource use restrictions are maintained and enforced pursuant to Paragraphs 6.1(a)(iii), 6.1(a)(v), and 6.7; (ii) performing all operation, maintenance and equipment replacement to meet the requirements of Paragraphs 6.1(a), (c), and (d); (iii) upgrading the pumps and any ancillary equipment in the Enhanced System to protect well field production as City pumping increases up to a maximum of thirty (30) MGD or as required if improvements

are implemented in phases according to MDEQ-approved work plans; (iv) conducting long-term monitoring activities as specified in the VWFMP; (v) maintaining financial assurance; and (vi) performing any additional response activities necessary to meet the performance objectives in Paragraphs 6.1(a), (c), and (d) of this Decree.

4.18 "MDEQ" means the Michigan Department of Environmental Quality, its successor entities, and those authorized persons or entities acting on its behalf.

4.19 "Non-detect" means the target detection level for COCs as specified in MDEQ Operational Memo 6, Revision 5, dated November 16, 1998; and Addendum, June 2, 1999.

4.20 "Northern Blocking Well Line" means the northernmost system of groundwater purge wells which are required by the ROD, and to fulfill the obligations of this Decree, and that are intended to intercept contaminated groundwater before the contamination reaches the currently utilized portion of the Verona Well Field.

4.21 "Operational Compliance" means that the applicable element of the Remedial Action is meeting its performance objectives in Paragraphs 6.1(a), (c), (d), and (e) and its design and operational objectives for controlling groundwater contamination, and is meeting all Operational Compliance Criteria at all Points of Operational Compliance for that element.

4.22 "Operational Compliance Criteria" means the Revised ROD Criteria for the COCs, except at those specific Points of Operational Compliance located upgradient

and generally south of the Northern Blocking Well Line where the Revised ROD Criteria for the COCs were exceeded in the sampling of groundwater that occurred as part of the annual sampling events from July 1999 through July 2002, where Operational Compliance Criteria will be defined as not exceeding the highest level of the particular COC observed at that particular Point of Operational Compliance so long as a downward trend in concentrations over time can be demonstrated.

4.23 "Paint Shop Evaluation" means the response activities specified in Paragraphs 6.1(b)(i), (ii), and (vi) of this Decree.

4.24 "Paint Shop Source Area" means the area shown on Figure 2 attached.

4.25 "Part 201" means Part 201, Environmental Remediation, of the NREPA, 1994 PA 451, as amended, MCL 324.20101 *et seq*, and its Administrative Rules.

4.26 "Parties" means the Defendants (see Attachment 1 for the list of the Defendants) and the State.

4.27 "Past Response Activity Costs" means: (1) $227,424.00 in settlement of those costs that the State has incurred and paid with regard to the Relevant Facility after September 1, 1994 and through March 18, 2000, plus interest from July 1, 2000 until payment is received by the State; and (2) $87,269 in settlement of those costs that the State has lawfully incurred and paid with regard to the Relevant Facility from March 19, 2000 through May 25, 2002, with interest accruing from July 1, 2002 until payment is received as required by Paragraph 14.1 of this Decree.

4.28 "Points of Operational Compliance" are specific locations within the Relevant Facility where Operational Compliance Criteria are measured to determine if Operational Compliance is being achieved. The Points of Operational Compliance are further described in Section VI (Defendants' Performance of Response Activities) and specifically identified in Attachment 8 and the VWFMP.

4.29 "Raymond Road Source Area" means the area shown on Figure 3 attached.

4.30 "Record of Decision" or "ROD" means the Record of Decision effectuated June 28, 1991, and the Explanation of Significant Difference, included as Attachment 3.

4.31 "Relevant Facility" means all of the Facility excluding the Raymond Road Source Area and the Davis Oil Source Area.

4.32 "Remedial Action" means all of the response activities for the Relevant Facility required to be undertaken by the Defendants pursuant to the UAOs and this Decree and which satisfy the requirements of Part 201 of the NREPA, including, but not limited to, Sections 20118, 20120a, 20120b, and 20120d, and the Part 201 Administrative Rules.

4.33 "Revised ROD Criteria" means the cleanup criteria for the COCs which are the lower of (i) the concentration level of the State of Michigan's residential Part 201 standards established pursuant to Section 20120a(1)(a) and Section 20120a(17) of Part 201 as contained in MDEQ Operational Memo 18, Revision 1, dated June 7, 2000; or (ii) the health-risk based criteria in the ROD for the COCs, recalculated as appropriate to

reflect new toxicological or other data regarding their health impacts. Methodology to be used to recalculate the health-risk-based criteria in the ROD shall be USEPA's Risk Assessment Guidelines and subject to USEPA review and approval. The Revised ROD Criteria will become effective upon the occurrence of (i) publication of an Explanation of Significant Difference (ESD) by USEPA which provides public notice of the change in criteria; and (ii) entry of this Decree. Where the Revised ROD Criteria for soils are based on protection of drinking water, the Defendants may use alternate leaching test procedures or other procedures approved by the MDEQ to demonstrate achievement of that criteria. The "Revised ROD Criteria" has the same meaning as the Clean Up Objectives (CUOs) referenced in the ESD. The CUOs are set forth in Attachment 5.

4.34 "RRD" means the Remediation and Redevelopment Division of the MDEQ and its successor entities.

4.35 "Southern Blocking Well Line" means the southernmost system of groundwater purge wells which are required by the ROD and to fulfill the obligations of this Decree, and that are intended to intercept contaminated groundwater before it reaches the Verona Well Field.

4.36 "Source Area Enhancements" means the air sparging response activities at the Annex Source Area, performed by the Defendants pursuant to Section VI (Defendants' Performance of Response Activities) and the Schedule of Major Deliverables (Attachment 2 of this Decree) that will meet the performance objective of

Paragraph 6.1(e) as part of the settlement of the State's natural resource damage claim and in order to expedite or enhance the restoration of the groundwater.

4.37 The terms "State" and "State of Michigan" mean the Michigan Department of Attorney General and the Michigan Department of Environmental Quality, their successors and assigns, and any authorized representatives acting on their behalf.

4.38 "Submissions" means all plans (including the contingency plan, the Groundwater Monitoring Plan, and the Verona Well Field Management Plan), reports, schedules, and other submittals the Defendants are required to submit to the State pursuant to this Decree. "Submissions" does not include the notifications set forth in Section X (Delays in Performance, Violations, and Force Majeure); a Request for Approval of Construction of Response Activities (Paragraph 6.9(a)); Request for Approval of Performance of Response Activities for the Annex Source Area soils, Annex Source Area groundwater, Paint Shop Source Area soils or Paint Shop Source Area groundwater (Paragraph 6.9(b)); a Request for Approval of Source Area Enhancements Completion (Paragraph 6.9(c)); or a Notification of Completion (Section XXII).

4.39 "Substantive Requirements Document" means a document developed pursuant to CERCLA Section 121(e), 42 U.S.C. § 9621(e), in place of a federal, state, or local permit.

4.40 (a) "Verona Well Field Management Plan" or "VWFMP" means the comprehensive management plan, including joint operating principles for the City's well field production, the Defendants' operation of the Remedial Action and USEPA and State

operation of the Raymond Road extraction and treatment system, which is designed to coordinate the Remedial Action with the City's well field production to meet well field production needs and performance objectives of Paragraphs 6.1(a), (c), (d), and (e) of this Decree.

(b) The VWFMP will include the components as outlined in the Verona Well Field Management Plan Outline (Attachment 6).

4.41 Unless otherwise stated herein, all terms used in this document, which are defined in Part 3 of the NREPA, MCL 324.301, Part 201 of the NREPA, MCL 324.20101 *et seq*, or the Part 201 Rules, 1990 AACS R 299.5101 *et seq*, shall have the same meaning in this document as in Parts 3 and 201 of the NREPA and the Part 201 Administrative Rules.

V. COMPLIANCE WITH STATE AND FEDERAL LAWS

All actions required to be taken pursuant to this Decree shall be undertaken in accordance with the requirements of all applicable or relevant and appropriate state and federal laws, rules and regulations, including, but not limited to, Part 201 of the NREPA, the Part 201 Administrative Rules, Part 31, Water Resources Protection, of the NREPA, the CERCLA, the National Contingency Plan pursuant to the CERCLA, and laws relating to occupational safety and health.

VI. DEFENDANTS' PERFORMANCE OF RESPONSE ACTIVITIES

6.1 The Defendants shall perform response activities to comply with the requirements of Part 201 and to meet the performance objectives outlined in this Decree at the Relevant Facility, as follows:

(a) Remedial Action Performance Objectives

The compliance and performance objectives for the Remedial Action are to:

(i) Monitor for COCs at all Points of Operational Compliance as specified in the Coordinated GWMP (Attachment 8), meet all Operational Compliance Criteria, comply with the design and operational goals and plans as specified in the VWFMP, and implement and comply with the contingency plan set forth in the Group Contingency Plan (Attachment 7);

(ii) Assure the effectiveness and integrity of the Remedial Action and the protection of public health, safety, and welfare, and the environment; Comply with all applicable technical and administrative requirements of Sections 20118,20120a, 20120b, and 20120d of the NREPA and the Part 201 Administrative Rules for the Relevant Facility;

(iii) Allow for the continued use of the Relevant Facility, consistent with present uses allowed by local zoning; and

(iv) Implement and maintain land use or resource use restrictions to prevent consumption of groundwater pursuant to Paragraph 6.7.

(b) Design Objectives for the Enhanced System

(i) Evaluate, during the design process for the Enhanced System, groundwater within the Paint Shop Source Area and between the Paint Shop Source Area and that part of the Southern Blocking Well Line which intercepts the plume from the Paint Shop Source Area;

(ii) Identify additional response activities including monitoring that may be necessary to ensure and demonstrate complete capture of Contamination from the Paint Shop Source Area at the approximate Verona Well Field/GTWRR property boundary;

(iii) Design enhancements which will protect the groundwater in the VWF to allow for a maximum production capacity from the VWF for each and every month of up to thirty (30) MGD, the quality of which must meet the Revised ROD Criteria at all relevant Points of Operational Compliance specified in the VWFMP;

(iv) Notwithstanding the specific objectives set out below, it shall be the design goal for both the Northern Blocking Well Line and the Southern Blocking Well Line to capture all Contamination reaching the Northern Blocking Well Line or the Southern Blocking Well Line and originating at the Annex Source Area, Paint Shop Source Area, and the Raymond Road Source Area;

(v) Design and implementation details for the Enhanced System will be contained in the relevant Enhanced System documents required pursuant to Paragraph 6.2 and the Schedule of Major Deliverables and Stipulated Penalties (Attachment 2); and

(vi) The Defendants will provide the State with a final written summary regarding the Paint Shop Evaluation under Paragraph 6.1(b)(i) as part of the

design/build document for the blocking wells and remedial action enhancements submitted pursuant to Paragraph 6.1(b)(v) and in accordance with the Schedule of Major Deliverables and Stipulated Penalties (Attachment 2).

(c) Performance Objectives for the Enhanced System

The performance objectives of the Enhanced System are to:

(i) Prevent the migration of Contamination in the groundwater into the VWF above Operational Compliance Criteria from the Annex Source Area, the Paint Shop Source Area, and the Raymond Road Source Area and ensure that Operational Compliance Criteria are met at the Points of Operational Compliance for the Enhanced System specifically identified in the Coordinated GWMP (Attachment 8) which shall be demonstrated through hydraulic control, chemical-specific monitoring, and other evaluation methods agreed upon by the Parties. This requires incorporating improvements into the Enhanced System that will prevent migration of Contamination in the groundwater above Operational Compliance Criteria from the Paint Shop Source Area at the approximate Verona Well Field/GTWRR property boundary. The Operational Compliance Criteria for the Paint Shop Source Area shall be met within the full width of the Paint Shop Source Area groundwater plume along that property boundary and the area immediately downgradient of that part of the Southern Blocking Well Line which intercepts Contamination above Operational Compliance Criteria from the Paint Shop Source Area;

(ii) Construct and operate the Enhanced System at a level necessary to protect prevailing City water production demand up to thirty (30) MGD plus a reasonable margin of safety, subject to acceptable maintenance and contingency plans in

the VWFMP. The Defendants may operate the Enhanced System at higher volumes, at their sole discretion but subject to the communication and coordination requirements that are articulated between the City and the Defendants in the VWFMP;

(iii) Water at the intake to the City's iron removal plant shall be Non-Detect for COCs attributable to the Annex Source Area, Paint Shop Source Area, Raymond Road Source Area, or other source areas for which the Defendants are responsible for a release or threat of release, except for COCs which can be demonstrated to be at or below naturally occurring local background concentrations. The Parties acknowledge that naturally occurring local background concentrations have not been established for the portion of the Verona Well Field used for water production by the City and agree that the Defendants may develop a work plan to establish such background for metals which are COCs at any of the source areas and shall complete the work plan after its approval in accordance with the schedule in the work plan approved by MDEQ. The background samples shall be collected from that part of the VWF unimpacted by the contaminant plumes;

(iv) Meet Operational Compliance Criteria at the Points of Operational Compliance which are immediately downgradient and side gradient of the Northern and Southern Blocking Wells; and

(v) The long-term groundwater cleanup goals for the remainder of the Relevant Facility are to achieve the Revised ROD Criteria for residential cleanup, except for the Annex Source Area and Paint Shop Source Area which shall meet cleanup goals listed in Paragraph 6.1(d).

(d) Annex and Paint Shop Source Area Compliance and Performance Objectives

The following compliance and performance objectives apply to cleanup levels to be achieved at the Annex and Paint Shop Source Areas:

(i) The performance objectives of the groundwater containment system at the Annex Source Area are to prevent migration of groundwater Contamination from the Annex Source Area which is above the Revised ROD Criteria for residential cleanup and meet Operational Compliance Criteria, which shall be demonstrated through hydraulic control, chemical-specific monitoring, and other evaluation methods agreed upon by the Parties, at all Points of Operational Compliance located immediately downgradient of the extraction wells providing Annex Source Area groundwater control as specifically identified in the VWFMP. Additional performance objectives include implementation of land use and/or resource use restrictions consistent with maintaining industrial land use, including but not limited to, no consumption of onsite groundwater and maintenance of a fence to restrict access. If all of the above performance objectives are met, the performance objective for the Annex soils shall be those cleanup standards allowable for a Part 201 limited industrial cleanup pursuant to Section 20120a(1)(i) of the NREPA considering relevant exposure pathways;

(ii) The Annex Source Area groundwater containment system shall be operated so long as groundwater within the Annex Source Area is above the Revised ROD Criteria for residential cleanup, and/or soils exceed the Revised ROD Criteria for soils for residential drinking water protection, or if and until a determination

of technical impracticability is made by the MDEQ or the USEPA and concurred with by the MDEQ;

(iii) The Paint Shop Source Area groundwater containment system (that part of the Southern Blocking Well Line which intercepts the Paint Shop Source Area plume) will be operated so long as groundwater within the Paint Shop Source Area and between the Paint Shop Source Area and the Southern Blocking Well Line is above the Revised ROD Criteria for residential cleanup, and/or Paint Shop Source Area soils exceed the Revised ROD Criteria for soils for residential drinking water protection, or if and until a determination of technical impracticability is made or concurred with by the MDEQ;

(iv) The Points of Operational Compliance for the Paint Shop Source Area shall be the full width of the groundwater plume contaminated with hazardous substances from the Paint Shop Source Area along the GTWRR/Verona Well Field property boundary and the area immediately downgradient (north and west) of that part of the Southern Blocking Well Line which intercepts Contamination from the Paint Shop;

(v) The long-term soil and groundwater cleanup goals for the Annex Source Area are to achieve the Revised ROD Criteria for residential cleanup; and

(vi) The long-term soil and groundwater cleanup goals for the Paint Shop Source Area are to achieve the Revised ROD Criteria for residential cleanup.

(e) Source Area Enhancements Performance Objective

The performance objective of the Source Area Enhancements is to undertake and complete the MDEQ-approved Air Sparging SOW for the Source Area Enhancements at

the Annex Source Area. The Air Sparging SOW shall explicitly outline the response actions to be performed regardless of the level of clean up achieved. The estimated costs, including contingencies, of the response actions shall be outlined in the Air Sparging SOW and shall total $210,000 in year 2000 dollars as set forth in the design/build document for the Source Area Enhancements submitted to the MDEQ for approval pursuant to the Schedule of Major Deliverables and Stipulated Penalties (Attachment 2). The Defendants' obligation shall be to undertake and complete the MDEQ-approved Air Sparging SOW, regardless of actual cost.

6.2 In accordance with this Decree, the Defendants shall submit work plans, scopes of work, design/build documents, construction completion reports, operation and maintenance manuals, VWFMP documents, or other such reports (collectively referred to as work plans) that will satisfy the performance objectives and design objectives identified in Paragraph 6.1 and in accordance with the Schedule of Major Deliverables (Attachment 2). The Parties agree that the objectives for design development listed in Paragraph 6.1(b) will be considered to be met at the time the associated design documents are approved by the MDEQ. In no case shall the Defendants implement any work plans without approval per Paragraph 6.6 or obtaining a final resolution of a dispute pursuant to Section XVI (Dispute Resolution), except for response activities pursuant to Section IX (Emergency Response).

6.3 (a) If the Defendants cannot meet a deadline in the Schedule of Major Deliverables (Attachment 2) because peak demand for municipal water would prevent meeting that particular deadline, they shall propose in writing by certified mail, return

receipt requested, to the MDEQ to modify the Schedule of Major Deliverables to add the minimum extra time needed to complete that specific activity to avoid conflict with the City's peak pumping demands. This proposal shall be deemed approved unless the MDEQ gives written notice within two (2) weeks of receipt that it disapproves the proposed schedule modification. In the event that MDEQ does not approve the proposed schedule modification, the Defendants shall notify the City and shall proceed to perform the work on the original schedule. The Defendants shall not be deemed to have breached this Decree for proceeding in accordance with this paragraph.

(b) Any other request by the Defendants for an extension of time to meet a deadline in the Schedule of Major Deliverables (Attachment 2) shall be by petition to MDEQ. Any such petition shall include all necessary explanations and rationale for any such request. The MDEQ shall consider such a request and shall promptly provide its response to the Defendants prior to the deadline of completion for that activity in the Schedule of Major Deliverables (Attachment 2). If the Defendants propose to change the Schedule of Major Deliverables in any way under this subsection (b), it shall be done pursuant to Paragraph 25.1. Upon MDEQ approval, each component of each work plan and any approved modifications shall be deemed incorporated into this Decree and made an enforceable part of this Decree, unless there is a conflict between the requirements of this Decree and any MDEQ-approved work plan, in which case the requirements of this Decree shall prevail.

6.4 The Defendants shall maintain compliance with the October 1993 Quality Assurance Project Plan (QAPP), as amended, which describes the quality control, quality

assurance, sampling protocol and chain of custody procedures that will be used in carrying out the tasks required by this Decree except as otherwise approved by MDEQ.

6.5 The Defendants shall maintain compliance with the May 27, 1993 Health and Safety Plan (HASP) (as amended) developed in accordance with the standards promulgated pursuant to the National Contingency Plan, 40 CFR 300.150, the Occupational Safety and Health Act of 1970, 20 CFR 1910.120, and the Michigan Occupational Safety and Health Act. The HASP is not subject to the MDEQ's approval under Section XIII (Submissions and Approvals) of this Decree. The HASP shall include all regulations and rules related to the safety of persons on railroad property.

6.6 The Defendants shall submit all deliverables required by Section 6.2 and/or listed on the Schedule of Major Deliverables (Attachment 2) to the MDEQ for review and approval in accordance with the schedule listed therein, unless an excused delay has been approved by the MDEQ. The MDEQ shall utilize the review and approval process according to the terms of Section XIII (Submissions and Approvals) of this Decree. Upon approval of those deliverables, the Defendants shall undertake all approved work specified in that deliverable including any modifications approved by the MDEQ in accordance with approved schedules.

6.7 The Defendants shall implement land use and resource use restrictions in the following manner:

(a) Annex Source Area

(i) In accordance with the Schedule of Major Deliverables and Stipulated Penalties (Attachment 2) and within eight (8) weeks of the Effective Date of this Decree the Defendants shall initiate implementation of the following land use or resource use restrictions in a manner consistent with the requirements of Sections 20118, 20120a, 20120b, and 20120d of the NREPA: (1) a restrictive covenant for the Annex Source Area that limits the Annex Source Area to industrial use and that provides for no consumption of on-site groundwater; and (2) the maintenance of a fence around the Annex Source Area so long as soils are above industrial direct contact criteria or any remedial equipment is operating at the Annex Source Area. These restrictions shall include the specific land use or resource use restrictions proposed and their areal extent for the Annex Source Area and shall include, if applicable, documentation from the local units of government that any necessary land use or resource use restrictions pertaining to easements within the Annex Source Area have been put in place. The Defendants shall submit to the MDEQ for approval a proposed restrictive covenant for the Annex Source Area and a work plan to monitor and maintain the required land use or resource use restrictions.

(ii) Within three (3) weeks of receiving the MDEQ's approval of the proposed restrictive covenant for the Annex Source Area and the work plan, the Defendants shall record with the Calhoun County Register of Deeds the restrictive covenant required by this Decree. The Defendants shall provide a true copy of the recorded restrictive covenant and the liber and page to the MDEQ within two (2) weeks of the Defendants' receipt of a copy from the Register of Deeds. Within four (4) weeks of

the MDEQ's approval of the restrictive covenant for the Annex Source Area and the work plan, the Defendants shall provide notice of the land use restrictions in the restrictive covenant to the zoning authority of the local unit of government which has jurisdiction.

(iii) With respect to any land use and/or resource use restrictions required by this Decree at the Annex Source Area, noncompliance with Paragraph 6.7 of this Decree includes the following:

(1) A court of competent jurisdiction determines that a land or resource use restriction is unlawful;

(2) A land or resource use restriction is not filed or enacted in accordance with this Decree;

(3) A land or resource use restriction is violated or is not enforced by the controlling entity; or

(4) A land or resource use restriction expires or is modified or revoked without MDEQ approval.

(iv) Within four (4) weeks of the Defendants becoming aware of any noncompliance under Paragraph 6.7(a)(iii), the Defendants shall provide to the MDEQ a written notification of the noncompliance. This notification shall include a description of the nature of the noncompliance, an evaluation of the impact or potential impact of the noncompliance on the effectiveness and integrity of the Remedial Action, and one of the following:

(1) If the Defendants have corrected the noncompliance, a written demonstration of how and when the noncompliance was corrected;

(2) If the Defendants have not yet corrected the noncompliance, a work plan and implementation schedule for addressing the noncompliance; or

(3) If the Defendants believe they will not be able to correct the noncompliance, a response activity work plan in accordance with Paragraph 6.11 and an implementation schedule outlining the alternate land use or resource use restrictions the Defendants will implement to comply with Part 201, to meet the performance objectives in Paragraph 6.1 (a)(v) and Paragraph 6.1 (d)(i), and to assure that the Annex Source Area does not pose a threat to public health, safety, or welfare, or the environment.

The MDEQ will review and approve any plan submitted pursuant to this Section VI in accordance with the procedures set forth in Section XIII (Submissions and Approvals). Upon receipt of MDEQ approval, the Defendants shall implement the alternate land use or resource use restrictions in accordance with the MDEQ-approved work plan.

(v) If the Defendants do not comply with all of the requirements of Paragraph 6.7(a)(iv), stipulated penalties as specified in Section XV (Stipulated Penalties) and Schedule of Major Deliverables and Stipulated Penalties (Attachment 2) shall begin to accrue the day the noncompliance under Paragraph 6.7(a)(iv) occurred and continue to accrue until the noncompliance is corrected to the satisfaction of the MDEQ.

6.8 Pursuant to Section 20120d of the NREPA, if the MDEQ determines there is significant public interest in the Remedial Action or land use or resource use

restrictions required by this Decree, the MDEQ will make the appropriate reports, plans, or other documents available for public comment. When the MDEQ determines that such information is acceptable for public review, a public notice regarding the availability of the appropriate reports, plans, or other documents will be published and made available for review and comment for a period of not less than four (4) weeks. The dates and length of the public comment period shall be established by the MDEQ. If the MDEQ determines there is significant public interest or the MDEQ receives a request for a public meeting, the MDEQ will hold such a public meeting in accordance with subsections 20120d(1) and (3) of the NREPA. Following the public review and comment period or a public meeting, the MDEQ may refer the proposed Remedial Action, any element thereof, or proposed land use or resource use restriction documents back to the Defendants for revision to address public comments and MDEQ's comments. To the extent that such public comment is sought, all subsequent deadlines shall be extended by the additional length of time required for such public comment, commencing from the time when MDEQ determines that public notice or comment is required through final notice from MDEQ that no change is required for the activities covered by the scope of the public notice or that MDEQ has rendered a decision on any submission or revised submission pursuant to Section XIII (Submissions and Approvals) that is required by MDEQ arising out of comments received.

6.9 MDEQ Approval of the Defendants' Performance of Response Activities

(a) Approval of Construction of Response Activities

(i) The Defendants may apply to the MDEQ for an "Approval of Construction of Response Activities" when the Defendants have satisfactorily constructed improvements to the Annex Source Area groundwater containment system, the first phase of improvements to the existing Northern Blocking Well Line and Southern Blocking Well Line system, and the Source Area Enhancements, and have performed the Paint Shop Evaluation, each as required by this Decree, and they have performed the associated MDEQ-approved work plans for construction prepared pursuant to Paragraph 6.2, and any MDEQ-approved modifications to those plans, with the exception of the performance of any Long-Term Requirements. When the Defendants have met the requirements for an Approval of Construction of Response Activities, the Defendants shall send a "Request for Approval of Construction of Response Activities" and a draft Construction Report (collectively "Request for Approval of Construction") to the MDEQ. The form and format of the Request for Approval of Construction shall be as similar as possible to any Construction Completion Report or other reports required by USEPA. The draft Construction Report shall summarize all relevant response activities conducted pursuant to this Decree and the MDEQ-approved work plans and shall include or reference any supporting documentation.

(ii) Upon receipt of the Request for Approval of Construction, the MDEQ will review the Request. If the MDEQ determines that the Defendants have submitted sufficient information to demonstrate that they have satisfactorily performed the response activities required by this Decree and the MDEQ-approved work plans, with

the exception of the performance of any Long-Term Requirements as defined in Paragraph 4.17, the MDEQ, RRD Division Chief will so notify the Defendants. Upon the Defendants' delivery of a final acceptable Construction Report, the MDEQ, RRD Division Chief will issue an Approval of Construction of Response Activities ("Approval of Construction"). The MDEQ's issuance of an Approval of Construction does not relieve the Defendants of their obligations to continue to comply with other parts of this Decree.

(b) Approval of Response Activities for the Annex Source Area Soils, Annex Source Area Groundwater, Paint Shop Source Area Soils, or Paint Shop Source Area Groundwater

(i) The Defendants may make separate applications to the MDEQ for an "Approval of Performance of Response Activities" for the Annex Source Area soils, Annex Source Area groundwater, Paint Shop Source Area soils, or Paint Shop Source Area groundwater when the Defendants have satisfactorily achieved all the performance objectives specified in Paragraph 6.1(d) of Section VI (Defendants' Performance of Response Activities) for the applicable source area and environmental media and performed the response activities required by this Decree and the MDEQ-approved work plans pursuant to Paragraph 6.2, Schedule of Major Deliverables (Attachment 2), Paragraph 6.6, and any MDEQ-approved modifications to those plans. When the Defendants have met the requirements for an Approval of Performance of Response Activities, the Defendants shall send a "Request for Approval of Performance of Response Activities" for the Annex Source Area soils, Annex Source Area groundwater, Paint Shop Source Area soils or Paint Shop Source Area groundwater, and a

draft Performance Report (collectively "Request for Approval of Performance") to the MDEQ. The draft Performance Report shall summarize all response activities conducted pursuant to this Decree and the MDEQ-approved work plans applicable to Annex Source Area soils, Annex Source Area groundwater, Paint Shop Source Area soils or Paint Shop Source Area groundwater and shall include or reference any supporting documentation.

(ii) Upon receipt of the Request for Approval of Performance for the Annex Source Area soils, Annex Source Area groundwater, Paint Shop Source Area soils, or Paint Shop Source Area groundwater, the MDEQ will review the Request. If the MDEQ determines that the Defendants have submitted sufficient information to demonstrate that they have satisfactorily performed the response activities required by this Decree and the MDEQ-approved work plans for the Annex Source Area soils, Annex Source Area groundwater, Paint Shop Source Area soils, or Paint Shop Source Area groundwater, the MDEQ, RRD Division Chief will so notify the Defendants. Upon the Defendants' delivery of a final acceptable Performance Report, the MDEQ, RRD Division Chief will issue an Approval of Performance of Response Activities ("Approval of Performance") for the Annex Source Area soils, Annex Source Area groundwater, Paint Shop Source Area soils, or Paint Shop Source Area groundwater indicating that the Defendants have satisfied their obligations under Paragraph 6.1(d) as to the source area and media approved. The MDEQ's issuance of an Approval of Performance for the Annex Source Area soils, Annex Source Area groundwater, Paint Shop Source Area soils, or Paint Shop Source Area groundwater does not relieve the Defendants of their obligations to continue to comply with other parts of this Decree.

(c) Confirmation of Completion of Source Area Enhancements

(i) The Defendants may apply to the MDEQ for an "Approval of Completion of Source Area Enhancements" when the Defendants have satisfactorily met the performance objective in Paragraph 6.1(e) and paid the NRD amount specified in Paragraph 14.6. When the Defendants have completed the SOW, the Defendants shall send a "Notice of Completion of Source Area Enhancements" and a draft completion report (collectively "Request for Approval of Source Area Enhancements Completion") to the MDEQ. The draft Source Area Enhancements Completion Report shall summarize all Source Area Enhancements conducted pursuant to this Decree and the MDEQ-approved Air Sparging SOW and shall include or reference any supporting documentation.

(ii) Upon receipt of the Request for Approval of Source Area Enhancements Completion, the MDEQ will review the Request. If the MDEQ determines that the Defendants have submitted sufficient information to demonstrate that they have satisfactorily performed the Source Area Enhancements required by the MDEQ-approved SOW, the RRD Division Chief will so notify the Defendants. If not, after consultation with the Defendants, MDEQ shall specify what part of the SOW remains to be performed. Upon the Defendants' delivery of a final acceptable Source Area Enhancements Completion Report and payment of the NRD amount specified in Paragraph 14.6, the MDEQ RRD Division Chief will issue an Approval of Source Area Enhancements Completion. The MDEQ's issuance of an Approval of Source Area Enhancements Completion is a final determination that the Defendants have satisfied their obligation under Paragraph 6.1(e) as to the Source Area Enhancements but such

approval does not relieve the Defendants of their obligations to continue to comply with other parts of this Decree

6.10 Final Well Abandonment

Upon demonstration of achievement of the Revised ROD Criteria and completion of the monitoring activities detailed in the VWFMP and the GWMP (including operation and maintenance and long-term monitoring) and that the Relevant Facility no longer poses a threat to the public health, safety, and welfare of the people of the State of Michigan or the natural resources and environment of the State of Michigan, the Defendants shall submit to the MDEQ for review and approval a work plan for the final identification, plugging, and abandonment of all remaining long-term monitor wells and extraction wells for which it is responsible pursuant to the VWFMP at or related to the Relevant Facility (Final Well Abandonment Work Plan). The work plan shall identify the wells that will be plugged and abandoned, the entity responsible for abandoning each well, and a time schedule for performing the work. Upon receiving MDEQ approval of the Final Well Abandonment Work Plan, the Defendants shall properly plug and abandon the identified wells for which they are responsible in accordance with the approved plan and in accordance with the approved methods per the Interim Well Abandonment Plan (dated October 7, 2004) (Attachment 10). Within four (4) weeks of completing their well abandonment work, the Defendants shall submit a Final Well Abandonment Report to the MDEQ.

6.11 Modification of a Response Activity Work Plan

(a) If the MDEQ determines that an element of the Remedial Action is not meeting the applicable Operational Compliance Criteria or a modification to an approved response activity work plan is necessary to achieve and maintain any other applicable performance objectives specified in Paragraph 6.1, the MDEQ may require that such modification be incorporated into that work plan through supplemental or errata pages as appropriate. If the MDEQ (i) determines that one or more operational or performance objectives specified in Paragraph 6.1(d) are not being met for the soils or groundwater at the Annex and Paint Shop Source Areas; (ii) if that determination is communicated in writing to the USEPA and the Defendants; and (iii) if MDEQ determines that USEPA has not thereafter required the Defendants to undertake or the Defendants have not undertaken on their own accord actions sufficient to achieve the unmet operational or performance objectives, then MDEQ may require that the Defendants modify their approved response activity work plan as necessary to achieve and maintain the unmet operational or performance objectives. The MDEQ may require that such modification be incorporated into that work plan through supplemental or errata pages as appropriate. If the Defendants request a modification to an approved response activity work plan, they shall submit such modification request to the MDEQ. If extensive modifications are necessary, the MDEQ may require the Defendants to develop and submit a new draft work plan. Any work plan modifications or any new work plans shall be developed in accordance with the requirements of this Decree and shall be submitted to the MDEQ for review and approval in accordance with the procedures set forth in Section XIII (Submissions and Approvals). Work plan modifications may

include, but are not limited to, adding or taking one or more blocking or extraction wells off line.

(b) The Defendants shall perform response activities that are provided for in a modified response activity work plan or a new work plan in accordance with MDEQ-approved time schedules as established in accordance with Section XIII (Submissions and Approvals).

6.12 Progress Reports

The Defendants shall provide to the MDEQ Project Coordinator and the City written progress reports regarding response activities and other matters at the Relevant Facility, related to the implementation of this Decree monthly by the fifteenth (15th) of the following month or in accordance with the schedule contained in each MDEQ-approved work plan. The format and schedules for these progress reports associated with the Relevant Facility shall be coordinated with those required by the USEPA. It is the intent of the Parties that a single progress report be submitted to both the MDEQ and the USEPA that provides the necessary information to satisfy the requirements of the USEPA, the MDEQ, and this Decree. These progress reports shall include the following:

(a) A description of the activities that have been taken toward achieving compliance with this Decree during the subject reporting period;

(b) All results of sampling and tests and other data received by the Defendants, their employees or authorized representatives during the subject reporting period relating to the response activities performed pursuant to this Decree;

(c) The status of any issues that have arisen, which affect or may affect the performance of response activities, and a description of how the Defendants propose to resolve those issues;

(d) A description of the nature and amount of any waste materials generated and the name of the facilities that were used for the off-site transfer, storage, treatment, or disposal of those waste materials;

(e) A description of and schedule for data collection and other activities scheduled for the next reporting period;

(f) The current status of the implementation and operation of the Source Area Enhancements; and

(g) Any other relevant information regarding other activities or matters at the Relevant Facility that affect or may affect the implementation of the requirements of this Decree.

6.13 Financial Assurance Mechanism ("FAM")

(a) The Defendants have established a trust known as the Verona Well Field Site RD/RA Trust Agreement (Trust) with a designated Trustee, and the Defendants and the State have entered into a Trust Management Agreement (TMA) with the designated Trustee. The Trust and the TMA will serve as the FAM. The TMA becomes effective twenty-eight (28) days after the Trustee receives written notice from the Defendants that the State Consent Decree has been executed by the MDEQ and the Defendants. The Defendants shall provide such written notice to the Trustee within two (2) weeks of the Effective Date of this Decree. The TMA is included as Attachment 4.

(i) Until and unless the Defendants provide an alternative financial assurance mechanism, the Trust and the TMA will be the financial assurance mechanism to demonstrate the Defendants' present and continuing ability to fund the present worth of the costs of all response activities required of the Defendants in this Decree and operate and maintain the Enhanced System, consistent with Paragraph 6.1(c) of this Decree (Enhanced System Future O&M Costs), and the Air Sparging SOW (Source Area Enhancements Future O&M Costs), consistent with Paragraph 6.1(e) of this Decree, and the Annex Source Area Groundwater Containment System Future O&M Costs required by a Federal Consent Decree with the United States (collectively, "Future O&M Costs"), for the lesser of thirty (30) years or the expected duration of the remedy.

(ii) Future O&M Costs will be re-estimated every five (5) years and the minimum trust balance will be adjusted up or down accordingly for the lesser of the next thirty (30) years or the expected duration of the remedy. As part of the update, the Defendants will provide documentation to MDEQ of O&M costs for the preceding five (5)-year period, signed by an authorized representative for the Defendants who shall confirm the data.

(iii) Eight (8) weeks after the MDEQ approves of each five (5)-year update, the Defendants shall provide any additional deposits to the Trust as necessary to ensure that the new balances of Parts A, B, and C of the Trust as defined in Paragraph 6.13(g) equal or exceed their respective estimates of Future O&M costs.

(b) The State acknowledges and agrees that the Trust will also serve as the financial assurance mechanism to the United States and that under no circumstances will the State be entitled to reimbursement for costs incurred by the United States in

pursuing activities which are the same. The State acknowledges that Future O&M Costs provides financial assurance for some costs against which only the USEPA may make a claim (*e.g.*, operation and maintenance of Annex upgrades), unless the USEPA waives its right to draw against the Trust for such costs pursuant to Paragraph 2.1(c) of the TMA.

(c) As long as the Trust and the TMA are the financial assurance mechanism, the Defendants shall maintain the Trust and the TMA in their present form, and shall not terminate the Trust or the TMA nor take any action that would defeat the purpose or usefulness of the Trust or the TMA as the financial assurance mechanism. Further, the Defendants shall take no action to reduce the assets in the Trust below Future O&M Costs.

(d) The Trust and the Trustee subject to the TMA do not provide financial assurance for the payment of the State's cost claims other than those costs lawfully incurred and paid by the State to perform response activities pursuant to Section IX (Emergency Response) and Paragraph 23.1 (MDEQ's Performance of Response Activities as They Relate to Defendants' Obligations Pursuant to this Decree) associated with the Relevant Facility, and, in particular, the Trust and the TMA do not provide for payment of State oversight costs, penalties and any other response cost or claim which has not arisen out of the performance of or lack of performance of activities which the Defendants are required to perform under this Decree.

(e) The Trustee of the Trust and the TMA is and shall be U.S. Bank National Association, 535 Griswold Street, Suite 550, Detroit, MI 48226. The Defendants shall cause this Decree to be provided to the Trustee and any successor trustee. The Defendants shall give the State four (4) weeks written notice before they

retain a successor trustee and in that notice shall identify the proposed successor trustee and the trust administrator. The proposed successor trustee shall be a corporate trust company or a national bank with trust powers. The notice shall be accompanied by the successor trustee's written agreement to be bound by the TMA in existence.

(f) Future O&M Costs will be calculated by the Defendants using a five percent (5%) discount rate and MDEQ's current guidelines as of 2002 for FAMs.

(g) Initial Deposit

(i) Pursuant to the Decree, Defendants shall deposit cash into the Trust so that Parts A, B and C of the Trust are funded as required pursuant to the respective MDEQ-approved and/or USEPA-approved operation and maintenance plan as specified in the Schedule of Major Deliverables and Stipulated Penalties (Attachment 2) and the VWFMP, as applicable:

Part A	Enhanced System Future O&M Costs
Part B	Source Area Enhancements Future O&M Costs calculated as $65,000.00 in 2000 dollars.
Part C	Annex Source Area Remedy Future O&M Costs
Part D	Any amount, including none, as determined by the Defendants in their sole discretion.

(ii) The first calculation of Future O&M Costs will be performed within four (4) weeks after entry of this Decree.

(iii) Within eight (8) weeks after the MDEQ's concurrence in the Defendants' calculation of Future O&M Costs, the Defendants shall fund the Trust in

the amount of Future O&M Costs. The MDEQ shall provide such written concurrence to the Defendants.

(h) All matters associated with Part D of the Trust shall be confidential between the Defendants and the Trustee. The MDEQ waives and releases any claim or right to discover that information.

(i) Earnings on Deposits

Earnings from the Trust assets shall be invested as part of the principal. The Defendants shall be responsible for any tax associated with the earnings on assets in the Trust. Changes in asset value and income shall be allocated to the four Parts of the Trust *pro rata* by the value of assets attributed to each part.

(j) Certification of Trust Value

The Defendants shall maintain assets in Parts A, B, and C of the Trust such that the market value of the Trust's assets, as determined by the Trustee using valuation methods in common use by corporate trustees for valuing such assets, equals or exceeds the relevant Future O&M Costs. Annually on or before March 1st, the Trustee shall certify to the State the market value of Trust assets in Parts A, B, and C, as of December 31st of the previous year. In the event that the market value certified by the Trustee for Parts A, B, and C of the Trust is less than the Future O&M Costs, the Defendants shall, within eight (8) weeks thereafter, deposit cash into the Trust in an amount equal to that required to restore the balance to at least the amount of the required Future O&M Costs.

(k) Rights to Draw Against Parts of the Trust

(i) The MDEQ shall have the right to draw against Part A of the Trust to perform response activities associated with the Enhanced System pursuant to Section IX (Emergency Response) or Paragraph 23.1. The State agrees that if the USEPA performs the required response activities, then the USEPA may draw against Part A.

(ii) The MDEQ shall have the exclusive right to draw against Part B of the Trust to perform Source Area Enhancements.

(iii) The State shall have no right to draw against Part C of the Trust to perform Annex Source Area remedial activities, unless the USEPA does not elect to perform the required response activities and agrees in writing that the MDEQ may perform the required response activities. Then the MDEQ may draw against Part C.

(iv) The Defendants shall have the exclusive right to draw against Part D of the Trust. At no time and under no circumstances shall the MDEQ have any right to assert a claim to or against assets held in Part D of the Trust and the MDEQ hereby waives and releases any right it has now or in the future to assert such a claim.

(v) Under no circumstances shall a draw be made by the MDEQ to cover the same work for which a prior draw has been made by the USEPA.

(l) The State agrees that before proceeding to Paragraph 6.13(n), it will confer with the United States to determine whether the United States seeks payment for the same operation or maintenance activity. In submitting its motion pursuant to Paragraph 6.13(n), the State shall state that it has made such an inquiry and that either the United States has stated it will not make a claim for reimbursement of costs for an

activity that is the same as the State activity or that the United States has stated it may or will make a claim for costs associated with such activities.

(i) In the latter case, the United States shall be a required participant in the proceedings on the State's motion and the Court shall determine the respective claims of the State and the United States for reimbursement from the Trust. In no case shall the State be granted recovery for the same activities performed by the United States.

(m) The State may recover from Parts A, B, or C of the Trust only according to the following conditions:

(i) The State has either: (a) lawfully incurred and paid costs which fall within the scope of Future O&M Costs for response activities that the State is required to perform pursuant to Section IX (Emergency Response) or Paragraph 23.1 (MDEQ's Performance of Response Activities as They Relate to the Defendants' Obligations Pursuant to this Decree) associated with the Relevant Facility; or (b) identified response activities the Defendants are required to perform under this Decree that they have not performed;

(ii) The State has made a written demand on the Defendants for payment or performance of the same;

(iii) The State has not received within eight (8) weeks of its demand: (a) payment of any uncontested amount or performance of response activities determined by the MDEQ to be required under this Decree; and/or (b) a demand for dispute resolution under Section XVI, Dispute Resolution, with regard to any part of its demand which is disputed; or (c) the Defendants have failed to pay a disputed amount or

perform the required response activities within four (4) weeks after completion of dispute resolution according to the procedures set forth in Section XVI of this Decree. If the dispute resolution has proceeded to court pursuant to Paragraphs 16.6 and 16.7, the State may assert as part of that process a request for relief in the form of an order consistent with Paragraph 6.13 (n) below;

(n) If the three foregoing conditions are satisfied, then the State may file a motion in this suit seeking a court order directing payment of its claim from the Trust.

(i) After such proceedings as the Court deems appropriate, the Court shall make a finding whether the conditions of Section IX or Paragraph 23.1 existed at the time the State took over a response activity from the Defendants, and, if so, enter an order (the "Order") determining the amount, if any, of the State's claim against the Trust.

(ii) The Order shall direct the Trustee to make a disbursement from the Trust to the State and/or directly to any State contractor in the amount determined by the Court within two (2) weeks of the Trustee's receipt of the Order. Upon receipt of a court order directing payment to the MDEQ or any State contractor from Parts A, B, or C, the Trustee shall disburse funds as directed by the court order but only to the extent that there are funds in the designated Part to satisfy the amount specified in the court order.

(iii) Payments made by the Trust to the MDEQ shall follow the procedures set forth in Paragraph 14.4 unless otherwise directed by the Court or the MDEQ.

(iv) For any future State costs and/or State contractor invoices ordered by the Court to be paid by the Defendants, the State, and/or the State's contractor shall send State cost invoices and/or a State contractor invoice to the Trustee with a copy to the Defendants. The Defendants may invoke dispute resolution within eight (8) weeks of presentation of such State costs or State contractor invoices. If the dispute is resolved in the Defendants' favor, pursuant to Section XVI (Dispute Resolution), they will receive a credit or relief on subsequent State cost claims if so determined by the State or Court as applicable. Invocation of dispute resolution by the Defendants will not affect the Trustee's obligation to pay the State's costs or State contractor invoices within four (4) weeks of receipt.

(o) If the required payments pursuant to Paragraph 6.13 (m) or Paragraph 6.13 (n) exceed the current balance in the relevant Part of the Trust or if the required payments reduce the balance of funds in the relevant Part of the Trust below the relevant Future O&M Costs, the Defendants shall make a deposit into the Trust to make up for the shortfall within eight (8) weeks of the Parties' resolution pursuant to Paragraph 6.13(m) or within eight (8) weeks of an Order pursuant to Paragraph 6.13(n). The amount of the required deposit shall be sufficient to fully pay all of the State's Costs pursuant to Paragraph 6.13(m) or Paragraph 6.13(n) and to restore the balance of the relevant Part of the Trust to equal or exceed Future O&M Costs.

(p) <u>Defendants' Use of Trust Assets</u>

The Defendants may pay Future O&M Costs as they are incurred from the assets from the relevant Part of the Trust. The Defendants may also withdraw funds from Parts A, B, and C of the Trust for any other use whatsoever so long as the Trustee

certifies to the MDEQ before making a disbursement in accordance with such a withdrawal request that the remaining assets will at least be equal to the Future O&M Costs. There is no restriction on the Defendants from withdrawing funds from Part D of the Trust.

(q) Termination of Parts A, B and C of the Trust

Parts A, B and C of the Trust may be terminated under two conditions.

(i) Completion of Remedial Work

(1) Upon receipt by the Trustee of the Certification of Completion of Remedial Action issued pursuant to Paragraph 22.3 of this Decree or if the MDEQ provides written notice to the Trustee that such FAM is no longer necessary to provide funding to assure the effectiveness and integrity of the Remedial Action, Parts A and C of the Trust shall no longer be a requirement of this Decree.

(2) Upon receipt by the Trustee of the Approval of Source Area Enhancements Completion from the MDEQ pursuant to Paragraph 6.9(c) of this Decree, Part B of the Trust shall no longer be a requirement of this Decree.

(ii) The Defendants may submit an alternative financial assurance mechanism at any time to the MDEQ for review and approval, so long as the alternative mechanism meets the State's then current guidelines or regulations for such mechanisms and the mechanism has a value equal to the then-existing estimate of the relevant Future O&M Costs, subject to presentation of appropriate supporting documentation to the MDEQ and the MDEQ's determination and approval that the proposed mechanism meets the applicable guidelines or regulations.

(1) Upon substitution of an alternative financial assurance mechanism, the State shall take all such actions necessary to eliminate its right to recover in the future from the former financial assurance mechanism for any claims against the Defendants or its members, including but not limited to amending the Decree to delete all provisions related to the former financial assurance mechanism.

(iii) Upon termination of Parts A, B, and C of the Trust, the State's rights under the TMA shall end and the Defendants' obligations under this Decree with regard to the Trust shall also end.

6.14 The VWFMP Process

(a) The VWFMP shall be implemented through an ongoing cooperative process involving the MDEQ, the Defendants, the USEPA, and the City (the "VWFMP Process"). The VWFMP Process shall apply to all matters within the scope of the VWFMP. It is the goal of MDEQ and the Defendants that technical matters, development, and implementation of work plans, and similar activities will be coordinated and carried out using the VWFMP Process.

(b) That process shall include or provide for:

(i) regular meetings and meetings requested by any participant with regard to any subject matter within the scope of the VWFMP,

(ii) presentation of oral and written reports by one or more participants in order to effectuate the purpose and requirements of the VWFMP,

(iii) maintenance of minutes and other informal records of matters reported, discussed and decided upon at meetings, and

(iv) any procedures agreed upon by the participants to assist in the conduct of the VWFMP Process,

And shall provide for

(v) initial review of work plans and materials developed as part of work plans,

(vi) development of and agreement upon revisions or modifications to any plan or procedure included in the VWFMP, and

(vii) review of work plans and corrective measures prompted by exceedances of Operational Compliance Criteria pursuant to Paragraph 6.1(c).

(c) The respective authority, rights, and obligations of and between the participants shall be those defined by law and as specified in any legally enforceable agreements, whether by contract, consent decrees, consensual orders, or other form, among the respective participants. Participation in the VWFMP Process shall not waive or release those respective rights and obligations. The VWFMP Process shall not bar any participant from taking any action to protect or enforce those rights and obligations.

(d) The Parties intend to use the VWFMP Process to cooperatively implement response activities at the Facility. It is the intent of the Parties to this Decree that for matters within the VWFMP, the VWFMP Process will be the informal process to resolve differences under Paragraph 16.1.

(e) The participants in the VWFMP Process shall meet annually in October to decide whether upgrades to the Enhanced System should be implemented in the next six (6) months or any other operational changes should be made in order to meet

the performance objectives in Paragraphs 6.1(a), (c), and (d) of this Decree. If an upgrade to the Enhanced System or any operational changes need to be made, the Defendants will prepare a work plan, submit it to the MDEQ, and implement the necessary response activities in accordance with Paragraph 6.11 (Modification of a Response Activity Work Plan).

VII. ACCESS

7.1 Upon the Effective Date of this Decree and to the extent the Relevant Facility and the associated property is owned by, controlled by, or access is made available to the Defendants, the MDEQ, its authorized employees, agents, representatives, contractors and consultants, and the USEPA, its authorized employees, agents, representatives, contractors and consultants, upon presentation of proper credentials and providing reasonable notice to the Defendants, shall have access at all reasonable times to the Relevant Facility and the associated property for the purpose of conducting any activity to which access is required for the implementation of this Decree or to otherwise fulfill any responsibility under federal or state law with respect to environmental conditions at the Relevant Facility, including, but not limited to:

(a) Monitoring response activities or any other activities taking place pursuant to this Decree at the Relevant Facility;

(b) Verifying any data or information submitted to the MDEQ;

(c) Conducting investigations relating to contamination at or near the Relevant Facility,

(d) Obtaining samples;

(e) Assessing the need for or planning or conducting response activities at or near the Relevant Facility;

(f) Assessing compliance with requirements for the performance of monitoring, operation and maintenance, or other measures necessary to assure the effectiveness and integrity of the Remedial Action;

(g) Inspecting and copying non-privileged records, operating logs, contracts, or other documents;

(h) Communicating with the Defendants' Project Coordinator or other personnel, representatives, or consultants for the purpose of assessing compliance with this Decree;

(i) Determining whether the Relevant Facility, or other property is being used in a manner that is prohibited or restricted, or that may need to be prohibited or restricted, by or pursuant to this Decree; and

(j) Assuring the protection of public health, safety, and welfare, and the environment.

7.2 To the extent that the Relevant Facility, or any other property where the response activities are to be performed by the Defendants under this Decree, is owned or controlled by persons other than any of the Defendants, the Defendants shall use their best efforts to secure from such persons access for the Parties and their authorized employees, agents, representatives, contractors and consultants. The Defendants shall provide the MDEQ with a copy of each new access agreement secured pursuant to this Section VII and have already provided a copy of the access agreements that are in place

for the persons listed in this Paragraph 7.2. For purposes of this Paragraph 7.2, "best efforts" includes, but is not limited to, providing compensation acceptable to the owner, or taking judicial action to secure such access. If judicial action is required to obtain access, the Defendants shall provide documentation to the MDEQ that such judicial action has been filed in a court of appropriate jurisdiction no later than eight (8) weeks after the Defendants' receipt of MDEQ approval of the work plan for which such access is needed. If the Defendants have not been able to obtain access within eight (8) weeks of filing judicial action, the Defendants shall promptly notify the MDEQ of the status of its efforts to obtain access and if and how any delay in obtaining access may affect the performance of response activities for which the access is needed. If the Defendants fail to use their best efforts to obtain access, then any delay in obtaining access shall not be an excuse for delay in the performance of response activities. As of the Effective Date of this Decree, the Parties acknowledge that the Defendants have obtained agreements with the City, Blue Diamond, Consumers Power, and Southern States Cooperative. Copies of these access agreements shall be included in the VWFMP.

7.3 Any lease, purchase, contract, or other agreement entered into by the Defendants, which transfers to another person a right of control over any portion of the Relevant Facility, shall contain a provision preserving for the MDEQ or any other person undertaking the response activities and their authorized representatives, the access provided under this Section VII (Access) and Section XI (Record Retention/Access to Information).

7.4 Any person granted access to the Relevant Facility pursuant to this Decree shall comply with all applicable health and safety laws and regulations. Persons afforded access to the GTWRR property pursuant to this Section VII shall also comply with all appropriate health and safety standards as are specified in the HASP and/or the VWFMP. In no circumstance shall MDEQ staff be required to sign any type of indemnification agreement to perform oversight of response activities required by this Decree or any applicable state or federal law.

VIII. SAMPLING AND ANALYSIS

8.1 All sampling and analysis conducted pursuant to this Decree shall be in accordance with the QAPP specified in Paragraph 6.4, the VWFMP, and MDEQ-approved work plans, except where specific sampling and analysis pursuant to a required state or federal permit specifies different sampling and analysis techniques or when MDEQ has agreed in writing that different sampling and analysis techniques may be used.

8.2 The Defendants, or their consultants or subcontractors, shall provide the MDEQ two (2) weeks notice prior to any sampling activity to be conducted pursuant to this Decree and shall allow the MDEQ Project Coordinator, or his or her authorized representative, the opportunity to take split or duplicate samples or to observe the sampling procedures. In circumstances where two (2) weeks notice is not possible, the Defendants, or their consultants or subcontractors, shall provide notice of the planned sampling activity as soon as possible to the MDEQ Project Coordinator and explain why earlier notification was not possible. If the MDEQ Project Coordinator concurs with the

explanation provided, the Defendants may forego the two (2) week notification period for that particular sampling event.

8.3 The Defendants shall provide the MDEQ with the results of all environmental sampling and other analytical data generated in the performance or monitoring of any requirement under this Decree, Parts 201, 211, or 213 of the NREPA, CERCLA, or other relevant authorities. Said results shall be reported in accordance with the schedule in the VWFMP or as otherwise required by this Decree or shall be included in the Progress Reports required in Paragraph 6.12.

8.4 For the purpose of quality assurance monitoring, the Defendants shall ensure that the MDEQ and its authorized representatives are allowed physical access to any laboratory that is used by the Defendants in implementing this Decree and access to any records maintained by that laboratory.

IX. EMERGENCY RESPONSE

9.1 If, in the course of the Defendants performing response activities pursuant to this Decree, an act or event occurs for which the Defendants or their contractors or agents are responsible and which either causes a release or threat of release of a hazardous substance at or from the Relevant Facility, or causes exacerbation of existing Contamination at the Relevant Facility, and the release, threat of release, or exacerbation poses or threatens to pose an imminent and substantial endangerment to public health, safety, or welfare, or the environment, the Defendants shall immediately undertake all appropriate actions to prevent, abate or minimize such release, threat of release,

exacerbation or endangerment and shall immediately notify the MDEQ's Project Coordinator. In the event of his or her unavailability, the Defendants shall notify the Pollution Emergency Alerting System (PEAS, 1-800-292-4706) with follow-up notification to the MDEQ Project Coordinator as soon as possible during normal business hours. In such an event, any actions taken by the Defendants shall be in accordance with all applicable health and safety laws and regulations and with the provisions of the HASP as set forth in Paragraph 6.5.

9.2 Within two (2) weeks of notifying the MDEQ of such an act or event, the Defendants shall submit a written report setting forth a description of the act or event that occurred and the measures taken or to be taken to mitigate any release, threat of release, exacerbation, or endangerment caused or threatened by the act or event and to prevent recurrence of such an act or event. Regardless of whether the Defendants notify the MDEQ under this section, if one or more of the Defendants causes a release, threat of release, or exacerbation, or poses or threatens to pose an imminent and substantial endangerment to public health, safety, or welfare, or the environment, the MDEQ may: (a) require the Defendants to stop response activities at the Relevant Facility for such period of time as may be needed to prevent or abate any such release, threat of release, exacerbation, or endangerment; (b) require the Defendants to undertake any actions that the MDEQ determines are necessary to prevent or abate any such release, threat of release, exacerbation, or endangerment; or (c) undertake any actions that the MDEQ determines are necessary to prevent or abate such release, threat of release, exacerbation,

or endangerment. This Section is not subject to the dispute resolution procedures set forth in Section XVI (Dispute Resolution).

X. DELAYS IN PERFORMANCE, VIOLATIONS, AND FORCE MAJEURE

10.1 The Defendants shall perform the requirements of this Decree within the time limits herein, unless performance is prevented or delayed by events that constitute a "Force Majeure." The Defendants shall not be deemed to be in violation of this Decree if the State agrees that a delay in performance is attributable to a Force Majeure event as determined pursuant to Paragraph 10.4(a) or at the conclusion of a dispute resolution proceeding between the Parties. If the Defendants otherwise fail to comply with Paragraph 6.6 or the time limits established in the Schedule of Major Deliverables and Stipulated Penalties (Attachment 2) of this Decree and such noncompliance is not attributable to a Force Majeure event, the Defendants shall be subject to the stipulated penalties set forth in Section XV (Stipulated Penalties) for those deliverables or tasks to which stipulated penalties apply as identified in the Schedule of Major Deliverables and Stipulated Penalties (Attachment 2) and Section XV (Stipulated Penalties).

10.2 For the purposes of this Decree, a "Force Majeure" event is defined as any event arising from causes beyond the control of and without the fault of the Defendants, of any person controlled by the Defendants, or of the Defendants' contractors, that delays or prevents the performance of any obligation under this Decree despite the Defendants' best efforts to fulfill the obligation. Failure of a supplier to deliver timely and according to specification, any part or material requiring custom design or construction and not readily available elsewhere, may also be a Force Majeure provided that the Defendants

used best efforts to obtain the part or material in a timely fashion. Furthermore, the Defendants are not responsible for any such delay that is the result of agency review and decision-making processes. The requirement that the Defendants exercise "best efforts to fulfill the obligation" includes using best efforts to anticipate any reasonably foreseeable force majeure event and best efforts to address the effects of any force majeure event as it is occurring and following the force majeure event, such that any delay is minimized to the greatest extent possible. A "Force Majeure" event does not include, among other things, unanticipated or increased costs, changes in financial circumstances, or failure to obtain a permit or license as a result of the Defendants' acts or omissions.

10.3 If either (a) an event occurs that causes or may cause a delay in the performance of the obligations under Paragraph 6.6 or the Schedule of Major Deliverables and Stipulated Penalties (Attachment 2) of this Decree, whether or not such delay is caused by a force majeure event; or (b) a delay in performance or other violation occurs due to the Defendants' failure to comply with this Decree, the Defendants shall do the following:

(a) Notify the MDEQ by telephone, electronic mail or telefax when it becomes apparent or within two (2) business days of discovering or when it can reasonably be concluded the event or violation may cause a delay; and

(b) Unless otherwise requested by the MDEQ, provide a written notice and supporting documentation to the MDEQ concurrent with the next required periodic progress report, which includes the following:

(i) A description of the event or violation and the anticipated length and precise causes of the delay, potential delay, or violation;

(ii) The specific obligations of this Decree that may be or have been affected by the delay or violation;

(iii) The measures the Defendants have taken or propose to take to avoid, minimize or mitigate the delay or the effect of the delay, or to cure the violation, and the timetable for performing those measures or for curing the violation;

(iv) If the Defendants intend to assert a claim of force majeure, the Defendants' rationale for attributing a delay or potential delay to a force majeure event;

(v) Whether the Defendants are requesting an extension for the performance of any of their obligations under this Decree and, if so, the specific obligations for which they are seeking such an extension, the length of the requested extension, and the rationale for needing the extension; and

(vi) A statement as to whether, in the opinion of the Defendants, the event or violation may cause or contribute to an endangerment to public health, safety, or welfare, or the environment and, if so, how the measures taken or to be taken to address the event or violation will avoid, minimize, or mitigate such endangerment.

10.4 The State will review any notification submitted by the Defendants pursuant to Paragraph 10.3 and, after consultation with the City, notify the Defendants of one of the following:

(a) If the State agrees with the Defendants' assertion that a delay or potential delay is attributable to a force majeure event, the MDEQ's written notification will include the length of the extension, if any, for the performance of specific obligations under this Decree that are affected by the force majeure event and for which the Defendants are seeking an extension. An extension of the schedule for performance of an obligation affected by a force majeure event shall not, of itself, extend the schedule for performance of any other obligation.

(b) If the State does not agree with the Defendants' assertion that a delay or anticipated delay has been or will be caused by a force majeure event, the State will notify the Defendants of its decision. If the Defendants disagree with the State's decision, the Defendants may initiate the dispute resolution process specified in Section XVI (Dispute Resolution) of this Decree. In any such proceeding, the Defendants shall have the burden of demonstrating by the preponderance of the evidence that the delay or anticipated delay has been or will be caused by a force majeure event, that the duration of the delay or the extension sought by the Defendants was or will be warranted under the circumstances, that the Defendants exercised their best efforts to avoid or mitigate the effects of the delay, and that the Defendants have complied with all the requirements of this Section X.

(c) If the Defendants' notification pertains to a delay in performance or other violation that has occurred because of its failure to comply with the requirements of this Decree, the Defendants shall undertake those actions determined to be necessary and appropriate by the MDEQ to address the delay in performance or violation and shall pay any stipulated penalties, if applicable, upon receipt of the MDEQ's demand for payment

as set forth in Section XV (Stipulated Penalties). Penalties shall accrue as provided in Section XV (Stipulated Penalties) regardless of when the MDEQ notifies the Defendants of a violation or when the Defendants notify the MDEQ of a violation pursuant to Paragraph 10.3.

10.5 This Decree shall be modified as set forth in Section XXV (Modifications) to reflect any modifications for the performance of specific submissions or responsibilities under this Decree that are agreed to between the Parties pursuant to Paragraph 10.4(a) or that are made as the result of a dispute resolution proceeding between the Parties pursuant to Paragraph 10.4(b).

10.6 The Defendants' failure to comply with the time to give notice or to substantially comply with regard to the content of the notice specified in Paragraph 10.3 shall render this Section X void and of no force and effect with respect to an assertion of Force Majeure by the Defendants; however, the State may waive these notice requirements in its sole discretion and in appropriate circumstances. The State will provide written notice to the Defendants of any such waiver.

XI. RECORD RETENTION/ACCESS TO INFORMATION

11.1 The Defendants and their representatives, consultants and contractors shall preserve and retain, during the pendency of this Decree and for a period of ten (10) years after completion of operation and maintenance and long-term monitoring at the Relevant Facility, one copy of all records, sampling or test results, charts, and other documents relating to the release or threatened release of contamination and the storage, generation,

disposal, treatment, or handling of contamination at the Relevant Facility, and any records that are maintained or generated pursuant to any requirement of this Decree. However, if the remedy for the site provides for land or resource use restrictions, the Defendants shall retain any records pertaining to those land or resource use restrictions in perpetuity or until the MDEQ issues a Certification of Completion of Remedial Action pursuant to Section XXII (Certification of Completion of Remedial Action). After the ten (10)-year period of document retention following completion of operation and maintenance and long-term monitoring at the Relevant Facility, the Defendants may, in writing, offer the documents to the MDEQ which shall, in writing, either accept all the documents or consent to their destruction. If no response is received from MDEQ within eight (8) weeks after offering the documents, the Defendants may deliver the documents to MDEQ. In any event, the Defendants shall obtain the MDEQ's written permission prior to the destruction of any documents. The Defendants' request shall be accompanied by a copy of this Decree and sent to the address listed in Section XII (Project Coordinators and Communications/Notices) or to such other address as may subsequently be designated in writing by the MDEQ.

11.2 Upon request, the Defendants shall provide to the MDEQ all documents and information within their possession, or within the possession or control of their employees, contractors, agents or representatives, not subject to privilege relating to response activities at the Relevant Facility, or to the performance of the requirements of this Decree, including, but not limited to, records regarding the collection and analysis of samples, chain of custody records, manifests, trucking logs, receipts, reports, traffic

routing forms for samples, correspondence, or other documents or information related to response activities. If the Defendants demonstrate that they had previously submitted the requested information or documents in the same form requested, they shall not be obligated to resubmit the requested information or documents. Upon request, the Defendants also shall make available to the MDEQ, upon reasonable notice, the Defendants' employees, contractors, agents, or representatives with knowledge of relevant facts concerning the performance of response activities.

11.3 In accordance with Section 20117(10) of the NREPA, the Defendants may designate information that they believe they are entitled to protect or keep confidential. If no such claim accompanies the information when it is submitted to the MDEQ, the information may be made available to the public by the MDEQ without further notice to the Defendants. Notwithstanding subsection 20117(10), information described in subsections 20117(11)(a)-(h) of the NREPA shall not be claimed as confidential or privileged by the Defendants. Information or data generated under this Decree shall not be subject to Part 148 of the NREPA, MCL 324.14801 *et seq.*

XII. PROJECT COORDINATORS AND COMMUNICATIONS/NOTICES

12.1 Each Party and the City shall designate a Project Coordinator. Whenever notices are required to be given or progress reports, information on the collection and analysis of samples, sampling data, work plan submittals, approvals, or disapprovals or other technical submissions are required to be forwarded by one party to the other party under this Decree, or whenever other communications between the parties is needed, such communications shall be directed to the Project Coordinators at the addresses listed

below. If any party changes its designated Project Coordinator from the individuals identified in this Decree, the name, address, and telephone number of the successor shall be provided to the other party, in writing, as soon as practicable.

(a) As to MDEQ:

(i) For record retention pursuant to Section XI (Record Retention/Access to Information), and questions concerning financial matters pursuant to Paragraph 6.13 (Financial Assurance Mechanism), Section XIV (Reimbursement of Costs and Payment of Natural Resource Damages), Section XV (Stipulated Penalties), and stipulated penalty aspects of Attachment 2 (Schedule of Major Deliverables):

Ms. Patricia A. McKay, Chief
Compliance and Enforcement Section
Remediation and Redevelopment Division
Michigan Department of Environmental Quality
P.O. Box 30426
Lansing, MI 48909
Telephone: 517-373-7818
Fax: 517-241-9581

(Via courier)
525 West Allegan Street
Lansing, MI 48933

A copy of all the above correspondence that is sent shall also be provided to the MDEQ Project Coordinator designated in Paragraph 12.1(a)(iii).

(ii) For all payments pursuant to Section XIV (Reimbursement of Costs and Payment of Natural Resource Damages) and Section XV (Stipulated Penalties):

Revenue Control Unit
Michigan Department of Environmental Quality
525 West Allegan Street
P.O. Box 30657
Lansing, MI 48909-8157

To ensure proper credit, all payments made pursuant to this Decree must reference the Verona Well Field Battle Creek Superfund Site, Case Number, and the RRD Account Number RRD2095.

(iii) For Submissions and Approvals pursuant to Section XIII (Submissions and Approvals) and all other matters pertaining to this Decree:

Ms. Cindy Fairbanks, Project Coordinator
Superfund Section
Remediation and Redevelopment Division
Michigan Department of Environmental Quality
P.O. Box 30426
Lansing, MI 48909
Telephone: 517-335-4111
Fax: 517-335-4887
E-Mail: Fairbanc@michigan.gov

(Via courier)
525 West Allegan Street
Lansing, MI 48933

(iv) For issues of informal dispute pursuant to Paragraph 16.3 of this Decree:

Elizabeth Browne, Chief
Superfund Section
Remediation and Redevelopment Division
Michigan Department of Environmental Quality
P.O. Box 30426
Lansing, MI 48909
Telephone: 571-373-8815
Fax: 517-335-4887

(Via courier)
525 West Allegan Street
Lansing, MI 48933

(b) As to the Defendants:

(i) Cost Reimbursement Pursuant to Section XIV (Reimbursement of Costs and Payment of Natural Resource Damages) and Disputes Pursuant to Section XVI (Dispute Resolution)

Mr. R. Craig Hupp
Bodman, LLP
100 Renaissance Center, 34th Floor
Detroit, MI 48243
Telephone: 313-393-7599
Fax: 313-393-7579
E-Mail: chupp@bodmanllp.com

Mary P. Sclawy, Esq.
Fabrizio & Brook, P.C.
City Center Building
888 West Big Beaver Road., Suite 1470
Troy, MI 48083
Telephone: 248-362-2600
Fax: 248-362-3610
E-Mail: msclawy@sclawy.biz

AND

Dustin P. Ordway
Miller, Johnson, Snell & Cummiskey, PLC
250 Monroe Avenue, Suite 800
Grand Rapids, MI 49503-2250
Telephone: 616-831-1706
Fax: 616-988-1706
E-Mail: ordwayd@mjsc.com

(ii) For All Other Matters:

Ms. Bridget Morello, Project Coordinator
Progressive Engineering & Construction, Inc.
3912 West Humphrey Street
Tampa, FL 33614
Telephone: 813-930-0669
Fax: 813-930-9809
E-mail: bmpec@tampabay.rr.com

With copies to:

Mr. R. Craig Hupp
Bodman, LLP
100 Renaissance Center, 34th Floor
Detroit, MI 48243
Telephone: 313-393-7599
Fax: 313-393-7579
E-Mail chupp@bodmanllp.com

(c) As to the City:

(i) For Submission and Approvals pursuant to Section XIII (Submissions and Approvals) and all other matters pertaining to this Decree, for issues of informal dispute pursuant to Paragraph 16.3 of this Decree, and for Record Retention pursuant to Section XI (Record Retention/Access to Information)

Mr. Kenneth Kohs
Department of Public Works
City of Battle Creek
DPW Building
150 South Kendall Street
Battle Creek, MI 49017
Telephone: 616-966-3480

12.2 The Defendants' Project Coordinator shall have primary responsibility for overseeing the performance of the response activities and other requirements specified in this Decree.

12.3 The MDEQ may designate other authorized representatives, employees, contractors, and consultants to observe and monitor the progress of any activity undertaken pursuant to this Decree

XIII. SUBMISSIONS AND APPROVALS

13.1 All Submissions required by this Decree shall comply with all applicable laws and the requirements of the Decree and be delivered to the MDEQ in accordance with the schedule set forth in the Schedule of Major Deliverables and Stipulated Penalties (Attachment 2), schedules set forth elsewhere in this Decree, and schedules established pursuant to MDEQ-approved work plans. All Submissions delivered to the MDEQ pursuant to this Decree shall include a reference to the Verona Well Field Battle Creek Superfund Site and Case Number. Any Submission delivered to the MDEQ for approval also shall be marked "Draft" and shall include, in a prominent location in the document, the following disclaimer: "Disclaimer: This document is a DRAFT document that has not received final approval from the Michigan Department of Environmental Quality. This document was prepared pursuant to a judicial consent decree. The opinions, findings, and conclusions expressed are those of the authors alone." Where USEPA requires similar submissions, MDEQ shall use its best efforts to specify submissions in a form and content similar to USEPA's requirements.

13.2 Upon receipt of any Submission relating to response activities, which is required to be submitted for approval pursuant to this Decree, the MDEQ Project Coordinator will in writing: (1) approve the Submission; (2) approve the Submission

with modifications; or (3) disapprove the Submission and notify the Defendants of the deficiencies in the Submission.

(a) If the MDEQ disapproves or approves with modifications a Submission, the reasons for the disapproval or approval with modification shall be provided by the MDEQ in writing with one complete and specific statement of the conditions or requirements necessary to obtain approval of the submission.

(b) Prior to MDEQ sending either an approval with modifications or a disapproval, the MDEQ will confer with and attempt to come to an agreement with the Defendants.

(c) Except as modified by Paragraph 13.3, upon receipt of either a notice of approval or approval with modifications the Defendants shall proceed to take the actions and perform the response activities required by the Submission, as approved or as modified, and shall submit a new cover page and any modified pages of the Submission marked "Final."

13.3 Coordination of Reviews and Approvals

(a) MDEQ agrees to coordinate its review, and its response to any Submission, Request for Approval of Construction of Response Activities (as defined in Paragraph 6.9(a)), Request for Approval of Performance of Response Activities (as defined in Paragraph 6.9(b)), or Notification of Completion (as defined at Paragraph 22.2) or Financial Assurance Mechanism and any other report or document subject to its review, concurrence or approval with any parallel USEPA review, concurrence or approval pursuant to the Federal Decree.

(b) USEPA shall have sole approval of the scope of work required to comply with the 1991 ROD and the performance of that scope of work. Notwithstanding the foregoing USEPA approval, in the event that Operational Compliance Criteria are not met at the Points of Operational Compliance for the Source Areas or the Enhanced System, the State may enforce the Operational Compliance Criteria according to the terms of this Decree.

(c) MDEQ shall have sole approval of the scope of work required to carryout the Source Area Enhancements and the performance of that scope of work.

(d) MDEQ shall have approval of the scope of work required to carry out and operate and maintain enhancements to the Northern Blocking Well Line and Southern Blocking Well Line which provide protection of the City's well field above 12.4 MGD and up to thirty (30) MGD and the performance of that scope of work. USEPA's role in review and concurrence on this work shall be limited to circumstances where USEPA concludes that the work may interfere with compliance with the 1991 ROD.

(e) Any modification to the Defendants' GWMP, and the Group Contingency Plan (Attachment 7) will be subject to both USEPA approval and MDEQ approval. Prior to MDEQ issuing an approval, an approval with modifications, or a disapproval, MDEQ will confer with USEPA in a good faith effort to develop a common response or set of requested modifications.

(f) This section is not intended as nor does it effect a waiver of the right of the State to review or concur or not concur in any matter over which the USEPA has approval.

(g) This Paragraph 13.3 applies to all of Section XIII.

(h) The MDEQ and the City shall have the right to approve and/or comment as shown for covered matters in the Summary of Lead Agency Responsibilities for Verona Well Field Remedial Action, Enhanced System, and Source Area Enhancements (Attachment 9).

13.4 Upon receipt of a notice of disapproval, the Defendants shall correct the deficiencies identified by the MDEQ and resubmit the Submission for MDEQ review and approval within four (4) weeks, unless the notice of disapproval specifies a longer time period for resubmission, or unless Defendants request an extension, which the MDEQ shall not unreasonably deny. Unless otherwise stated in the MDEQ's notice of disapproval or any USEPA notice of disapproval pursuant to the Federal Decree, the Defendants shall proceed to take the actions and perform response activities not dependant on the disapproved portion of the Submission. Any stipulated penalties accruing pursuant to the Schedule of Major Deliverables and Stipulated Penalties (Attachment 2) shall accrue during the four (4) week period or other time period (which period will begin after the later of MDEQ and USEPA disapproval, if any) set for the Defendants to resubmit those Submissions to which stipulated penalties apply, but shall not be payable unless the resubmission is also disapproved or is delayed beyond the due date set for resubmission. The MDEQ will review the resubmitted Submission in accordance with the procedure stated in Paragraph 13.2. If a resubmitted Submission to which stipulated penalties apply pursuant to the Schedule of Major Deliverables and Stipulated Penalties (Attachment 2) is disapproved, the MDEQ will so advise the Defendants and stipulated penalties shall accrue from the later of the date of MDEQ

disapproval or any USEPA disapproval of the original Submission and continue to accrue until the Defendants deliver a Submission approvable by the MDEQ.

13.5 Upon approval by the MDEQ, any Submission and attachments to Submissions required by this Decree are incorporated into this Decree and are enforceable pursuant to the terms of this Decree. If there is a conflict between the requirements of this Decree and any Submission or an attachment to a Submission, the requirements of this Decree shall prevail.

13.6 A finding of approval or approval with modifications shall not be construed to mean that the MDEQ concurs with any of the conclusions, methods, or statements in any Submission or warrants that the Submission comports with law.

13.7 No informal advice, guidance, suggestions, or comments by the MDEQ regarding any Submission or any other writing submitted by the Defendants shall be construed as relieving the Defendants of their obligation to obtain such formal approval as may be required by this Decree.

13.8 If any modifications required by the MDEQ approval pursuant to Paragraph 13.2(2) or modifications required by the MDEQ to obtain approval to correct a disapproved submission pursuant to Paragraph 13.2(3) are not in conflict or incompatible with any USEPA approval, approval upon conditions or modifications, or disapproval, the Defendants shall proceed to take the actions and perform the response activities required by such MDEQ-required modifications.

XIV. REIMBURSEMENT OF COSTS AND PAYMENT OF NATURAL RESOURCE DAMAGES

14.1 Within four (4) weeks of the Effective Date of this Decree, the Defendants shall pay the MDEQ Past Response Activity Costs: (a) $227,424 and interest, calculated from July 1, 2000 until payment is received by the State, at the rate specified on investments of the Hazardous Substances Superfund, established under Subchapter A of Chapter 98 of Title 26 of the U.S. Code, compounded on October 1 of each year, in accordance with 42 U.S.C. § 9607(a), to resolve all state claims for Past Response Activity Costs relating to matters covered in this Decree for the period of September 1, 1994 to March 18, 2000; and (b) $87,269 for Past Response Activity Costs that the State has incurred after March 18, 2000, and through May 25, 2002, and interest from July 1, 2002 until payment is received by the State, at the rate specified on investments of the Hazardous Substances Superfund, established under Subchapter A of Chapter 98 of Title 26 of the U.S. Code, compounded on October 1 of each year, in accordance with 42 U.S.C. § 9607(a), including, without limitation, costs in negotiating and preparing settlement documents with the Defendants, overseeing response activities at the Relevant Facility, and contractor costs. Payment shall be made pursuant to the provisions of Paragraph 14.4.

14.2 The Defendants shall reimburse the State for all Future Response Activity Costs incurred and paid by the State as defined in Paragraph 4.15 (Definition of Future Response Activity Costs). As soon as possible after each anniversary of the Effective Date of this Decree, the MDEQ will provide the Defendants with a written demand for payment of Future Response Activity Costs that have been lawfully incurred and paid by

the State since the period covered by the preceding demand. Any such demand will set forth with reasonable specificity the nature of the costs incurred. Except as otherwise determined in accordance with Section XVI (Dispute Resolution), the Defendants shall reimburse the MDEQ for such costs within eight (8) weeks of receipt of a written demand from the MDEQ.

14.3 The Defendants shall have the right to request a full and complete accounting of all MDEQ demands made hereunder, including time sheets, travel vouchers, contracts, invoices, and payment vouchers as may be available to the MDEQ. MDEQ's provision of these documents to the Defendants may result in the MDEQ incurring additional Future Response Activity Costs, which will be included in the annual demand for payment of Future Response Activity Costs.

14.4 All payments made pursuant to this Decree shall be by certified check made payable to the "State of Michigan – Environmental Response Fund," and shall be sent by first-class mail to the address listed in Section XII (Project Coordinators and Communications/Notices). The Verona Well Field Battle Creek Superfund Site, the Case Number, and the RRD Account Number RRD2095 shall be identified on each check. A copy of the transmittal letter and a copy of the check shall be provided simultaneously to the MDEQ Project Coordinator and the Division Chief, Environment, Natural Resources, and Agriculture Division, Department of Attorney General, 525 West Allegan Street, Lansing, MI 48913. Costs recovered pursuant to this Section XIV shall be deposited in the Environmental Response Fund in accordance with the provisions of Sections 20108(3) and (4) of the NREPA.

14.5 If the Defendants fail to make full payment to the MDEQ for Past Response Activity Costs, as specified in Paragraph 14.1 of this Decree, Future Response Activity Costs as specified in Paragraphs 14.2 or the NRD amount as specified in Paragraph 14.6, interest shall begin to accrue on the unpaid balance at the rate specified on investments of the Hazardous Substances Superfund, established under Subchapter A of Chapter 98 of Title 26 of the U.S. Code, compounded on October 1 of each year, in accordance with 42 U.S.C. § 9607(a) on the day after payment was due until the date upon which the Defendants make full payment of those costs and the accrued interest to the MDEQ. The Defendants shall have the burden of establishing, in any challenge by the Defendants to a MDEQ demand for reimbursement of costs, that the MDEQ did not lawfully incur those costs in accordance with Section 20126a(1)(a) of the NREPA.

14.6 Within four (4) weeks of the Effective Date, the Defendants shall pay to the MDEQ an NRD amount calculated by using $300,000 brought forward at a five percent (5%) annual rate from July 1, 2000 to the Effective Date of this Decree.

XV. STIPULATED PENALTIES

15.1 The Defendants shall be liable for stipulated penalties in the amounts set forth in Paragraphs 15.2(a) and (b) and the Schedule of Major Deliverables (Attachment 2) for failure to meet or perform the major construction and operational compliance requirements set forth in the Schedule of Major Deliverables (Attachment 2) of this Decree which are identified as penalty items, unless excused under Section X (Delays in Performance, Violations, and Force Majeure).

15.2 (a) Stipulated penalties shall accrue per violation per day for any failure to meet or perform the major construction and operational requirements identified in the Schedule of Major Deliverables and Stipulated Penalties (Attachment 2) to which stipulated penalties apply. The Schedule of Major Deliverables and Stipulated Penalties (Attachment 2) identifies deliverables, tasks, and requirements, including those to which stipulated penalties shall apply and other deliverables, tasks, and requirements, to which no stipulated penalties apply. The penalty schedules are set forth on the Schedule of Major Deliverables and Stipulated Penalties (Attachment 2).

(b) The Defendants' failure to comply with Section IX (Emergency Response) shall be subject to the stipulated penalty on Penalty Schedule B in the Schedule of Major Deliverables and Stipulated Penalties (Attachment 2) for each day of noncompliance.

15.3 All penalties shall begin to accrue on the day after performance of an activity was due, and shall continue to accrue through the final day of completion of performance of the activity. Nothing herein shall prevent the simultaneous accrual of separate penalties for separate violations of this Decree.

15.4 Except as provided in Paragraph 16.8 of this Decree, stipulated penalties owed to the State shall be paid no later than four (4) weeks after receiving a written demand from the State. Payment shall be made in the manner provided in Section XIV (Reimbursement of Costs and Payment of Natural Resource Damages). Interest shall accrue on the unpaid balance at the end of the four (4)-week period at the rate specified on investments of the Hazardous Substances Superfund, established under Subchapter A

of Chapter 98 of Title 26 of the U.S. Code, compounded on October 1 of each year, in accordance with 42 U.S.C. § 9607(a).

15.5 The payment of penalties shall not alter in any way the Defendants' obligation to complete the performance of response activities required by this Decree.

15.6 If the Defendants fail to pay stipulated penalties when due, the State may institute proceedings to collect the penalties, as well as interest. However, the assessment of stipulated penalties is not the State's exclusive remedy if the Defendants violate this Decree. The State also reserves the right to pursue any other remedies to which it is entitled under this Decree or any applicable law for any failure or refusal of the Defendants to comply with the requirements of this Decree, including, but not limited to, seeking civil penalties, injunctive relief, the specific performance of response activities, reimbursement of costs, exemplary damages pursuant to Section 20119(4) of the NREPA in the amount of three (3) times the costs incurred by the State as a result of the Defendants' violation of or failure to comply with this Decree, and sanctions for contempt of court provided that the State agrees that no stipulated penalties for the violation in question shall apply if the State seeks civil penalties for the same violation.

15.7 Notwithstanding any other provision of this Section XV, the State may, in its discretion, waive any portion of stipulated penalties that have accrued pursuant to this Decree.

XVI. DISPUTE RESOLUTION

16.1 Unless otherwise expressly provided for in this Decree, the dispute resolution procedures of this Section XVI shall be the exclusive mechanism to resolve disputes arising under or with respect to this Decree, except for Section IX (Emergency Response), which are not disputable. However, the procedures set forth in this Section XVI shall not apply to actions by the State to enforce obligations of the Defendants that have not been disputed in accordance with this Section XVI. It is the Parties' understanding that: (i) the procedures in this Section XVI will not be invoked until after technical staff for the Parties have attempted informally to resolve any differences through the VWFMP Process pursuant to Paragraph 6.14(d); and (ii) engagement in attempts to resolve differences without invoking this Section XVI shall not be considered a waiver of any Party's right to invoke the procedures of this Section XVI. Engagement of dispute resolution under this Section XVI shall not be cause for the Defendants to delay the performance of any response activity required under this Decree. Where matters in dispute are subject to USEPA approval or review, the Parties shall attempt to get USEPA to participate in the process but USEPA's non-participation shall not affect or change the use of this Section XVI for dispute resolution.

16.2 (a) The State shall maintain an administrative record of any disputes that are initiated pursuant to this Section XVI. The administrative record shall include all of the information the Defendants provide to the State under Paragraphs 16.3-16.5 and all documents the MDEQ relies on in making the decisions set forth in Paragraphs 16.3-16.5.

(b) To the extent that in reaching its decision under this Section XVI (Dispute Resolution) the MDEQ relies on materials not reasonably anticipated by the Defendants in their Notice of Dispute under Paragraph 16.5 or Request for Review under Paragraph 16.4, the Defendants shall have the right to make one submission of additional materials into the administrative record which contradict, rebut or explain the materials relied upon by the MDEQ.

(c) The Defendants shall also have the right to request that the administrative record be supplemented with other material involving matters in dispute pursuant to MCL 324.20137(5) in the event that the Defendants challenge a final action by the State and/or MDEQ in court pursuant to Paragraph 16.6.

16.3 Any dispute that arises under this Decree with respect to the MDEQ's disapproval, modification, or other decision concerning the requirements of Section VI (Defendants' Performance of Response Activities), Section VIII (Sampling and Analysis), Section XIII (Submissions and Approvals), and Schedule of Major Deliverables (Attachment 2) shall in the first instance be the subject of informal negotiations between the Project Coordinators representing the Parties (for the MDEQ, the Superfund Section Chief, designated in Paragraph 12.1(a)(iv), and for the Defendants, legal counsel as designated in Paragraph 12.1 (b)(i)). A dispute shall be considered to have arisen on the date that a party to this Decree receives a written Notice of Dispute from the other party. This Notice of Dispute shall state the issues in dispute; the relevant facts upon which the dispute is based; any factual data, analysis, or opinion supporting its position; and all supporting documentation and noting the relevant portions thereof upon which the party

bases its position. Documents believed to be in the other party's possession may be incorporated by reference. The period of informal negotiations shall not exceed three (3) weeks from the date a party receives a Notice of Dispute, unless the time period for negotiations is modified by written agreement between the Parties. If the Parties do not reach an agreement within three (3) weeks or as that period may be extended, the RRD Superfund Section Chief will thereafter provide a written RRD Statement of Decision to the Defendants. The RRD Statement of Decision shall address each issue raised by the Defendants and provide at least a brief response to each with citation to materials in the administrative record which support the decision on each point. In the absence of initiation of formal dispute resolution by the Defendants under Paragraph 16.4, the MDEQ's position as set forth in the RRD Statement of Decision shall be binding on the Parties.

16.4 If the Defendants and the MDEQ cannot informally resolve a dispute under Paragraph 16.3, the Defendants may initiate formal dispute resolution by submitting a written request for review of the disputed issues (Request for Review) to the RRD Division Chief. The Defendants must file a Request for Review with the RRD Division Chief and the MDEQ Project Coordinator within four (4) weeks of the Defendants' receipt of the RRD Statement of Decision issued pursuant to Paragraph 16.3. The Defendants' Request for Review shall state the issues in dispute; the relevant facts upon which the dispute is based; any factual data, analysis, or opinion supporting its position; and all supporting documentation and noting relevant portions thereof upon which the Defendants base their position. Documents believed to be in the other party's

possession may be incorporated by reference. The Defendants shall not be limited to positions and materials submitted in their Notice of Dispute under Paragraph 16.3. The Defendants may request the opportunity to present their position orally to the RRD Division Chief. Within three (3) weeks after the RRD Division Chief's meeting with the Defendants or the RRD Division Chief's denial of the Defendants' request, the RRD Division Chief will provide a written Final RRD Statement of Decision to the Defendants, which will include a statement of his/her understanding of each of the issues in dispute; the relevant facts upon which the dispute is based; any factual data, analysis, or opinion supporting her/his position as to each issue; and all supporting documentation relied upon by the RRD Division Chief in making his/her decision. The time period for the RRD Division Chief's review of the Request for Review may be extended by written agreement between the Parties. The Final RRD Statement of Decision shall be binding on the Parties, subject to proceedings taken pursuant to Paragraph 16.6, and shall be MDEQ's final agency action with regard to matters falling within Paragraphs 16.3 and 16.4. The Defendants may supplement the administrative record after the Final RRD Statement of Decision as permitted by Paragraphs 16.2(b) and (c).

16.5 If the Defendants seek to challenge any decision or notice issued by the State under this Decree, except for any decision or notice regarding matters covered by Section IX (Emergency Response), or Paragraphs 16.3 or 16.4, the Defendants shall send a written Notice of Dispute to both the RRD Division Chief and the Assistant Attorney General assigned to this matter within two (2) weeks of the Defendants' receipt of the decision or notice from the State. The Notice of Dispute shall include the relevant facts

upon which the dispute is based; any factual data, analysis, or opinion supporting its position; and all supporting documentation and noting the relevant portions thereof upon which the Defendants base their position. Documents believed to be in the other party's possession may be incorporated by reference. The Parties shall have three (3) weeks from the date of the State's receipt of the Notice of Dispute to reach an agreement unless such period is extended by written agreement between the Parties. If an agreement is not reached on any issue within the three (3) week period or as the period may be extended, the Defendants may request the opportunity to present their position orally to the RRD Division Chief and the Assistant Attorney General assigned to this matter. Within three (3) week after such meeting with the Defendants or the denial of the Defendants' request for such meeting, the State will thereafter issue, in writing, the State's Statement of Decision to the Defendants, which will include a statement of the State's understanding of each of the issues in dispute; the relevant facts upon which the dispute is based; any factual data, analysis, or opinion supporting the State's position as to each issue; and all supporting documentation relied upon by the State in making the decision. The Statement of Decision shall be binding on the Parties, subject to proceedings taken pursuant to Paragraph 16.6, and shall be the State's final action with regard to matters falling within Paragraph16.5. The Defendants may supplement the administrative record after the Final Statement of Decision as permitted by Paragraphs 16.2(b) and (c).

16.6 The Final RRD Statement of Decision or the State's Statement of Decision pursuant to Paragraphs 16.4 or 16.5, respectively, shall control unless, within four (4) weeks after the Defendants' receipt of the Decision, the Defendants file with this Court a

motion for resolution of the dispute, which sets forth the matter in dispute, the efforts made by the Parties to resolve it, the relief requested, and the schedule, if any, within which the dispute must be resolved to ensure orderly implementation of this Decree. Within four (4) weeks of the Defendants' filing of a motion asking the Court to resolve a dispute, the State will file with the Court the administrative record that is maintained pursuant to Paragraph 16.2.

16.7 Any judicial review of the Final RRD Statement of Decision or the State's Statement of Decision shall be limited to the administrative record. In proceedings on any dispute, the Defendants shall bear the burden of persuasion on factual issues under the applicable standards of review. In proceedings on any dispute relating to the selection, extent, or adequacy of any aspect of the response activities that are the subject of this Decree, the Defendants shall have the burden of demonstrating on the administrative record that the position of the MDEQ is arbitrary and capricious or otherwise not in accordance with law. Nothing herein shall prevent the State from arguing that the Court should apply the arbitrary and capricious standard of review to any other dispute under this Decree or prevent the Defendants from opposing that argument. However, nothing herein shall be construed to change any standard of review as specified in applicable law.

16.8 Notwithstanding the invocation of a dispute resolution proceeding, stipulated penalties shall accrue from the first day of any failure or refusal to comply with any term or condition of this Decree that is subject to stipulated penalties pursuant to Section XV (Stipulated Penalties), but payment shall be stayed pending resolution of the

dispute. In the event, and to the extent, that the Defendants do not prevail on the disputed issue, the MDEQ may demand payment of stipulated penalties and the Defendants shall pay stipulated penalties as set forth in Paragraph 15.4 (Stipulated Penalties). The Defendants shall not be assessed stipulated penalties for disputes that are resolved in their favor. In determining whether to demand stipulated penalties under this Paragraph 16.8, MDEQ may consider whether the Defendants' invocation of the dispute resolution process was brought in good faith and without the purpose of delaying the Defendants' responsibilities under this Decree.

16.9 Notwithstanding the provisions of this Section XVI and in accordance with Sections XIV (Reimbursement of Costs) and XV (Stipulated Penalties), as appropriate, the Defendants shall pay to the MDEQ that portion of a demand for reimbursement of costs, or for payment of stipulated penalties that is not the subject of an on-going dispute resolution proceeding.

XVII. INDEMNIFICATION AND INSURANCE

17.1 The State of Michigan does not assume any liability by entering into this Decree. This Decree shall not be construed to be an indemnity by the State for the benefit of the Defendants or any other person.

17.2 The Defendants shall indemnify and hold harmless the State of Michigan and its departments, agencies, officials, agents, employees, contractors, and representatives for any claims or causes of action arising from or on account of acts or

omissions of the Defendants, its officers, employees, agents, or any persons acting on their behalf or under their control in carrying out activities pursuant to this Decree.

17.3 The Defendants shall indemnify and hold harmless the State of Michigan and its departments, agencies, officials, agents, employees, contractors, and representatives for all claims or causes of action for damages or reimbursement from the State arising from, or on account of, any contract, agreement, or arrangement between the Defendants and any person for the performance of response activities at the Relevant Facility, including claims due to construction delays, unless the delay is occasioned by requirements from the MDEQ which are held to be arbitrary and capricious or otherwise unlawful pursuant to the dispute resolution procedures in Section XVI (Dispute Resolution).

17.4 The State shall provide the Defendants with written notice of any claim for which the State intends to seek indemnification within eight (8) weeks of receipt of any such claim pursuant to Paragraphs 17.2 and 17.3. The State shall not enter into a settlement of any monetary claim under Paragraphs 17.2 and 17.3 without providing the Defendants written notice of and opportunity to object to the proposed settlement at least four (4) weeks prior to entry. If the Defendants do not object to the proposed settlement within four (4) weeks of receipt of notice, the State may proceed to enter the settlement. If the Defendants do object to the proposed settlement within four (4) weeks of receipt of notice, the State and the Defendants shall confer and attempt to agree upon the disposition of the claim and the Defendants' indemnification obligation with respect to the claim. If, after such consultation, the Parties have not agreed, and the Defendants

object to the settlement proposed by the State, the Defendants shall bear all further costs of defense of the underlying claim. In addition, for any claim which the Defendants do not dispute their liability to indemnify the State, and the State rejects a settlement offer by the plaintiff which is acceptable to the Defendants, the Defendants' indemnity obligation shall be limited to the monetary amount of the plaintiff's offer.

17.5 Neither the State of Michigan nor any of its departments, agencies, officials, agents, employees, contractors, or representatives shall be held out as a party to any contract entered into by or on behalf of the Defendants in carrying out activities pursuant to this Decree. Neither the Defendants nor any contractor shall be considered an agent of the State.

17.6 The Defendants waive all claims or causes of action against the State of Michigan and its departments, agencies, officials, agents, employees, contractors, and representatives for damages, reimbursement, or set-off of any payments made or to be made to the State, that arise from, or on account of, any contract, agreement, or arrangement between the Defendants and any other person for the performance of response activities at the Relevant Facility.

17.7 Prior to commencing any response activities pursuant to this Decree, the Defendants shall secure, and maintain for the duration of this Decree, comprehensive general liability insurance with limits of $2,000,000, combined single limit, naming the MDEQ, the Attorney General, and the State of Michigan as additional insured parties. If the Defendants demonstrate by evidence satisfactory to the MDEQ that any contractor or

subcontractor maintains insurance equivalent to that described above, then with respect to that contractor or subcontractor, the Defendants need to provide only that portion, if any, of the insurance described above that is not maintained by the contractor or subcontractor. Regardless of the method used to insure, and prior to commencement of response activities pursuant to this Decree, the Defendants shall provide the MDEQ Project Coordinator and the Attorney General with certificates evidencing said insurance and the MDEQ's, the Attorney General's, and the State of Michigan's status as additional insured parties. In addition, for the duration of this Decree, the Defendants shall satisfy, or shall ensure that its contractors or subcontractors satisfy, all applicable laws and regulations regarding the provision of Workers' Disability Compensation Insurance for all persons performing response activities on behalf of the Defendants in furtherance of this Decree.

XVIII. COVENANTS NOT TO SUE BY PLAINTIFFS

18.1 In consideration of the actions that will be performed and the payments that will be made by the Defendants under the terms of this Decree, and except as specifically provided in this Section XVIII and Section XIX (Reservation of Rights by the Plaintiffs), the State hereby covenants not to sue or to take further administrative action against the Defendants for:

(a) Performance of response activities that the Defendants perform pursuant to this Decree, excluding the Long-Term Requirements;

(b) Performance of response activities necessary to protect production of the Verona Well Field in excess of thirty (30) MGD for each month;

(c) Reimbursement of Past Response Activity Costs paid by the Defendants, as set forth in Paragraphs 14.1 and 14.5 of this Decree;

(d) Reimbursement of Future Response Activity Costs and any applicable interest, which have been incurred and paid by the State and paid by the Defendants, as set forth in Paragraphs 14.2 and 14.5 of this Decree;

(e) Performance by the Defendants of:

(i) response activities to fulfill Long-Term Requirements; and

(ii) any other response activities at the Relevant Facility that are not specifically required by this Decree, to address releases at the Relevant Facility that occurred prior to the Effective Date of this Decree, subject to the reservations stated in Paragraphs 18.4 (The State's Reservations Concerning Post-Certification of Completion of Remedial Action) and 19.4;

(f) Natural resource damages resulting from releases of hazardous substances at the Facility which occurred prior to the Effective Date of this Decree. The continued presence and/or migration of soil and groundwater contamination existing as of the date of this Decree shall not constitute the basis of a new natural resource damages claim so long as the migration is controlled by or contained by the Remedial Action as required by this Decree; and

(g) To the extent not already resolved in another judicial consent decree, reimbursement of response activity costs and any applicable interest which have been or will be incurred by the State at the Raymond Road Source Area and/or the performance of any response activity at the Raymond Road Source Area.

18.2 The covenants not to sue shall take effect under this Decree as follows:

(a) With regard to performance of response activities that the Defendants perform pursuant to this Decree, excluding the Long-Term Requirements, the covenant not to sue shall take effect upon issuance by the MDEQ of the Approval of Construction of Response Activities pursuant to Paragraph 6.9(a) of Section VI (Defendants' Performance of Response Activities).

(b) The covenant not to sue with respect to performance of response activities necessary to protect production of the Verona Well Field in excess of 30 MGD each month shall take effect upon entry of this Decree.

(c) With respect to the Defendants' liability for Past Response Activity Costs incurred by the State and paid by the Defendants, as set forth in Paragraphs 14.1 and 14.5 of this Decree, the covenants not to sue shall take effect upon the MDEQ's receipt of payments for those costs.

(d) With respect to the Defendants' liability for Future Response Activity Costs which have been incurred by the State and paid by the Defendants as set forth in Paragraphs 14.2 and 14.5 of this Decree, this covenant not to sue shall take effect upon MDEQ's receipt of payments for those costs.

(e) The covenant not to sue with respect to the Defendants' liability for the performance of:

(i) Response activities related to the releases at the Relevant Facility to fulfill Long-Term Requirements, or

(ii) Any other response activities at the Relevant Facility that are not specifically required by this Decree to address releases at the Relevant Facility

that occurred prior to the Effective Date of this Decree, subject to the reservations stated in Paragraphs 18.4 (The State's Reservations Concerning Post-Certification of Completion of Remedial Action) and 19.4, shall take effect upon the issuance by the MDEQ of the Certification of Completion of Remedial Action pursuant to Section XXII (Certification of Completion of Remedial Action).

(f) With respect to the Defendants' liability for natural resource damages, the covenant not to sue shall take effect upon MDEQ's written approval pursuant to Paragraphs 6.9(a) and (c).

(g) With respect to response activity costs and any applicable interest which have been or will be incurred by the State at the Raymond Road Source Area and/or the performance of any response activity, the covenant not to sue shall take effect upon Effective Date of this Decree.

18.3 These covenants not to sue extend only to the Defendants and do not extend to any other person.

18.4 The State's Reservations Concerning Post-Certification of Completion of Remedial Action

(a) In addition to, and not as a limitation of, any other provision of this Decree, the State reserves, and this Decree is without prejudice to, the right to institute proceedings in this action or a new action or to issue an administrative order to seek to compel the Defendants to perform further response activities at the Relevant Facility, (except to compel the Defendants to protect above thirty (30) MGD), or to reimburse the State for additional response activity costs if, after issuance of the Certification of

Completion of Remedial Action, conditions at the Relevant Facility, previously unknown to the MDEQ, are discovered, or new information is received, in whole or in part, and these previously unknown conditions or this information, together with any other relevant information, indicates that the remedial action is not protective of the public health, safety, or welfare, or the environment.

(b) For purposes of Paragraph 18.4(a), the conditions known to exist and the information previously received by the MDEQ shall include only those conditions and that information set forth or contained in:

(i) USEPA's administrative record supporting the ROD or the ROD issued in 1984, the UAOs, the ESD, or other USEPA decisions regarding selection and operation of remedial actions at the Relevant Facility;

(ii) the Completion Report submitted to the MDEQ pursuant to Paragraph 22.3;

(iii) any written information received by the MDEQ pursuant to the requirements of this Decree prior to the MDEQ's issuance of the Certification of Completion of Remedial Action;

(iv) (1) any reports prepared by MDEQ or its contractors with regard to conditions at the VWF; (2) any other reports or other documents which MDEQ approved or upon which MDEQ has prepared written comments and provided same to the Defendants or USEPA; (3) the MDEQ and USEPA responses to such reports or documents; and (4) monthly progress reports prepared by the Defendants in compliance with the CERCLA Section 106 orders and/or the Federal Decree, and

(v) administrative records developed as part of the dispute resolution process under Section XVI (Dispute Resolution) of this Decree.

(c) In the event of a dispute between MDEQ and the Defendants with regard to whether specific materials fall within subparagraph 18.4(b)(iv), the Defendants shall have the burden of proof.

XIX. RESERVATION OF RIGHTS BY THE PLAINTIFFS

19.1 The covenants not to sue apply only to those matters specified in Paragraph 18.1. However, the covenants not to sue do not apply to, and the State reserves its rights on, the matters specified in Paragraph 18.1 until such time as the covenants become effective as set forth in Paragraph 18.2. The MDEQ and the Attorney General reserve the right to bring an action against the Defendants under federal and state laws for any matters for which the Defendants have not received a covenant not to sue as set forth in Section XVIII (Covenants Not to Sue by Plaintiffs). The State reserves, and this Decree is without prejudice to, the State's right to take judicial or administrative action pursuant to any applicable authority against the Defendants with respect to all other matters, including, but not limited to, the following:

(a) Response activities that the Defendants have not satisfactorily performed or for which the Defendants have not received a covenant not to sue;

(b) Response activity costs that the Defendants have not paid or for which the Defendants have not received a covenant not to sue;

(c) The past, present, or future treatment, handling, disposal, release, or threat of release of contamination that occur outside of the Relevant Facility and that are not attributable to the Relevant Facility;

(d) The past, present, or future treatment, handling, disposal, release, or threat of release of contamination taken from the Relevant Facility;

(e) Damages for injury to, destruction of, or loss of natural resources resulting from releases of contamination by one or more of the Defendants that occur after the Effective Date of this Decree;

(f) Criminal acts of the Defendants;

(g) Any matters for which the State is owed indemnification under Section XVII (Indemnification and Insurance) of this Decree; and

(h) The release or threatened release of contamination or violations of federal or state law for which the Defendants have not received a covenant not to sue.

19.2 The State reserves the right to take action for matters addressed in Paragraph 18.1 against the Defendants to require additional response activities if the State discovers at any time that any material information provided by the Defendants prior to or after entry of this Decree was false or, from the standpoint of a reasonable person, misleading.

19.3 Except as provided otherwise in this Decree, the State expressly reserves all rights and defenses pursuant to any available legal authority that they may have to enforce this Decree or to compel the Defendants to comply with the NREPA, CERCLA, and any other applicable statute or regulation.

19.4 In addition to, and not as a limitation of, any other provision of this Decree, the MDEQ retains all authority it has under law and reserves all rights to perform, or contract to have performed, any response activities that the MDEQ determines are necessary.

19.5 The MDEQ and the Attorney General retain all of their information gathering, inspection, access, and enforcement authorities related thereto and rights under CERCLA, Part 201 of the NREPA, and any other applicable statute or regulation.

19.6 Failure by the MDEQ or the Attorney General to timely enforce any term, condition, or requirement of this Decree shall not:

(a) Provide or be construed to provide a defense for the Defendants' non-compliance with any such term, condition, or requirement of this Decree; or

(b) Estop or limit the authority of MDEQ or the Attorney General to later enforce any such term, condition, or requirement of the Decree or to seek any other remedy provided by law.

19.7 This Decree does not constitute a warranty or representation of any kind by the MDEQ that the response activities performed in accordance with this Decree or MDEQ-approved work plans will result in the achievement of the performance objectives stated in Paragraph 6.1, except as to Paragraph 6.1(e), or that those response activities will assure protection of public health, safety, or welfare, or the environment.

19.8 Except as provided in Paragraph 18.1, nothing in this Decree shall limit the power and authority of the MDEQ or the State of Michigan pursuant to Section

20132(8) of the NREPA to direct or order all appropriate action to protect the public health, safety, or welfare, or the environment; or to prevent, abate or minimize a release or threatened release of contamination, pollutants, or hazardous substances on, at or from the Relevant Facility.

XX. COVENANT NOT TO SUE AND RESERVATION OF RIGHTS BY DEFENDANTS

20.1 The Defendants hereby covenant not to sue or to take any civil, judicial, or administrative action against the State, its agencies, or their authorized representatives, for any claims or causes of action against the State for the Relevant Facility that arise from this Decree, including, but not limited to, any direct or indirect claim for reimbursement from the Cleanup and Redevelopment Fund pursuant to Section 20119(5) of the NREPA or any other provision of law, other than claims pursuant to Section 20135(1)(c) of Part 201, MCL 324.20135(1)(c).

20.2 In any subsequent judicial proceeding initiated by the MDEQ or the Attorney General seeking injunctive relief, recovery of response activity costs, or other appropriate relief relating to the Relevant Facility, the Defendants agree not to assert, and may not and shall not maintain any defense or claim based upon the principles of waiver, res judicata, collateral estoppel, issue preclusion, claim-splitting, or other defenses that are based upon any contention that the claims raised by the MDEQ or the Attorney General in the subsequent proceeding were or should have been brought in this case; provided, however, that nothing in this Paragraph 20.2 affects the enforceability of the covenants not to sue set forth in Section XVIII (Covenants Not to Sue by Plaintiffs).

20.3 This Section XX does not prevent the Defendants from seeking relief in this case consistent with Section XVI (Dispute Resolution) to obtain enforcement of the terms of this Decree.

20.4 Nothing in this Decree is intended to waive any right or defense under law or equity which the Defendants may have against or to any claims brought by the State under Section XIX (Reservation of Rights by the Plaintiffs) of this Decree, excluding any rights or defenses expressly waived in this Decree.

XXI. CONTRIBUTION PROTECTION

Pursuant to Section 20129(5) of the NREPA and Section 9613(f)(2) of the CERCLA and to the extent provided in Section XVIII (Covenants Not to Sue by Plaintiffs), the Defendants shall not be liable for claims for contribution for the matters set forth in Paragraph 18.1 of this Decree. Entry of this Decree does not discharge the liability of any other person that may be liable under Section 20126 of the NREPA, or the CERCLA, 42 USC §§ 9607 and 9613, to the extent allowable by law. Pursuant to Section 20129(9) of the NREPA, any action by the Defendants for contribution from any person not a party to this Decree shall be subordinate to the rights of the State of Michigan, if the State files an action pursuant to the NREPA or other applicable federal or state law.

XXII. CERTIFICATION OF COMPLETION OF REMEDIAL ACTION

22.1 For the purposes of this Decree, "Completion of Remedial Action" shall mean that all of the response activities have been completed, and that all performance

objectives specified in Paragraphs 6.1(a), (c), and (d) have been attained at the Relevant Facility and the Relevant Facility no longer poses an unacceptable threat to public health, safety, and welfare of the people of the State of Michigan or the natural resources and environment of the State of Michigan. Additionally, MDEQ will not issue a Certificate of Completion of Remedial Action until it finds that all technical and administrative components of the Remedial Action are no longer needed, including, but not limited to, land and resource use restrictions, operation and maintenance and long-term monitoring activities, and the maintenance of financial assurance; and that any data collection and verification sampling required to demonstrate that all of the performance objectives in Paragraphs 6.1(a), (c), and (d) have been met at the Relevant Facility.

22.2 (a) When the Defendants determine that they have completed the Remedial Action, paid all outstanding response activity costs and stipulated penalties owed to the State, and complied with all other terms and conditions of this Decree, they may submit to the MDEQ a Notification of Completion of Remedial Action and a draft Completion Report (collectively the "Notification of Completion").

(b) The draft Completion Report shall summarize all response activities performed under this Decree and set forth in detail with supporting data the basis for the Defendants' determination that they have completed the Remedial Action, and shall include or reference any supporting documentation.

22.3 (a) Upon receipt of the draft Completion Report, the MDEQ will first review the draft Completion Report to determine whether it contains sufficient information and supporting documentation to make a decision as to the nature and extent

of Contamination at the time the draft Completion Report is submitted, describe the operation and effectiveness of the Remedial Action in addressing Contamination, and demonstrate that all of the performance objectives specified in Paragraphs 6.1(a), (c), and (d) have been attained at the Relevant Facility and the Relevant Facility no longer poses an unacceptable threat to public health, safety, and welfare of the people of the State of Michigan and the natural resources and environment of the State of Michigan

(b) If MDEQ determines that the draft Completion Report does not contain information meeting the requirements of Paragraph 22.3(a), it shall confer with the Defendants as to additional information and the development of a work plan to develop that information. If the conference does not result in an agreement on the additional information required and the scope of the work plan to develop it, MDEQ shall make a written determination of the information required and the scope of the work plan to develop that information. That determination shall be binding on the Defendants as to the information required to obtain MDEQ review of the draft Completion Report, unless the Defendants invoke dispute resolution under Section XVI (Dispute Resolution).

(c) Upon submission of a draft Completion Report containing all information required by MDEQ to make its determination of completion, MDEQ shall make such determination.

(d) If the MDEQ determines that the Defendants have not completed the Remedial Action, and/or the MDEQ determines that the Defendants have not complied with all other terms and conditions of this Decree, the Parties shall informally confer. After the informal conference, the MDEQ will so notify the Defendants in writing of the denial of the Request for Certification of Completion of Remedial Action

and the reasons for the denial with a complete and specific statement of the conditions or requirements necessary to obtain approval of Certificate of Completion of Remedial Action. MDEQ'S determination of the conditions and requirements necessary to obtain approval of a Certificate of Completion of Remedial Action are binding on the Defendants unless they challenge the denial and/or its terms and conditions pursuant to Section XVI (Dispute Resolution).

(e) If the MDEQ determines after receipt of a draft Completion Report or a revised draft Completion Report, that the Defendants have submitted sufficient information to demonstrate they have satisfactorily completed the Remedial Action, and all requirements of this Decree, and that all of the performance objectives specified in Paragraphs 6.1(a), (c), and (d) have been attained at the Relevant Facility, and the Relevant Facility no longer poses an unacceptable threat to public health, safety, and welfare of the people of the State of Michigan and the natural resources and environment of the State of Michigan, the MDEQ RRD Chief will so notify the Defendants. Upon that notice, the Completion Report will be deemed to be the final report and the RRD Chief will issue a Certification of Completion of Remedial Action to the Defendants.

22.4 After issuance of the Certification of Completion of Remedial Action, the Defendants shall arrange for the rescission or revocation of any notices of environmental remediation and any land or resource use restrictions that may have been placed or enacted on property not owned by one or more the Defendants and remove any permanent markers that may have been placed at the Relevant Facility. However, to the extent that rescission or revocation depends on actions by any legal person other than the

Defendants, the Defendants shall be deemed to have satisfied their obligations under this Paragraph 22.4 by presenting to such person all information needed for such person to take action necessary for rescission or revocation.

XXIII. MDEQ'S PERFORMANCE OF RESPONSE ACTIVITIES AS THEY RELATE TO DEFENDANTS' OBLIGATIONS PURSUANT TO THIS DECREE

23.1 If the Defendants cease to perform response activities as required by the UAOs, are not performing response activities in accordance with this Decree, or are performing response activities in a manner that may cause an endangerment to human health or the environment, the MDEQ may, at its option and upon providing four (4) weeks prior written notice to the Defendants, take over the performance of those response activities. The MDEQ, however, is not required to provide four (4) weeks written notice prior to performing response activities that the MDEQ determines are necessary pursuant to Section IX (Emergency Response). Costs incurred and paid by the State to perform response activities pursuant to this Paragraph 23.1 shall be considered to be "Future Response Activity Costs." The State may seek direct payment of these State costs or State contractor costs from the financial assurance mechanism pursuant to the conditions of Paragraph 6.13 or the Defendants shall provide reimbursement of these costs to the State (and any associated interest) in accordance with Paragraphs 14.2, 14.4, and 14.5 (Reimbursement of Costs).

(a) The MDEQ is currently performing the source control remedial action at the Raymond Road Source Area, consistent with the June 28, 1991 ROD and the Cooperative Agreement (CA) Amendment dated September 19, 2000 between USEPA

and MDEQ. That remedial action includes extraction and treatment of contaminated groundwater in order to contain and remediate contaminated groundwater at the Raymond Road Source Area.

(b) Pursuant to 42 USC § 9604(c)(3) and the State Superfund Contract Amendment dated July 7, 1995, and subject to the availability of sufficient appropriated funds for that purpose, the MDEQ is committed to operating and maintaining the source control remedial action at the Raymond Road Source Area:

(i) to meet the performance objectives described in Paragraph 23.1(c); and

(ii) so long as groundwater Contamination within the Raymond Road Source Area and attributable to the Raymond Road Source Area is above the Revised ROD Criteria for residential cleanup and/or soils exceed the Revised ROD Criteria for residential drinking water protection for soil, or if and until a determination of technical impracticability is made.

(c) The performance objectives of the groundwater containment system at the Raymond Road Source Area are to prevent migration of Contamination in the groundwater above the Revised ROD Criteria from the Raymond Road Source Area and ensure that Operational Compliance Criteria are met at the Points of Operational Compliance specifically identified in the VWFMP.

(d) The MDEQ will coordinate its response activities at the Raymond Road Source Area with the Defendants and the City through the Coordinated GWMP and VWFMP.

(e) The Parties to this Consent Decree expressly understand and agree that the Defendants are not obligated to perform any response activities at the Raymond Road Source Area or to reimburse the State of Michigan for costs of MDEQ response activities at the Raymond Road Source Area.

(f) If the State or MDEQ cease operating and maintaining the source control groundwater remedial action at the Raymond Road Source Area before the Revised ROD Criteria have been achieved, or a determination of technical impracticability is made, the Defendants shall have the right to reopen this Decree to negotiate how Contamination leaving the Raymond Road Source Area will be dealt with. Further, the Parties agree that in any such negotiations their mutual objectives shall be that, to the fullest extent of the State's legal authority:

(i) the Defendants should not ultimately bear the costs of remedying contamination leaving the Raymond Road Source Area if the MDEQ ceases to operate and maintain the source control remedial action at the Raymond Road Source Area, and

(ii) the effectiveness and integrity of the response activities at the Facility should continue to be maintained until the Revised ROD Criteria are achieved and the MDEQ will seek legislative appropriations as needed to meet those objectives at the Raymond Road Source Area.

23.2 The Defendants and the MDEQ shall each prepare that portion of the Coordinated GWMP and VWFMP as it relates to those matters for which that party is responsible. The MDEQ is responsible for the Raymond Road Source Area portion of the

Coordinated GWMP and VWFMP. The Parties acknowledge that, although not compelled by this Decree, the City is responsible for preparation of the municipal drinking water supply production portion of the Coordinated GWMP and VWFMP. The Defendants are responsible for the remainder of the Coordinated GWMP and VWFMP for the Relevant Facility. Each portion of the Coordinated GWMP shall be capable of standing alone, but must be prepared in coordination with the other parties' GWMPs such that when taken together they comprise a coordinated and comprehensive whole.

23.3 Upon the Defendants' request and subject to the limitations under the Michigan Freedom of Information Act 1976 PA 442, as amended, MCL 15.231 *et seq*, MDEQ shall provide the Defendants with a copy of all reports and actions for Raymond Road Source Area, Davis Oil Source Area, and any other specifically identified source of Contamination within the Facility over which MDEQ is exercising oversight, pursuing an enforcement action or performing remediation.

XXIV. RIGHTS OF THE CITY AS A THIRD PARTY BENEFICIARY TO THIS DECREE

24.1 If the City determines to pursue its third party beneficiary rights under this Decree, it shall provide written notification to the Plaintiffs and Defendants as designated in Section XII (Project Coordinators and Communications/Notices).

24.2 If the City determines that the Parties have not adequately responded to the notification given under Paragraph 24.1, after eight (8) weeks, the City may initiate proceedings under Section XXVIII (Continuing Jurisdiction).

XXV. MODIFICATIONS

25.1 This Decree may only be modified according to the terms of this Section XXV. Any Submissions, tasks, or deliverables or an attachment to a Submission or a schedule for or in a Submission required by this Decree may be modified by written agreement between the Defendants' designated Project Coordinator or other authorized representative of the Defendants and the appropriate MDEQ Project Coordinator as designated in Section XII (Project Coordinators and Communications/Notices).

25.2 Modification of any other provision of this Decree shall be made by written agreement between the Defendants' signatories to this Decree or their designees, the MDEQ by its RRD Division Chief, and the Michigan Department of Attorney General.

XXVI. SEPARATE DOCUMENTS

This Decree may be executed in two (2) or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one (1) and the same instrument. This Decree may be executed in duplicate original form.

XXVII. EFFECT OF FILING OF DECREE ON RELATED CASES

Upon entry of this Decree, this Decree shall be submitted for filing in *Kelley v Thomas Solvents*, Civil Action No. K86-164 CA8; and *Kelley v Cello Foil*, Civil Action No. 4:92-CV-139 and shall be deemed a final resolution of any remaining claims of the Plaintiffs in those actions.

XXVIII. CONTINUING JURISDICTION

This Court shall retain continuing jurisdiction to oversee implementation of this Decree and to resolve any disputes arising under this Decree, including rights of the City as a third party beneficiary of this Decree.

SO ORDERED THIS 21st DAY OF February, 2006.

/s/ Robert Holmes Bell
United States District Judge

The Attorney General for the State of Michigan, *et al.* v. Grand Trunk Western Railroad Incorporated, *et al*

Consent Decree Signature Page

THE UNDERSIGNED PARTIES enter into this Consent Decree in the matter of The Attorney General of the State of Michigan, et al., v. Grand Trunk Western Railroad Incorporated, et al., relating to the Verona Well Field Battle Creek Superfund Site.

For THE ATTORNEY GENERAL
OF THE STATE OF MICHIGAN, and the
MICHIGAN DEPARTMENT OF
ENVIRONMENTAL QUALITY

Attorney General for the State of Michigan

Date: January 12, 2006

Robert P. Reichel

Robert P. Reichel [P31878]
Assistant Attorney General
Environment, Natural Resources, and Agriculture Division
Michigan Department of Attorney General
Constitution Hall, 5th Floor, South Tower
525 West Allegan Street
Lansing, MI 48933

Date: January 13, 2006

Andrew Hogarth

Andrew Hogarth, Chief
Remediation and Redevelopment Division
Michigan Department of Environmental Quality
Constitution Hall, 4th Floor, South Tower
525 West Allegan Street
Lansing, MI 48933-2125

THIRD PARTY BENEFICIARY
CITY OF BATTLE CREEK

Date: 1/24/06

Gary A. Trepod

Gary A. Trepod (P21516)
Attorney for the City of Battle Creek
1221 Glenmeadow
East Lansing, MI 48823
Telephone: 517-332-4846
Fax: 517-332-4846

CITY OF BATTLE CREEK

Date: 10/26/04

Wayne D. Wiley

Wayne D. Wiley
City Manager for the City of Battle Creek
10 North Division
Battle Creek, MI 49014
Telephone: 269-966-3378

Bob
Reichel

The Attorney General for the State of Michigan, *et al.* v. Grand Trunk Western Railroad Incorporated, *et al.*

Consent Decree Signature Page

The UNDERSIGNED PARTY enters into this Consent Decree in the matter of The Attorney General for the State of Michigan, *et al.* v. Grand Trunk Western Railroad, *et al.*, relating to the Verona Well Field Battle Creek Superfund Site.

FOR Acheson Industries, Inc.

Date: July 28, 2005

Name: Derick B. Whyte
Title: General Manager
Address: 1600 Washington Avenue
Port Huron, MI 48060

Agent authorized to accept service on behalf of the above-signed party:

Name:
Title:
Address:

The Attorney General for the State of Michigan, *et al.* v. Grand Trunk Western Railroad Incorporated, *et al.*

Consent Decree Signature Page

The UNDERSIGNED PARTY enters into this Consent Decree in the matter of The Attorney General for the State of Michigan, *et al.* v. Grand Trunk Western Railroad, *et al.*, relating to the Verona Well Field Battle Creek Superfund Site.

FOR Arkwright, Inc.

Date: 8/14/05

Name: Phillip J. Wheeler
Title: V.P. Human Resources / CFO
Address: 538 Main St.
Fiskville, RI 02823

Agent authorized to accept service on behalf of the above-signed party:

Name:
Title:
Address:

The Attorney General for the State of Michigan, *et al.* v. Grand Trunk Western Railroad Incorporated, *et al.*

Consent Decree Signature Page

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FOR Bayer CropScience Inc. (f/k/a Aventis CropScience USA Inc., corporate successor to Stauffer Chemical Company)

Date: May 23, 2005

Name: Luke W. Mette
Title: President of Stauffer Management Company LLC, as litigation agent for Bayer CropScience Inc.
Address: 1800 Concord Pike
P. O. Box 15437
Wilmington, DE 19850-5437

Agent authorized to accept service on behalf of the above-signed party:

Name:
Title:
Address:

The Attorney General for the State of Michigan, *et al.* v. Grand Trunk Western Railroad Incorporated, *et al.*

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The UNDERSIGNED PARTY enters into this Consent Decree in the matter of The Attorney General for the State of Michigan, *et al.* v. Grand Trunk Western Railroad, *et al.*, relating to the Verona Well Field Battle Creek Superfund Site.

FOR Bayer Healthcare, Inc.

Date:

Name: Paul R. Berry
Title: Senior Vice President, General Counsel and Secretary
Address: 400 Morgan Lane, West Haven, CT 06516

Agent authorized to accept service on behalf of the above-signed party:

Name:
Title:
Address:

The Attorney General for the State of Michigan, *et al.* v. Grand Trunk Western Railroad Incorporated, *et al*

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FOR Grand Trunk Western Railroad Incorporated

Date: June 3/05

Name: Normand Pellerin
Title: Assistant Vice President, Environment
Address: Canadian National Railway Company
935 de La Gauchetiere Street West
Montreal, Quebec H3B 2M9

Agent authorized to accept service on behalf of the above-signed party:

Name: Mary P. Sclawy
Title: Attorney
Address: 888 West Big Beaver, Suite 1470
Troy, MI 48084

The Attorney General for the State of Michigan, *et al.* v. Grand Trunk Western Railroad Incorporated, *et al.*

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The UNDERSIGNED PARTY enters into this Consent Decree in the matter of The Attorney General for the State of Michigan, *et al.* v. Grand Trunk Western Railroad, *et al.*, relating to the Verona Well Field Battle Creek Superfund Site.

FOR Clark Equipment Co.

Date: 5/25/05

Name: Patricia Nachtigal
Title: Sr VP + General Counsel
Address: 155 Chestnut Ridge Road
Montvale, NJ 07645

Agent authorized to accept service on behalf of the above-signed party:

Name:
Title:
Address:

The Attorney General for the State of Michigan, *et al.* v. Grand Trunk Western Railroad Incorporated, *et al.*

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FOR E. I. DUPONT DE NEMOURS

Date: 6/9/05

Name: GUY V. JOHNSON
Title: CORPORATE COUNSEL
Address: LEGAL D-7090-2
1007 MARKET STREET
WILMINGTON, DE 19898

Agent authorized to accept service on behalf of the above-signed party:

Name: GUY V. JOHNSON
Title: CORPORATE COUNSEL
Address: E. I. du Pont de Nemours AND COMPANY
LEGAL D-7090-2
1007 MARKET ST.
WILMINGTON, DE 19898

The Attorney General for the State of Michigan, *et al.* v. Grand Trunk Western Railroad Incorporated, *et al.*

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FOR EATON CORPORATION

Date: 5-31-05

Name: LYNN R. ROGOZINSKI
Title: SENIOR ATTORNEY
Address: EATON CORP
1111 SUPERIOR AV
CLEVELAND OH 44114

Agent authorized to accept service on behalf of the above-signed party:

Name: JOHN A. FERRONI, ESQ.
Title: DYKEMA GOSSETT PLLC
Address: SUITE 700
300 OTTAWA AV., NW
GRAND RAPIDS, MI 49503-2306

The Attorney General for the State of Michigan, *et al.* v. Grand Trunk Western Railroad Incorporated, *et al.*

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The UNDERSIGNED PARTY enters into this Consent Decree in the matter of The Attorney General for the State of Michigan, *et al.* v. Grand Trunk Western Railroad, *et al.*, relating to the Verona Well Field Battle Creek Superfund Site.

FOR EMHART INDUSTRIES, INC.

Date: 5/12/05

Linda H. Biagioni

Name: Linda H. Biagioni
Title: Vice President
Address: 701 East Joppa Road
Towson, MD 21286

Agent authorized to accept service on behalf of the above-signed party:

Name: Laura Ford Brust
Title: Counsel
Address: Swidler Berlin LLP
3000 K Street, N.W., Suite 300
Washington, D.C. 20007

The Attorney General for the State of Michigan, *et al.* v. Grand Trunk Western Railroad Incorporated, *et al.*

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The UNDERSIGNED PARTY enters into this Consent Decree in the matter of The Attorney General for the State of Michigan, *et al.* v. Grand Trunk Western Railroad, *et al.*, relating to the Verona Well Field Battle Creek Superfund Site.

FOR Enodis Corporation

Date: June 8, 2005

Name: Irwin M. Shur
Title: Vice President
Address: 2227 Welbilt Blvd.
New Port Richey, FL 34653

Agent authorized to accept service on behalf of the above-signed party:

Name:
Title:
Address:

The Attorney General for the State of Michigan, *et al.* v. Grand Trunk Western Railroad Incorporated, *et al.*

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The UNDERSIGNED PARTY enters into this Consent Decree in the matter of The Attorney General for the State of Michigan, *et al.* v. Grand Trunk Western Railroad, *et al.*, relating to the Verona Well Field Battle Creek Superfund Site.

FOR Ferro Corporation

Date: X May 11, 2005

X
Name: James C. Bays
Title: Vice President & General Counsel
Address: 1000 Lakeside Avenue
Cleveland, Ohio 44114

Agent authorized to accept service on behalf of the above-signed party:

Name: James M. Friedman
Title: Attorney
Address: Benesch Friedlander Coplan & Aronoff LLP
2300 BP Tower
200 Public Square
Cleveland, Ohio 44114-2378

The Attorney General for the State of Michigan, *et al.* v. Grand Trunk Western Railroad Incorporated, *et al.*

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The UNDERSIGNED PARTY enters into this Consent Decree in the matter of The Attorney General for the State of Michigan, *et al.* v. Grand Trunk Western Railroad, *et al.*, relating to the Verona Well Field Battle Creek Superfund Site.

FOR Ford Motor Company

Date: May 10, 2005

Name: Kathryn S. Lamping
Title: Assistant Secretary
Address: One American Road
Dearborn MI 48126

Agent authorized to accept service on behalf of the above-signed party:

Name: Kathy J. Hofer
Title: Counsel
Address: Suite 1500 PTW
Three Parklane Blvd.
Dearborn, MI 48126

The Attorney General for the State of Michigan, *et al.* v. Grand Trunk Western Railroad Incorporated, *et al.*

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The UNDERSIGNED PARTY enters into this Consent Decree in the matter of The Attorney General for the State of Michigan, *et al.* v. Grand Trunk Western Railroad, *et al.*, relating to the Verona Well Field Battle Creek Superfund Site.

FOR Fort James Operating Company

Date: 6/16/05

Ronald T. Allen

Name: Ronald T. Allen
Title: Principal Counsel
Address: 133 Peachtree Street
Atlanta, GA 30305

Agent authorized to accept service on behalf of the above-signed party:

Name:
Title:
Address:

The Attorney General for the State of Michigan, *et al.* v Grand Trunk Western Railroad Incorporated, *et al.*

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The UNDERSIGNED PARTY enters into this Consent Decree in the matter of The Attorney General for the State of Michigan, *et al.* v. Grand Trunk Western Railroad, *et al.*, relating to the Verona Well Field Battle Creek Superfund Site.

FOR General Electric Company

Date: 6/15/05

Name: Paul Wm. Hare
Title: Manager, Northeast/Midwest Regions
Address: 320 Great Oaks Blvd., Suite 319
Albany, NY 12203

Agent authorized to accept service on behalf of the above-signed party:

Name: Paul Wm. Hare
Title: Manager, Northeast/Midwest Regions
Address: 320 Great Oaks Blvd., Suite 319
Albany, NY 12203

The Attorney General for the State of Michigan, *et al.* v. Grand Trunk Western Railroad Incorporated, *et al.*

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The UNDERSIGNED PARTY enters into this Consent Decree in the matter of The Attorney General for the State of Michigan, *et al.* v. Grand Trunk Western Railroad, *et al.*, relating to the Verona Well Field Battle Creek Superfund Site.

FOR HLI Operating Company, Inc.
(f/k/a Motor Wheel Corporation)

Date: June 6, 2005

Name: Patrick C. Cauley
Title: Vice President, General Counsel & Secretary
Address: 15300 Centennial Dr.
Northville, Michigan 48167

Agent authorized to accept service on behalf of the above-signed party:

Name: Same as above
Title:
Address:

The Attorney General for the State of Michigan, *et al.* v. Grand Trunk Western Railroad Incorporated, *et al.*

Consent Decree Signature Page

The UNDERSIGNED PARTY enters into this Consent Decree in the matter of The Attorney General for the State of Michigan, *et al.* v. Grand Trunk Western Railroad, *et al.*, relating to the Verona Well Field Battle Creek Superfund Site.

FOR HONEYWELL INC.

Date: 25 JULY 2005

Name: TROY J. MEYER
Title: REMEDIATION PORTFOLIO DIRECTOR
Address: 101 COLUMBIA RD, MEY-3
MORRISTOWN NJ 07962

Agent authorized to accept service on behalf of the above-signed party:

Name:
Title:
Address:

The Attorney General for the State of Michigan, *et al.* v. Grand Trunk Western Railroad Incorporated, *et al.*

Consent Decree Signature Page

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FOR Hoover Group, Inc. (as successor entity to Hoover Universal, Inc.)

Date: June 8, 2005

Name: Ernest Mathia
Title: President
Address: 12725 Morris Road, Suite 310
Alpharetta, GA 30004

Agent authorized to accept service on behalf of the above-signed party:

Name:
Title:
Address:

The Attorney General for the State of Michigan, *et al.* v. Grand Trunk Western Railroad Incorporated, *et al.*

Consent Decree Signature Page

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FOR Interkal, Inc.

Date: May 31, 2005

Name: Andrew G. Pietrini
Title: President of UIS, Inc., as the alleged successor to certain liabilities of "Interkal" and "Vecta"
Address: c/o UIS, Inc.
15 Exchange Place
Jersey City, NJ 07302-3912

Agent authorized to accept service on behalf of the above-signed party:

Name: Michael B. Ortega, Esq.
Title: Attorney
Address: Lewis Reed & Allen P.C.
136 East Michigan Ave., Suite 800
Kalamazoo, MI 49007-3975

The Attorney General for the State of Michigan, *et al.* v. Grand Trunk Western Railroad Incorporated, *et al.*

Consent Decree Signature Page

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FOR INX INTERNATIONAL INK COMPANY

Date: June 15, 2005

Name: ROBERT C. OSMUNDSEN
Title: SECRETARY
Address: SUITE 700
150 Martingale
SCHAUMBURG, IL 60173

Agent authorized to accept service on behalf of the above-signed party:

Name: CT CORPORATION SYSTEM
Title: 208 SOUTH LASALLE, SUITE 814
Address: CHICAGO, IL 60604-1101

The Attorney General for the State of Michigan, *et al.* v. Grand Trunk Western Railroad Incorporated, *et al.*

Consent Decree Signature Page

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FOR KRAFT FOODS GLOBAL, INC. (f/k/a GENERAL FOODS CORPORATION)

Date: May 12, 2005

Name: Philip M. McAndrew
Title: Director Environmental Affairs
Address: Kraft Foods Global, Inc.
Three Lakes Dr.
Northfield, IL 60093-2753

Agent authorized to accept service on behalf of the above-signed party:

Name: Thomas M. Giller
Title: Chief Environmental & Safety Counsel
Address: Kraft Foods Global, Inc.
Three Lakes Dr.
Northfield, IL 60093-2753

The Attorney General for the State of Michigan, *et al.* v. Grand Trunk Western Railroad Incorporated, *et al.*

Consent Decree Signature Page

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FOR THE LEISURE GROUP, INC.

Date: 5-17-05

Name: ARTHUR B. LEACH
Title: CORPORATE SECRETARY
Address: 445 S. FIGUEROA #3250
LOS ANGELES CA 90071

Agent authorized to accept service on behalf of the above-signed party:

Name:
Title:
Address:

The Attorney General for the State of Michigan, *et al.* v. Grand Trunk Western Railroad Incorporated, *et al.*

Consent Decree Signature Page

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FOR METALDYNE MACHINING AND ASSEMBLY COMPANY, INC.

Date: June 6, 2005

Name: R. JEFFREY POLLOCK
Title: GENERAL COUNSEL & SECRETARY
Address: 47603 HALYARD DR., PLYMOUTH, MI 48170

Agent authorized to accept service on behalf of the above-signed party:

Name:
Title:
Address:

The Attorney General for the State of Michigan, *et al.* v. Grand Trunk Western Railroad Incorporated, *et al.*

Consent Decree Signature Page

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FOR The O'Brien Corporation

Date: May 10, 2005

Thomas F. Karaba

Name: Thomas F. Karaba
Title: Attorney
Address: See Below

Agent authorized to accept service on behalf of the above-signed party:

Name: Thomas F. Karaba
Title: Attorney
Address: Crowley Barrett & Karaba, Ltd.
20 S. Clark Street
Suite 2310
Chicago, IL 60603

The Attorney General for the State of Michigan, *et al.* v. Grand Trunk Western Railroad Incorporated, *et al.*

Consent Decree Signature Page

The UNDERSIGNED PARTY enters into this Consent Decree in the matter of The Attorney General for the State of Michigan, *et al.* v. Grand Trunk Western Railroad, *et al.*, relating to the Verona Well Field Battle Creek Superfund Site.

FOR Rieke Corporation

Date: 6/8/2005

Name: Joshua A. Sherbin
Title: General Counsel
Address: 39400 Woodward Avenue
Bloomfield Hills MI 48304

Agent authorized to accept service on behalf of the above-signed party:

Name: Joshua Sherbin
Title: General Counsel
Address: 39400 Woodward Avenue
Bloomfield Hills MI 48304

The Attorney General for the State of Michigan, *et al.* v. Grand Trunk Western Railroad Incorporated, *et al.*

Consent Decree Signature Page

The UNDERSIGNED PARTY enters into this Consent Decree in the matter of The Attorney General for the State of Michigan, *et al.* v. Grand Trunk Western Railroad, *et al.*, relating to the Verona Well Field Battle Creek Superfund Site.

FOR Tomkins Industries, Inc

Date: 6/1/05

Name: Mildred P. Woryk
Title: Assistant Secretary
Address: 6450 Poe Avenue, Suite 109
Dayton, OH 45414

Agent authorized to accept service on behalf of the above-signed party:

Name: Athan A. Vinolus
Title: Counsel
Address: 6450 Poe Avenue, Suite 109
Dayton, OH 45414

The Attorney General for the State of Michigan, *et al.* v. Grand Trunk Western Railroad Incorporated, *et al.*

Consent Decree Signature Page

The UNDERSIGNED PARTY enters into this Consent Decree in the matter of The Attorney General for the State of Michigan, *et al.* v. Grand Trunk Western Railroad, *et al.*, relating to the Verona Well Field Battle Creek Superfund Site.

FOR The Valspar Corporation

Date: June 1, 2005

Ronda Bayer, Associate General Counsel

Name: Ronda D. Bayer
Title: Association General Counsel
Address: 1101 South 3rd Street
Minneapolis, MN 55415

Agent authorized to accept service on behalf of the above-signed party:

Name: Same as above
Title:
Address:

ATTACHMENT 1

Verona Well Field Site RD/RA Group

The Attorney General of the State of Michigan v.
Grand Trunk Western Railroad, Incorporated

Attachment 1

Members of the Verona Well Field Site RD/RA Group

Grand Trunk Western Railroad, Incorporated
Kraft Foods Global Inc. (f/k/a Kraft Food North America, Inc., f/k/a General Foods Corporation)
Emhart Industries, Inc. (USM)
Hoover Group, Inc. (as successor entity to Hoover Universal, Inc.) (AE Division)
The O'Brien Corporation
Bayer Cropscience Inc. (f/k/a Aventis Cropscience USA, Inc.) (corporate successor to Stauffer Chemical Company)
General Electric Company
Fort James Operating Company (responding for James River Corporation of Virginia)
Arkwright Inc.
Eaton Corporation
Metaldyne Corporation (f/k/a Metaldyne Machining and Assembly Company, Inc.) (on behalf of Edon Machine)
Rieke Corporation
Honeywell International, Inc. (f/k/a Honeywell, Inc.) (as successor to Sinclair and Valentine Company, Inc.)
The Leisure Group, Inc.
Ford Motor Company
Clark Equipment Company
Inx International Ink Company (f/k/a Acme Printing Ink Company)
Ferro Corporation
Tomkins Industries, Inc. (f/k/a Bath Fixtures Corporation and Phillips Industries, Inc.)
HLI Operating Company, Inc. (f/k/a Motor Wheel Corporation)
Bayer Corporation (f/k/a Bayer Healthcare, Inc., f/k/a Miles, Inc.)
Acheson Industries, Inc.
E.I. DuPont de Nemours and Company
Edonis Corporation, (as successor to Kysor Industrial Corporation)
UIS, Inc. (f/k/a Interkal, Inc.)
The Valspar Corporation

ATTACHMENT 2

Schedule of Major Deliverables and Stipulated Penalties

ATTACHMENT 2

Submission/Task	Deliverable/Task Schedule	Subject to Stipulated Penalties & Penalty Schedule
Construction And Commencement Of Operation Of The Enhanced System (Northern and Southern Blocking Well Systems)		
I.1 Interim 80% Design/Build Document and meeting for the Enhanced System.	Submit 80% Interim Design/Build Document including summary reports of the Source Area aquifer performance tests, within 16 weeks of entry of the Decree. Conduct meeting within 20 weeks of entry of the Decree. Task completed in two phases. Enhanced System Bypass Piping Design Build Document Final document, March 13, 2003; MDEQ approval March 31, 2003; EPA approval April 16, 2003. Enhanced System Design Build Document Draft August 26, 2003; MDEQ approval September 23, 2003; EPA approval October 14, 2003.	No
I.2 Final Design/Build Document for the Enhanced System	Submit approvable Design/Build Document within 8 weeks of the latter of entry of this Decree or receipt of MDEQ and any USEPA final comments on the Interim 80% Design/Build Document for the Enhanced System. Task completed. Enhanced System Design Build Document Final December 15, 2003; MDEQ approval February 24, 2004; EPA approval February 12, 2004.	Yes, B
I.3 Construct Enhanced System (actual in field construction)	Start within 17 weeks of the latter of entry of this Decree or receipt of MDEQ and any required USEPA approval or approval with modifications of the Final Design/Build Document for the Enhanced System. Task completed in two phases. Enhanced System Bypass Piping construction completed on May 31, 2003. Enhanced System construction completed on June 21, 2004.	No

ATTACHMENT 2

Submission/Task	Deliverable/Task Schedule	Subject to Stipulated Penalties & Penalty Schedule
Construction And Commencement Of Operation Of The Enhanced System (Northern and Southern Blocking Well Systems)		
I.4 Pre-Final Inspection of Enhanced System	Conduct with MDEQ and USEPA within one week of completion of construction of the Enhanced System. Task completed in two phases. Enhanced System Bypass Piping inspection July 23, 2003; MDEQ approval October 30, 2003; EPA approval July 28, 2003. Enhanced System inspection June 21, 2004. MDEQ approval July 8, 2004. EPA approval September 3, 2004.	No
I.5 Commence Operation, Maintenance and Monitoring Of The Enhanced System.	Commence operation, maintenance, and monitoring in accordance with the Operation and Maintenance Plan and the GWMP within 38 weeks of the latter of entry of this Decree or receipt of MDEQ and any required USEPA approval or approval with modifications of the Final Design/Build Document for the Enhanced System. Task completed in two phases. Restart of system after construction of Enhanced System Bypass Piping May 31, 2003. Startup of enhanced system June 21, 2004.	Yes, B
I.6 Completion of Punch List Items and Final Inspection of the Enhanced System	Complete within 4 weeks after development of a combined punch list by the MDEQ, the USEPA and the Defendants during the pre-final inspection of construction of the Enhanced System. Enhanced System inspection June 21, 2004. MDEQ approval July 8, 2004. EPA approval September 3, 2004.	No
I.7 Construction Completion Report and Operation and Maintenance Plan for the Enhanced System	Submit within 12 weeks of the Enhanced System Inspection. Modified submittal date agreed to by MDEQ and Defendants on September 30, 2004 to within 12 weeks of EPA approval September 3, 2004. Submitted November 5, 2004; MDEQ approval January 3, 2005; EPA approval of Construction Completion Report January 26, 2005.	Yes, A

ATTACHMENT 2

Submission/Task	Deliverable/Task Schedule	Subject to Stipulated Penalties & Penalty Schedule
Construction And Commencement Of Operation Of Enhanced System Upgrades (Northern and Southern Blocking Well Systems)		
II.1 Construct and Operate Enhanced System Upgrade(s) in Accordance with the Design/Build Document for the Enhanced System and the VWFMP.	Complete and commence operation of any Enhanced System Upgrade(s) within 6 months after decision is made pursuant to paragraph 6.14(e) of the Decree and Section 9.1 of the VWFMP that the specific upgrade(s) should be implemented.	Yes, B
II.2 Pre-Final Inspection of Enhanced System Upgrade	Conduct with MDEQ and USEPA within one week of construction completion of the Enhanced System Upgrade.	No
II.3 Completion of Punch List Items and Final Inspection of the Enhanced System Upgrade	Complete within 3 weeks of development of a combined punch list by MDEQ, USEPA, and the Defendants during the Pre-Final Inspection of construction of Enhanced System Upgrade.	No
II.4 Construction Completion Report for the Enhanced System Upgrade and Operation and Maintenance Plan Addendum	Submit within 6 weeks of the Final Inspection of the Enhanced System Upgrade.	Yes, A

ATTACHMENT 2

Submission/Task	Deliverable/Task Schedule	Subject to Stipulated Penalties & Schedule
Source Area Enhancements (at Annex and/or Paint Shop)		
III.1 Draft Scope of Work (SOW) for the Annex and/or Paint Shop Source Area Enhancements, with Detailed Phase 1 Scope and Cost	Submitted June 13, 2001; resubmitted on January 27, 2004 and February 27, 2004. MDEQ approval June 10, 2004.	NA
III.2 Implement Phase 1 of the Draft SOW - Paint Shop Recovery Well (RW) Installations and Aquifer Performance Tests.	Completed	N/A
III.3 Report of Paint Shop and Annex Aquifer Test Results/Evaluation, Groundwater Modeling of Source Area Enhancements, Impact on Enhanced System, and Conceptual Design of Enhancements	Completed: Summary of 2002 Aquifer Testing at the Annex and Paint Shop Source Areas; Draft Joint Consent Decree, Attachment 2, Deliverable Items III.3 and IV.3, dated September 30, 2002	N/A
III.4 Final SOW (Design/Build Document) for Source Area Enhancements, with Actual Cost for Design and Cost Estimate for Construction (Phase 3A) and Operation and Maintenance (Phase 3B) and Preliminary Operation and Maintenance Plan	Submit approvable final SOW within 8 weeks of the latter of entry of this Decree or receipt of MDEQ final written comments on the Conceptual Design of Enhancements. MDEQ August 9, 2004. Draft SOW submitted June 13, 2001; resubmitted on January 27, 2004 and February 27, 2004. MDEQ approval June 10, 2004.	Yes, B
III.5 Construct and Operate Source Area Enhancements (SAE) (Phase 3A).	Complete construction and commence operation within 34 weeks of the latter of entry of this Decree or receipt of MDEQ approval of the SOW (Design/Build Document) for Source Area Enhancements, as pursuant to the MDEQ approval of the SOW on August 9, 2004. Start up of Annex SAE on November 19, 2004.	Yes, B
III.6 Pre-final Inspection of Source Area Enhancements	Conduct with MDEQ within one week of construction completion of the Source Area Enhancements.	N/A
III.7 Completion of Punch List Items and Final Inspection of the Source Area Enhancements	Complete within 4 weeks of development of a combined punch list by MDEQ and the Defendants during the Pre-final Inspection of construction of Source Area Enhancements.	No
III.8 Construction Completion Report for Source Area Enhancements	Submit within eight weeks of commencing operation of Source Area Enhancements. Submitted November 23, 2004; MDEQ approval January 3, 2005.	Yes, A

ATTACHMENT 2

Submission/Task	Deliverable/Task Schedule	Subject to Stipulated Penalties & Schedule
Annex Upgrades to Improve Source Area Capture (Pursuant to 1991 ROD)		
IV.1 Draft Annex Scope of Work (SOW) for Recovery Well (RW) Installation and Aquifer Performance Test	Submitted June 13, 2001 MDEQ approval August 22, 2001	N/A
IV.2 Implement Annex RW Installation and Aquifer Performance Test.	Completed	N/A
IV.3 Summary Report of Annex Aquifer Test Results/Evaluation	Submitted: Summary of 2002 Aquifer Testing at the Annex and Paint Shop Source Areas; Draft Joint Consent Decree, Attachment 2, Deliverable Items III.3 and IV.3, dated September 30, 2002	N/A
IV.4 Interim Design/Build Document for Annex Upgrade	Draft submitted May 22, 2003. MDEQ approval June 20, 2003.	No
IV.5 Design/Build Document for Annex Upgrades including Interim Operation and Maintenance Plan	Submit approvable Design/Build Document within 8 weeks of the latter of entry of this Decree or receipt of MDEQ and USEPA final comments on the Interim Design/Build Document for the Annex Upgrade. Completed in the following documents: Annex Recovery System Upgrades Design Build Document Final June 20, 2003; MDEQ approved July 9, 2003, EPA approved July 19, 2003. Annex Upgrades Construction Schedule and Initial Hydraulic Monitoring Scope of Work August 26, 2003; MDEQ and EPA approval September 12, 2003. Groundwater Quality and Hydraulic Monitoring During 1st Year of Operation of Annex Upgrades November 12, 2003.	No
IV.6 Construct Annex Upgrades.	Start within 17 weeks of the latter of entry of this Decree or receipt of USEPA and any required MDEQ approval or approval with modifications of the Design/Build Document for Annex Upgrades. Completed September 12, 2003.	No
IV.7 Prefinal Inspection of Annex Upgrades	Conduct with USEPA and MDEQ within one week of construction completion of the Annex Upgrades. Completed September 29, 2003.	No
IV.8 Commence Operation Of The Annex Upgrades.	Commence within 38 weeks of the latter of entry of this Decree or receipt of USEPA and any required MDEQ approval or approval with modifications of the Design/Build Document for the Annex Upgrades. Startup began September 15, 2003.	Yes, B

ATTACHMENT 2

IV.9 Completion of Punch List Items and Final Inspection of the Annex Upgrades	Complete within 4 weeks after development by USEPA, the Defendants and the MDEQ of a combined punch list from the Pre-Final Inspection of Construction of Annex Upgrades. MDEQ approval December 11, 2003; EPA approval December 18, 2003.	No
IV.10 Construction Completion Report and Operation and Maintenance Plan for Annex Upgrades	Submit within 12 weeks of Final Inspection of Enhanced System per EPA approval December 18, 2003. Modified submittal date agreed to by MDEQ and Defendants on September 30, 2004 to within 12 weeks of EPA approval September 3, 2004. Submitted November 5, 2004; MDEQ approval January 3, 2005; EPA approval Construction Completion Report January 25, 2005.	Yes, A

ATTACHMENT 2

Submission/Task	Deliverable/Task Schedule	Subject to Stipulated Penalties & Schedule
Development and Completion of the Verona Well Field Management Plan (VWFMP)		
V.1 Submit the Defendant's Portion of the Draft VWFMP.	Submit within 12 weeks of the latter of this Decree or submittal of the Final Design/Build Document for the Enhanced System.	No
V.2 Compile *Draft* VWFMP upon Receipt of all Individual Sections from Each VWFMP Party.	Submit within 6 weeks of receipt of all other individual sections from remaining VWFMP Parties.	No
V.3 Submit the Defendant's Portion of the Final VWFMP with all "revised as final" Sections.	Submit within 4 weeks of receipt of comments from all other VWFMP Parties.	Yes, A
V.4 Compile *Final* VWFMP upon Receipt of all "revised as final" Sections from each VWFMP Party.	Submit within 8 weeks of receipt of all "revised as final" sections from each VWFMP party.	No

ATTACHMENT 2

Submission/Task	Deliverable/Task Schedule	Subject to Stipulated Penalties & Schedule
OPERATION AND MAINTENANCE OF THE REMEDIAL ACTION PURSUANT TO The Verona Well Field Management Plan (VWFMP)		
VI.1 Operate the Remedy		
(a) Operate the Enhanced System and Enhanced System Upgrades.	Operate the Enhanced System and Enhanced System Upgrades until approval to cease response activities is given by MDEQ pursuant to this Decree.	Yes, B
(b) Operate Annex Source Area response activities (including upgrades).	Operate Annex Source Area response activities (including upgrades) until approval to cease response activities is given by MDEQ pursuant to this Decree.	Yes, B
VI.2 Achieve Performance Objectives		
(a) Achieve Operational Compliance Criteria for the Enhanced System at all Points of Operational Compliance identified in the VWFMP, except for the intake to the city's iron removal plant, pursuant to Paragraph 6.1(c)(i and iv) of this Decree.	(a) Meet until Certification of Completion is issued pursuant to Section XXII (Certification of Completion of Remedial Action). If Operational Compliance Criteria for the Enhanced System at all Points of Operational Compliance identified in the VWFMP, except for the intake to the City's iron removal plant, pursuant to Paragraph 6.1(c)(i and iv), are not met*, Defendants shall take the following actions:	(a) Yes, B, unless the Defendants take the actions described in VI.2(a) (1) – (3)
	(1) Defendants shall carry out an Immediate Contingency Response comprised of the steps shown in Flow Chart #1, attached, which shall be completed within nine weeks, or such longer period as approved by MDEQ, after receipt of a groundwater sampling result with completed quality assurance and quality control documentation ("Initial Sampling Result"[1]) which shows presence of a COC at a Point of Operational Compliance at a concentration either i) above Operational Compliance Criteria or ii) indicating an increasing trend in contamination.	(1) Stipulated Penalties shall accrue according to Schedule B for each day that completion of the Immediate Contingency Response exceeds nine weeks or such longer period as approved by MDEQ. Stipulated Penalties shall also accrue for failure to collect a "Confirmation Sample(s)"[2] requesting a three day sample analysis within one week of receipt of the Initial Sampling Result, and for failure to initiate any required "Initial Response"[3] within three weeks of receipt of the Initial Sampling Result if the Confirmation

[1] Box 2 of Flow Chart #1
[2] Box 3 of Flow Chart #1.
[3] Box 6 on Flow Chart #1.

	Upon completion of the Immediate Contingency Response, Defendants shall recommend that either: (i) No "Corrective Measure(s)" are required; or (ii) Specific Corrective Measure(s) should be performed to achieve or maintain the Operation Compliance Criteria.	Sample(s) confirm the exceedance or an increasing trend.
	(2) If Corrective Measure(s) are required and MDEQ concurs in the recommended measure, then within 2 weeks after receipt of written notice of MDEQ approval, or such longer period as approved by MDEQ, Defendants shall submit to MDEQ a work plan to implement the Corrective Measure(s) together with a schedule for implementation of the Corrective Measure(s) which includes completion dates for each milestone on Flow Chart #2 and an estimate of the period required to achieve compliance with the Operational Compliance Criteria after implementation of the Corrective Measure, with all time periods measured from the date upon which Defendants receive MDEQ's written approval of the work plan.	(2) Stipulated penalties shall accrue according to Schedule B for each day that submittal of the Corrective Measure(s)[4] work plan exceeds two weeks or such longer period as approved by MDEQ.
	(3) Upon MDEQ's approval of the work plan, the Defendants shall implement the work plan according to the approved schedule or such longer period as approved by MDEQ**.	(3) Stipulated penalties shall accrue according to Schedule B for each day that the "Completion of Implementation"[5] or "Achievement of Operational Compliance"[6] exceeds the date set forth in the approved schedule, or such longer period as approved by MDEQ. However Stipulated Penalties shall not accrue if Defendants are pursuing an "Alternative Strategy"[7] in accordance with Flow Chart #2.
(b) Operate the Enhanced System to prevent the migration of	(b) Meet until Certification of Completion is issued pursuant to	(b) Yes, B, but not imposed unless the Defendants fail to

[4] Box 12 on Flow Chart #2
[5] Box 14 on Flow Chart #2
[6] Box 17 on Flow Chart #2
[7] Box 19 on Flow Chart #2

groundwater contaminated above Operational Compliance Criteria, due to releases from the Annex Source Area, Paint Shop Source Area, and the Raymond Road Source Area, beyond the Southern and Northern Blocking Well Lines through a combination of hydraulic control and chemical containment. This will be demonstrated through an evaluation of a combination of hydraulic and chemical monitoring data and other evaluation methods agreed upon by the Parties pursuant to Paragraph 6.1(c)(i) of this Decree.	Section XXII (Certification of Completion of Remedial Action).	perform Task VI.3(a) and (c).

ATTACHMENT 2

Submission/Task	Deliverable/Task Schedule	Subject to Stipulated Penalties & Schedule
OPERATION AND MAINTENANCE OF THE REMEDIAL ACTION PURSUANT TO The Verona Well Field Management Plan (VWFMP)		
(c) Operate the Enhanced System so as to maintain non-detect or no greater than naturally occurring background levels at the intake to the City's iron removal plant for Contaminants of Concern attributable to the Annex Source Area, Paint Shop Source Area, Raymond Road Source Area or other source areas at which the Defendants are responsible for a release or a threat to release pursuant to Paragraph 6.1(c)(iii) of this Decree.	(c) Meet until Certification of Completion is issued pursuant to Section XXII (Certification of Completion of Remedial Action). (1) Defendants demonstrate the COC above Non-Detect is below naturally occurring background concentrations. (2) At the time the intake Confirmation Sample(s) results were received by Defendants, Defendants had already commenced an Immediate Contingency Response which was then ongoing or which had led to a corrective measure which was then under implementation. (3) If at the preceding sampling event: i) all COCs at the intake for the City's iron removal plant were below Non-detect; and ii) any COC(s) detected at immediately upgradient Points of Operational Compliance were below Operational Compliance Criteria and/or below trigger levels specified in Attachment 2A ; and Defendants carry out an Immediate Contingency Response comprised of the steps shown in Flow Chart #1, attached, which shall be completed within nine weeks or such longer period as approved by MDEQ after receipt of an Initial Sampling Result which shows presence of a COC above Non-Detect at the intake. Upon completion of the Immediate Contingency Response, Defendants shall recommend that either: i) No Corrective Measure(s) are required; or ii) Specific Corrective Measure(s) should be implemented in order to achieve or maintain the Operational Compliance Criteria.	(c) Yes, B, except as discussed in VI.2(c) (1) – (3) (1) None (2) None (3) Stipulated Penalties shall accrue according to Schedule B for each day that completion of the Immediate Contingency Response exceeds nine weeks or such longer period as approved by MDEQ. Stipulated Penalties shall also accrue at Schedule B for failure to collect a Confirmation Sample(s) requesting a three day sample analysis within one week of receipt of the Initial Sampling Result, and for failure to initiate any required Initial Response within three weeks of receipt of the Initial Sampling Result if the Confirmation Sample(s) confirm the exceedance.

	(A) If Corrective Measure(s) are required and MDEQ concurs in the recommended measure, then within 2 weeks after receipt of written notice of MDEQ approval or such longer period as approved by MDEQ, Defendants shall submit to MDEQ a work plan to implement the Corrective Measure(s) together with a schedule for implementation of the Corrective Measure(s) which includes completion dates for each milestone on Flow Chart #2 and an estimate of the period required to achieve the Operational Compliance Criteria after implementation of the Corrective Measure(s), with all time periods measured from the date upon which Defendants receive MDEQ's written approval of the work plan.	(A) Stipulated penalties shall accrue according to Schedule B for each day that submittal of the Corrective Measure(s)work plan exceeds two weeks or such longer period as approved by MDEQ.
	(B) Upon MDEQ's approval of the Corrective Measure(s) work plan, the Defendants shall implement the work plan according to the approved schedule, or such longer period as approved by MDEQ**.	(B) Stipulated penalties shall accrue according to Schedule B for each day that the milestones Completion of Implementation or Achievement of Operational Compliance exceeds the respective completion date set forth in the approved schedule, or such longer period as approved by MDEQ. However Stipulated Penalties shall not accrue if Defendants are pursuing an Alternative Strategy in accordance with Flow Chart #2
(d) Achieve Operational Compliance Criteria for the Annex Source Area at all Points of Operational Compliance for that area identified in the VWFMP, pursuant to Paragraph 6.1(d)(i) of this Decree.	(d) Meet from 3 years after the Annex Upgrades are constructed until Approval of Performance for the Annex Source Area Groundwater is issued pursuant to Paragraph 6.9(b).	(d) Yes, B, but not imposed unless the Defendants fail to perform Task VI.3(b) and (c).

* Note: An exceedance is an analytical result above the appropriate Operational Compliance Criteria at a Point of Operational Compliance which has been confirmed by resampling.

** Note: The Defendants may request in writing a modification to an approved work plan or an approved schedule referenced in VI.2 above. Upon written approval by MDEQ, such modifications will become effective. The Defendants are required to continue performance of the work plan according to its schedule until MDEQ approves any requested modification to the work plan or its schedule, unless MDEQ has agreed otherwise in writing.

ATTACHMENT 2

Submission/Task	Deliverable/Task Schedule	Subject to Stipulated Penalties & Schedule
OPERATION AND MAINTENANCE OF THE REMEDIAL ACTION PURSUANT TO The Verona Well Field Management Plan (VWFMP)		
VI.3 Perform Contingency Plan (a) Perform All Relevant Contingency Plan Components, if the Enhanced System fails, including the Paint Shop Source Area Remediation, to meet the Performance Objectives of Paragraph 6.1(a)(c) and (d)(iii, iv and vi) of this Decree.	(a) Perform Contingency Plan components within the time specified in the Contingency Plan in the VWFMP.	(a) Yes, B, unless stipulated penalties are pursued by the state under VI.2.
(b) Perform All Relevant Contingency Plan Components If the Annex Source Area Remediation fails to meet the Performance Objectives of Paragraph 6.1(a),(c) and (d)(i, ii and v) of this Decree.	(b) Perform Contingency Plan components within the time specified in the Contingency Plan in the VWFMP	(b) Yes, B, unless stipulated penalties are pursued by the state under VI.2.
(c) Perform all other relevant Contingency Plan components	(c) Perform Contingency Plan components within the time specified in the Contingency Plan in the VWFMP	(c) Yes, A
VI.4 Perform the Scope of Work for the Source Area Enhancements pursuant to Paragraph 6.1(e) of this Decree.	Continue until completion of the Scope of Work	Yes, B
VI.5 Perform all monitoring activities required by the GWMP in the VWFMP to meet Performance Objectives in Paragraph 6.1(a)(i) of this Decree.	Meet until Certification of Completion of Remedial Action is issued pursuant to Section XXII of this Decree	Yes, B
(a) Evaluate the ability of the piezometer lines to determine the effectiveness of capture and identify appropriate hydraulic criteria for long-term remedy evaluation.	(a) Submit evaluation of piezometer lines and proposed hydraulic criteria for long-term remedy evaluation within 65 weeks of commencing operation of the enhanced system. Submitted February 2, 2005; MDEQ approval March 3, 2005.	Yes A
VI.6 Perform Operation and Maintenance as necessary to meet the requirements of the applicable Operation and Management Plan.	Perform until Certification of Completion of Remedial Action is issued pursuant to Section XXII of this Decree	Yes, A
VI.7 Implement the Interim Well Abandonment Plan in the VWFMP at the Relevant Facility	Upon MDEQ and USEPA approval of the Interim Well Abandonment Plan and in accordance with its schedule	No
VI.8 Implement the Defendant's Component of the Final Well Abandonment Plan in the VWFMP at the Relevant Facility	Start within 12 weeks of USEPA/MDEQ approval or approval with modifications. Complete according to schedule in the Final Well Abandonment Plan.	No

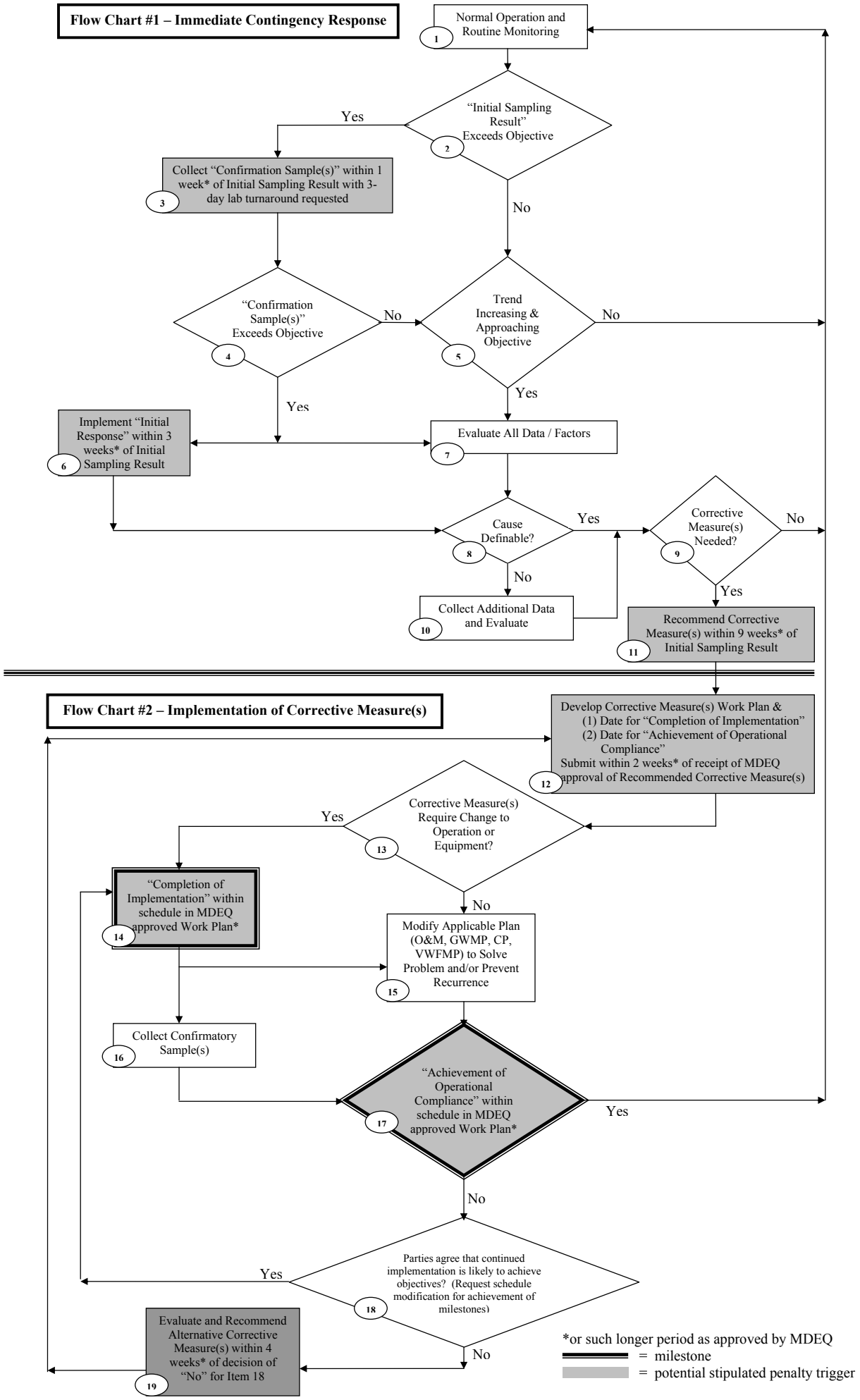
ATTACHMENT 2

Submission/Task	Deliverable/Task Schedule	Subject to Stipulated Penalties & Schedule
ADDITIONAL REQUIREMENTS		
VII.1 Establish, Fund, and Maintain a Financial Assurance Mechanism (FAM) in accordance with Paragraph 6.13 of this Decree	In accordance with the schedule in Paragraph 6.13 of this Decree	Yes, B
VII.2 Provide Updated Operation and Maintenance Costs for the Remedial Action	In accordance with the schedule in Paragraph 6.13 of this Decree	No
VII.3 Update the Amount of the Financial Assurance Mechanism as Required	In accordance with the schedule in Paragraph 6.13 of this Decree	Yes, A
VII.4 Implement Land Use and Resource Use Restrictions in accordance with Paragraph 6.7 of this Decree	In accordance with the schedule in Paragraph 6.7 of this Decree	Yes, A

Penalty Schedule A
$100 per day for days 1 to 14
$150 per day for days 15 to 30
$250 per day for all days after 30

Penalty Schedule B
$1,000 per day for days 1 to 14
$1,500 per day for days 15 to 30
$2,500 per day for all days after 30

Version 9/30/04



ATTACHMENT 2A

Proposed Concentrations at Northern Blocking Well Line Points of Operational Compliance that would Trigger the Contingency Plan
Verona Well Field Site

		A	B	C
Contaminant	Target Detection Limit[1] (ug/L)	Groundwater Cleanup Objective (CUO)[2] (ug/L)	Estimated Maximum Concentration Allowed at POC (per mass balance of City wells)[3] (ug/L)	**Concentration at NBW Line POC that Triggers Contingency Process[4] (ug/L)**
				Lower of Column A and B
Acetone	100	730	1222	**730**
Benzene	1	1	11	**1**
Carbon tetrachloride	1	1	11	**1**
Chlorobenzene	1	100	11	**11**
Chloroform	1	77	11	**11**
1,1-Dichloroethane	1	880	11	**11**
1,2-Dichloroethane	1	1	11	**1**
1,1-Dichloroethene	1	7	11	**7**
cis-1,2-Dichloroethene	1	70	11	**11**
trans-1,2-Dichloroethene	1	100	11	**11**
Ethylbenzene	1	74	11	**11**
Methylene chloride	5	5	60	**5**
Tetrachloroethene	1	1.4	11	**1.4**
Toluene	1	790	11	**11**
1,1,1-Trichloroethane	1	200	11	**12**
1,1,2-Trichloroethane	1	1	11	**1**
Trichloroethene	1	2.5	11	**2.5**
Vinyl chloride	1	1	11	**1**
Xylenes	3	280	36	**36**

[1] Target Detection Limit per MDEQ Op Memo #6, version 11/16/98.
[2] CUOs per ESD Table 1.

[3] Concentration calculated from mass balance calculations of City production wells (calculations available upon request). Value shown reflects the maximum concentration that could be detected at a City production well without causing a detect at the iron removal plant influent tap. For conservatism, this value was then assumed to be the maximum value allowed at a NBW line POC.

[4] Concentration at POC that would trigger the contingency plan. It reflects the lower value of columns A and B, and represents the maximum concentration allowed at a NBW line POC. These values are conservative because they assume no dilution occurs between the POCs and the City production wells or within the City production header system. Concentrations higher than these values at a NBW line POC could theoretically (assuming no dilution) result in a detection at the iron removal plant influent tap.

SOURCE: Progressive's memo titled *Summary of Proposed Trigger Concentrations for NBW Line Points of Operational Compliance*, Table 3, dated 11/4/02.

ATTACHMENT 3

Explanation of Significant Difference

ATTACHMENT 3
March 2005

2003 EXPLANATION OF SIGNIFICANT DIFFERENCES FOR THE VERONA WELL FIELD SUPERFUND SITE BATTLE CREEK, MICHIGAN

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LIST OF ATTACHMENTS

1. 2003 ESD TABLE 1: VERONA WELL FIELD, BATTLE CREEK, MICHIGAN IDENTIFICATION OF CONTAMINANTS OF KNOWN CONCERN FOR SOIL AND GROUND-WATER (GW) MONITORING; IDENTIFICATION OF POTENTIAL CONTAMINANTS OF CONCERN FOR SOURCE AREA GW MONITORING; IDENTIFICATION AND DERIVATION OF UPDATED GW CLEANUP OBJECTIVES (CUOs), WHICH ARE ALSO THE SOIL CUOs if SPLP TESTS RESULTS ARE AVAILABLE; AND SOIL CUOs FOR TOTAL VOC ANALYSES

2. 2003 ESD TABLE 2: COMPARISON OF RANGE OF ALUMINUM, IRON AND SODIUM DETECTIONS IN PAINT SHOP GROUND-WATER WITH BACKGROUND, MDEQ CRITERIA, AND EPA REGION 9 PRGS FOR TAP WATER

3. 2003 ESD TABLE 3: RATIO OF MAXIMUM DETECTIONS FROM 1999 – 2001 TO 1991 ROD CUOs AND 2003 ESD CUOs

4. FIGURE 1: VERONA WELL FIELD SUPERFUND SITE [COLORED MAP]

5. FIGURE 2: VERONA WELL FIELD SUPERFUND SITE 3D SURFACE TERRAIN MODEL [COLORED]

6. THOMAS SOLVENT RAYMOND ROAD REMEDIAL ACTION EXTRACTION SYSTEM, VICINITY MAP, AND EXTRACTION WELL FORCE MAIN (EFM) ROUTING

7. FIGURE 9, EXTRACTION WELL LOCATIONS, FROM THE 1985 ROD

8. UPDATED ADMINISTRATIVE RECORD FOR VERONA WELL FIELD RECORD OF DECISION AS REVISED BY THE 2003 ESD

I. INTRODUCTION

This Explanation of Significant Differences (2003 ESD) revises the Record of Decision (ROD) for the Verona Well Field (VWF) Site, which was issued by the United States Environmental Protection Agency (EPA) on June 28, 1991. EPA's 1991 ROD addresses contaminated ground-water in an approximate 160 acre area and contaminated ground-water and soil in three source areas: Thomas Solvent Raymond Road (TSRR), the Thomas Solvent Annex (Annex), and the Grand Trunk Railroad Company Paint Shop (Paint Shop) (see Attachments 4 and 5). The VWF Site is located in the northeast portion of the City of Battle Creek, Michigan. If no action was taken, the contaminated ground-water would flow into the Verona Well Field, which continues to be the primary source of drinking water for the City of Battle Creek and the surrounding communities (City), which presently includes approximately 55,000 residents, as well as many businesses, and a number of industrial facilities.

Remedial actions to protect the City water supply, cleanup the aquifer, and cleanup the soil and ground-water at the Annex and Paint Shop are being conducted by a group of private parties called the VWF Group with oversight by EPA and the Michigan Department of Environmental Quality (MDEQ) under unilateral administrative orders issued by EPA. Until May 2002, remedial actions to cleanup ground-water and soil at TSRR were conducted and funded by EPA and the State of Michigan. Since May 2002, the continued operation and maintenance of the TSSR ground-water pump-and-treat system has been implemented and funded by MDEQ with oversight by EPA.

This ESD is being issued, pursuant to Section 117 of the Comprehensive Environmental Response, Compensation and Liability Act, and Section 40 CFR 300.435(c)(2)(I) of the National Contingency Plan, by EPA following consultation with the MDEQ. This ESD presents to the public an explanation of significant differences in the components of the selected remedy as described in the 1991 ROD, including:

- updating ground-water cleanup objectivies (GW CUOs) and soil cleanup objectives (soil CUOs);
- updating of the list of contaminants of concern and potential contaminants of concern requiring further ground-water monitoring or verification of soil cleanup;
- deletion of the requirement to expand the TSRR ground-water extraction system to capture the formerly highly contaminated ground-water downgradient plume;
- measures to prevent the potential for release of hazardous constituents from the pipeline from the Annex to the Verona Well Field treatment system to comply with requirements in 40 CFR 265.193.

A fundamental change to the remedies, which would require another ROD Amendment, is not being proposed.

The 2003 ESD also presents to the public an updated Site history and status, which includes a description of a cooperative process among the parties closely involved in this site, the VWF Group, the City of Battle Creek, the State of Michigan, and EPA. This

process will result in formal agreements between the VWF Group and the City of Battle Creek, and between the VWF Group and the State of Michigan. These agreements will provide for cooperative development of a Verona Well Field Management Plan, and implementation by the VWF Group of measures to ensure protection of the City of Battle Creek water supply up to a production rate of 30 million gallons per day (mgd), to accelerate source area ground-water cleanup, and to commit that VOCs of Known Concern (see Section V.A of this ESD) will be non-detect at the influent to the City's iron removal plant. While EPA is not a formal party to these agreements, it supports these enhancements to the ROD remedy.

II. SITE HISTORY AND SELECTED REMEDIAL ACTIONS

A. INTERIM REMEDIAL MEASURES: In 1981-1982, 27 of the 30 VWF City production wells, as well as 80 private residential wells were found to be contaminated by a number of volatile organic compounds (VOCs), including benzene, dichloroethanes (DCA), dichloroethylenes (DCE), methylene chloride, trichloroethylene (TCE), perchloroethylene (tetrachloroethylene or PCE), and vinyl chloride (VC).

In 1983, EPA and MDEQ provided bottled water and portable showers to the residents with contaminated private wells. In 1984, EPA approved a ROD for Initial Remedial Measures, which included the following components:

- conversion of a number of City owned production wells into a line of hydraulic blocking wells;
- treatment of the extracted ground-water by air stripping with carbon adsorption treatment of air emissions followed by discharge of the treated ground-water to the Battle Creek River;
- installation of new production wells for the City of Battle Creek capable of providing 6 million gallons per day of potable water.

The objective of the 1984 ROD was to reduce or minimize migration of contaminants into the northern portion of the Verona Well Field, and to provide a sufficient supply of uncontaminated water to meet the City's established needs until the final remedial measures were implemented.

While the blocking well system was operating and providing protection to the City water supply, EPA proceeded with conducting a Remedial Investigation/Feasibility Study (RI/FS) for the Site. EPA determined that the sources of contamination were two facilities operated by Thomas Solvent Company (TSRR and the Annex), and a paint shop operated by the Grand Trunk Western Railroad (Paint Shop). TSRR was used for storage, blending and containerization of solvents, while the Annex was primarily a transfer station. Ground-water contamination had resulted from leakage from

containers and underground storage tanks, spillage and direct dumping.

B. TSRR REMEDIAL MEASURES: In 1985, EPA approved a ROD to address contamination from TSRR, which was the most highly contaminated source area. The 1985 ROD included the following components:

- construction and operation of a ground-water extraction system to contain and collect the most highly contaminated ground-water at TSRR and in the vicinity of TSRR;
- construction of a pipe to transfer the extracted ground-water to the existing VWF air stripper/carbon adsorption treatment system for treatment;
- construction and operation of a soil vapor extraction (SVE) system with carbon adsorption treatment of air emissions to remove VOCs from the soils.

These components were constructed and initiated operation by 1987 and 1988.

C. 1991 ROD: EPA continued the RI/FS for the Annex and Paint Shop source areas and for the contaminated aquifer as a whole. The general goals used for assessment of remedial alternatives in the FS included:

- limiting ground-water contamination at the Verona Well Field production wells to levels that meet State and Federal clean up standards for protecting human health;
- reducing ground-water contamination in the entire aquifer to levels that meet State and Federal clean up standards for protecting human health and the environment;
- reducing all soil contamination at the major source areas to concentrations that are estimated to result in exposure rates less than the reference doses for non-carcinogens and a total incremental lifetime cancer risk of 1×10^{-6} for carcinogens;
- reduce all soil contamination at the major source areas to levels that will prevent ground-water at the site from exceeding the State and Federal clean up standards for ground-water.

In 1991, EPA approved the final ROD for the entire Site, which provides for a remedy with the following components:

- continued operation of the existing blocking well system;
- construction and operation of a second line of blocking wells downgradient from the source areas;
- containment and collection of contaminated ground-water at the Annex and Paint Shop source areas;
- treatment of extracted ground-water from the Annex and Paint Shop areas and the blocking wells by air stripping with carbon treatment of air emissions;
- construction and operation of SVE systems to cleanup soils at the Annex and Paint Shop source areas;
- continued operation of the existing ground-water extraction system at TSRR;
- expansion of the ground-water extraction system at TSRR to recover ground-

water in the highly contaminated downgradient plume area northwest of TSRR;
- construction of a separate treatment system for extracted ground-water from TSRR (this implied that the pipeline from TSRR to the Verona Well Field treatment system would no longer be used).

The 1991 ROD also defined site-specific GW CUOs for 18 indicator VOCs and soil CUOs for 14 indicator VOCs (see Tables 16 and 17 of the 1991 ROD). These indicator VOCs were the primary contaminants, with the exception of arsenic, found to present individual incremental risks greater than 1×10^{-6} for carcinogens, or to present a risk index greater than one for non-carcinogens. As explained on Table 16 of the 1991 ROD, the selected GW CUO for each indicator VOC was the lowest concentration among the following cleanup goals:

- the concentration estimated to produce an incremental lifetime cancer risk of 1×10^{-6} due to ingestion of drinking water in the residential scenario;
- the concentration estimated to produce an exposure rate equal to the reference dose for health effects other than cancer due to ingestion of drinking water in the residential scenario;
- the Safe Drinking Water Act, Maximum Contaminant Levels; and
- the Michigan Act 307, Type B ground-water cleanup criteria.

However, if a resulting GW CUO was less than the method detection limit (MDL) for a VOC, then the MDL became the GW CUO for that VOC. The GW CUOs apply to the entire aquifer.

As explained in Table 17 of the 1991 ROD, the selected soil CUO for each indicator VOC was the lowest concentration among the following cleanup goals:

- the concentration in soil estimated to produce an incremental lifetime cancer risk of 1×10^{-6} based on residential ingestion exposure assumptions;
- the concentration in soil estimated to produce an exposure rate equal to the reference dose for health effects other than cancer due to soil ingestion in the residential scenario;
- concentration in soil that would be expected to leach into ground-water at a concentration equal to the ground-water cleanup goals;
- the Michigan Act 307, Type B soil cleanup criteria.

The ROD also included contingent ground-water and soil CUOs (1991 ROD Table 21) equal to the Michigan Act 307 Type B Cleanup Numbers for potential contaminants of concern as identified in the RI, and required sampling for the potential contaminants of concern every two years.

III. IMPLEMENTATION AND EFFECTIVENESS OF REMEDIAL ACTIONS

A. Interim Remedial Measures: The interim measures were constructed and initiated operation in 1984. The construction and first year of operation was conducted by EPA contractors. Subsequently, the system was operated by MDEQ under a cooperative agreement with EPA.

The City of Battle Creek permanently discontinued usage of several production wells located between the source areas and the blocking well system. In addition, the City of Battle Creek voluntarily minimized pumping of production wells closest to the blocking wells. This usage restriction along with construction of new production wells farther north in the well field has improved the effectiveness of the blocking well system by shifting City water production away from the blocking well line, which reduces competition between the City water pumping and the pumping from the blocking wells. VOC concentrations in production wells north of the blocking well line were reduced to trace levels towards the end of 1984, within a few months of the start of operation.

The City has continued to detect trace levels of VOCs (well below 1991 ROD GW CUOs) in certain production wells nearest the blocking well line. Potential causes of such detection include incomplete capture of contaminants by the blocking wells (possibly exacerbated by higher City water production rates and blocking well down times), and residuals from past contamination.

B. TSRR Remedial Measures:

TSRR Soil Treatment: In 1987, EPA constructed the SVE system at TSRR. EPA operated the SVE system from 1988 until 1992, and removed an estimated 50,000 pounds of VOCs from the soil, and left an estimated 0.5 pounds based on extensive soil sampling conducted by EPA in June 1992. The sampling effort included collection of 104 separate samples from 26 soil borings. The samples were analyzed only for VOCs. Only PCE was detected above the soil CUOs. Semivolatile organic compounds (SVOCs) were analyzed in soils during the RI, but the results were determined to be unuseable. SVOCs were sampled at one depth interval at 25 boring locations in August 1989.

Although soils at TSRR had been well characterized for VOCs, there had been no soil samples collected for analysis of pesticide/PCBs or metals and the SVOC data was

limited.[1] In response to this data gap in March 2002, MDEQ collected 2 surface soil samples and seven soil boring samples from some of the formerly most contaminated areas for analysis of the base-neutral fraction SVOCs, pesticide/PCBs and metals (excluding lead). If SVOCs, pesticides, PCBs, and metals are less than the risk-based screening levels in areas that were the most contaminated by VOCs, these parameters are not considered to be a concern at TSRR. The criteria used were MDEQ soil criteria for protection of drinking water and residential direct contact in Operational Memorandum #18 (June 7, 2000), the EPA Region 9 Preliminary Screening Levels (PRGs) for residential soils, and the EPA Region 9 Soil Screening Levels (SSLs) for migration to ground-water (using the 20 fold dilution/attenuation factor).

The results of the August 1989 soil sampling for SVOCs and the March 2002 soil sampling have been compared to the MDEQ critiera, the PRGs, and SSLs Metals that exceeded any of these criteria were compared to statewide and site-specific background concentrations. None of the analytical results exceeded both the risk-based criteria and background. It should be noted that lead was not included in the metals analyses, but it is acceptable to screen out lead as a contaminant of concern based on the following factors:

- the PRG and Michigan criteria for inorganic lead is relatively high (400 mg/kg);
- from what is known about the site it appears unlikely that inorganic lead contaminated waste were brought to the site;
- the PRG for tetraethyl lead is very low (0.0061 mg/kg), but, from what is known about the site, it appears unlikely that waste containing tetraethyl lead (such as leaded gasoline) was brought to the site for storage;
- lead was detected at relatively low concentrations at the Annex, which was also operated by Thomas Solvent and probably accepted similar wastes (3.8 to 74.6 mg/kg with an average of 16 mg/kg, which is less than the Statewide Default Background Criteria of 21 mg/kg).

Based on the results of this sampling, EPA has determined that SVOCs, pesticides, PCBs and metals are not contaminants of concern in soil at TSRR. Therefore, completion of the soil remedial action can be evaluated based on the results of the soil sampling for VOCs conducted in 1992. This evaluation is addressed in Section V.A.4 of this ESD.

<u>TSRR Ground-water Extraction</u>: In 1987, EPA constructed and started operation of the TSRR ground-water extraction system. An EPA contractor constructed a separate treatment system for TSRR in 1996 and operated the facility through 1997. At other times, the system was operated by MDEQ under a cooperative agreement with EPA. MDEQ assumed full responsibility for operation and funding of the system in May 2002, in accordance with provisions of the Comprehensive Environmental Response,

[1] *Five-Year Review Verona Well Field*, EPA, September 2002.

Compensation and Liability Act.

The system initially included 9 extraction wells pumping approximately 350 gpm (compared to 400 gpm anticipated in the ROD). TSRR ground-water was piped to the air stripper of the main VWF ground-water treatment facility (see Attachment 6). Along Emmett Street to a manhole on Brigden Drive, the pipeline was a 6 inch high density polyethylene (HPDE) 110 force main. Along Emmett Street, this force main was installed within a 30 inch storm sewer. From the Bridgen Drive manhole to the Verona Well Field treatment system (where the pipeline is adjacent to a residential area), the pipeline is an 8 inch SDR11 HDPE carrier pipe inside a 12 inch HDPE 52 casing pipe. The casing pipe is designed to contain any leakage from the 8 inch carrier pipe and result in a discharge into a sump at the treatment facility. Such discharge has never been observed. The 1985 ROD provided for a ground-water capture zone including the area where total VOCs exceeded 100,000 ug/l, which included much of the source area property and almost the entire Davis Oil property as far westward as W16S (see Attachment 7).

MDEQ believes that the desired capture zone is being achieved by the TSRR pump-and-treat system. In 2000 MDEQ conducted a capture zone evaluation that indicated that, at a cumulative extraction rate of only 160 gpm, ground-water below the entire TSRR source area property and much of the Davis Oil property located west of the source area was likely to be within the capture zone.[2] Water levels collected at Davis Oil Company in 2001, when TSRR was operating at an even lower extraction rate, appear to indicate that ground-water below the entire Davis Oil property extending as far as monitoring well W16S was being drawn into the TSRR extraction system. On the other hand, VAS samples collected in March 2002 from a downgradient temporary monitoring well located between monitoring wells T6 and W16S, contained as much as 165 ug/l of total VOCs. MDEQ is evaluating these results, and working on determining the extraction rates and distributions that are necessary to assure that they achieve full capture of source area ground-water and operate efficiently.

Whether the desired capture zone was achieved in the past is still in question because the extraction well near W16S could not produce more than 5-7 gpm and was shut-down within a few months. In spite of this, flow-line analyses and model calculations conducted in 1996 when the pumping rate was reported to be 250-300 gpm, indicated that the capture zone may have extended 300 feet downgradient and 450 feet side-to-side, which would comfortably include the area near W16S.[3]

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[2] *2000 Annual Performance Monitoring Report for the Thomas Solvent Raymond Road Source Area*, MDEQ.

[3] *Final Current Conditions*, CH2M-Hill, 1996.

The TSRR ground-water extraction system is still in operation, and has been successful in reducing both the size and concentration of the contaminant plume. A number of monitoring and extraction wells show that ground-water has been cleaned up or is close to being cleaned up. The total VOC concentration in the most contaminated monitoring well (B18S) has been reduced from as high as 960,000 ug/l in 1987, to 168 ug/l in 2001. Since initiation of operation of the TSRR ground-water extraction system, it is estimated that over 19,000 pounds of VOCs have been removed by the TSRR ground-water extraction system.[1]

The 1991 ROD provided for expansion of the TSRR extraction system to capture highly contaminated ground-water detected in CH139S in 1989. This was never implemented possibly because of sampling conducted in December 1992 which indicated that VOC concentrations in CH139S had decreased from 22,300 ug/l in 1989 to 330 ug/l in 1992. W16S is now clean and VOC concentrations in CH139S have continued to decrease.

C. Final Remedial Actions to Protect Well Field and Cleanup Annex and Paint Shop Source Areas:

EPA selected the final remedial actions to protect the well field and cleanup the Annex and Paint Shop in the 1991 ROD. In 1992, EPA issued two Unilateral Administrative Orders (UAOs) to potentially responsible parties requiring design and implementation of the final soil and ground-water remedies to protect the well field and cleanup the Paint Shop and Annex source areas. The potentially responsible parties formed the Verona Well Field Site Remedial Design/Remedial Action Group (VWF Group) to implement the UAOs.

SVE at the Annex and Paint Shop: In 1993, the VWF Group constructed an SVE system at the Annex. Grand Trunk Western Railroad Company (the only potentially responsible party for the Paint Shop) did likewise at the Paint Shop. The SVE system started operating in June 1993. The SVE systems were shut-down in June 1994 because the VOC removal rates had reduced substantially, and it was anticipated that the systems would be reinitiated when the source area pump-and-treat system started operating. The systems have removed an estimated combined total of 7,000 pounds of VOCs. The SVE at the Annex included 18 SVE wells and 7 piezometers. The SVE system at the Paint Shop included 4 SVE wells and 3 piezometers. EPA and MDEQ have approved the *Final Soil Verification Sampling Plan* (SVSP)[4] to fully evaluate the effectiveness of treatment at the Annex and Paint Shop, evaluate whether soil CUOs have been achieved, and determine whether further treatment is needed. The SVSP provides for statistically random sampling for all VOCs of Known Concern (listed later in this ESD) in accordance with MDEQ guidance.[5] It also provides for limited sampling for

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[4] Progressive Engineering and Construction, Inc., January 2001.

[5] *Verification of Soil Remediation (Revison 1)*, MDEQ, April 1991

naphthalene, bis(2-ethylhexyl)phthalate, arsenic, barium, cadmium, chromium, copper, manganese, mercury, vanadium and zinc.

Although VOCs were well characterized in the RI, only one soil sample at the Annex and one at the Paint Shop were analyzed for pesticide/PCBs and metals, and only two at the Annex and two at the Paint Shop were analyzed for SVOCs.[6] In response to this data gap in December 2002, EPA collected soil samples from some of the formerly most contaminated areas for analysis of SVOCs, metals, cyanide and pesticide/PCBs. Soil samples were collected from nine locations at the Annex and four locations at the Paint Shop.

The soil sampling results were evaluated in the same manner as the TSRR sampling for SVOCs, pesticides, PCBs and metals. The result of this investigation was that EPA determined that no further sampling of Annex or Paint Shop soils was needed for SVOCs, pesticides, PCBs, metals or cyanide. However, it was determined that further ground-water monitoring should be conducted for 1,1,2,2-tetrachloroethane, and dieldrin at the Annex.

<u>Design and Construction Process for Dual Blocking Well System and Annex and Paint Shop Extraction Well System</u>: Between 1993 and 1996, the VWF Group performed the design of the final ground-water remediation system, including:

- upgrading of the original (northern) blocking wells and addition of a southern line of blocking wells (numbered GMBW1 through GMBW8) to form a new dual blocking well system to protect the City well field, and using the two northeasternmost southern blocking wells (GMBW1 and GMBW2) for cleanup of source area ground-water at the Paint Shop;
- an Annex ground-water extraction system;
- connecting the Annex water discharge to the former TSRR pipeline to transport contaminated ground-water to the Verona Well Field treatment system;
- upgrading the existing Verona Well Field treatment system to treat all extracted ground-water from the dual blocking well system and the Annex extraction system; and
- addition of sentinel monitoring wells located north of the northern blocking well line to detect contaminant breakthrough between the northern blocking wells and the City water production wells.

This design was conducted under EPA oversight, and the *Final RD/RA Design Report*[7]

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[6] *Five-Year Review Verona Well Field,* EPA, September 2002. The Phase I RI included a number of SVOC analyses on source area soils, but that data was qualified as usable only to identify detections (quantification was unreliable, and compounds could have been present that were not detected).

[7] Maumee Bay Environmental, Inc., September 26, 1994

was approved by EPA. Monitoring requirements were defined in the *Ground-water and Air Monitoring Plan*.[8] This plan was also approved by EPA. An updated model prepared by Geraghty & Miller, Inc. was used to determine the best placement for blocking and extraction wells, and the pumping rates necessary to achieve containment of the contaminated ground-water.

From September – December 1996, the VWF Group constructed the final ground-water remediation system. When the City constructed the Emmett Street overpass in 1996, a City contractor replaced the 6 inch HDPE pipeline from the Annex to the Brigden Drive manhole including the portion inside the 30 inch storm sewer along Emmett Street with a 4 inch HDPE (SDR 11) pipeline. When the City constructed the iron/manganese removal plant for its drinking water system, a City contractor relocated the pump house for V-22.

Dual Blocking Well System Design and Operational Performance: The EPA-approved design provided for operating the northern blocking wells at an extraction rate of 935 gpm rather than 1450 gpm as was anticipated in the FS. The extraction rate for the southern blocking wells was 1675 gpm, which greatly exceeds the estimate in the FS of 1080 gpm. This higher ground-water extraction rate for the southern blocking wells may result in faster cleanup of the aquifer upgradient from the new blocking wells.

Since December 1996, the VWF Group has been operating the final ground-water remediation system. The treatment system has met all air and water emission treatment requirements. During the first couple years of operation, the VWF Group had trouble with frequent down-times primarily due to wet-well pump problems. This probably resulted in some contaminant breakthrough in the northern blocking wells. The VWF Group implemented actions to reduce down-times and periods of reduced flow. In addition starting in 1999, the VWF Group increased the pumping rates at certain northern blocking wells during May - August to attempt to lessen the potential for breakthrough during this period of high City water pumping.

There have been low-level VOC detections in the sentinel wells for the northern blocking well line and in three seldom-used City production wells located near the northern blocking well line. The City of Battle Creek and MDEQ have expressed concern about the potential that contaminant breakthrough is presently occurring, and that the existing dual blocking well system will not provide sufficient protection to the City water supply at higher pumping rates. In response to this, extensive additional investigations have

[8] Geraghty & Miller, Inc., June 20, 1996

been conducted in 1999, 2000, 2001, and 2002, and the VWF Group has conducted modeling of performance at higher City water pumping rates.

Annex Extraction System Design and Operational Performance: To cleanup the Annex ground-water, the EPA-approved design provided for initial construction of two extraction wells screened in the upper sandstone aquifer at the downgradient property boundary. These extraction wells were to have a combined optimized extraction rate of 90 gpm. The design also included a contingency for two additional shallow extraction wells if the upper sandstone extraction wells did not produce sufficient draw-down in the sand-and-gravel monitoring wells. Even if the shallow extraction wells are added, the approved design is likely to result in a significant reduction in the source area ground-water extraction rate from the 400 gpm extraction rate that was anticipated in the FS. However, this design is not necessarily inconsistent with the remedy description and project objectives identified in the 1991 ROD.[9]

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[9] The 1991 ROD includes the following definition and objectives for the ground-water remedy for Annex and Paint Shop as follows:

- collection and treatment of contaminated ground-water at the Annex and Paint Shop source areas (pp. 22 and 38 of ROD Summary);
- capture contaminants in ground-water at the source areas (p. 23);
- "greatly reduce contaminant plume concentrations migrating from the sources" so that, in conjunction with the new blocking well line, the action "would result in cleanup of the downgradient portion of the aquifer" (p. 25);
- address risks by achieving applicable or relevant and appropriate requirements and cleanup goals in the source areas (pp. 19, 29, 32, 38, 39, 40, 41, and Table 16).

The first quarter water level measurement data at the Annex did not clearly indicate whether ground-water in the sand and gravel aquifer at the Annex was being captured. To address this concern, in 1997 another peizometer was added at the downgradient edge of the Annex. December 1997 water level measurements suggested that the sand and gravel aquifer was being captured, but subsequent water level measurements contradicted this conclusion. In addition, model runs by MDEQ using Geraghty & Miller's model indicated that the sand and gravel aquifer may not be captured. This is a particular concern because most of the VOC contamination at the Annex is in the sand & gravel aquifer. For these reasons, EPA and MDEQ have questioned whether the Annex ground-water extraction system is effective in capturing contaminated ground-water in the sand and gravel aquifer. The VWF Group is currently constructing improvements to the ground-water extraction system, which will include two additional ground-water extraction wells screened across the sand and gravel aquifer and the top of the upper sandstone aquifer.

The ground-water extracted from the Annex[10] is piped to the VWF air stripper initially connecting to the pipeline formerly used by TSRR (a separate treatment system had just been constructed for TSRR). The pipeline was not double-lined where it goes through a 36 inch storm-sewer under Emmett Street. This portion of the pipeline was replaced with a 4 inch SDR11 HDPE pipeline along with the storm sewer in 1996 by the City's contractors during replacement of utilities for construction of the Emmett Street Overpass. Any leak in the line could result in a discharge of VOC contaminated ground-water to the Battle Creek River, and there has been no defined procedure to detect such leaks. A leak in the pipeline occurred in January 2003 and was repaired during the same month.

[10] EPA and MDEQ have determined that the contaminated ground-water at the site contains listed hazardous waste as defined by the Resource Conservation and Recovery Act.

Paint Shop Extraction System Design and Operational Performance: Rather than extracting an estimated 400 gpm of ground-water using four extraction wells in the source area as was anticipated in the FS, the approved design provides for locating the two northeastern most of the southern blocking wells (GMBW1 and GMBW2) at the property boundary between Grand Trunk and City-owned property for the Verona Well Field (about 1000 feet downgradient from the Paint Shop source area). GMBW1 and GMBW2 are to operate at optimized extraction rates of 225 and 220 gpm, respectively. These extraction rates are much higher than the 135 gpm for each blocking well that was anticipated in the FS. The northeastern two blocking wells are meant to meet the objectives for the source area extraction wells.[11] This design is not inconsistent with the remedy description and project objectives identified in the 1991 ROD[9].

PCE detections at monitoring well DEQ8 appear to indicate that VOC contaminated ground-water from the Paint Shop is bypassing GMBW1 and GMBW2 to the east in the sand & gravel aquifer. This is backed up by the results of runs of Geraghty & Miller's ground-water model by MDEQ that indicate that this bypassing is likely to occur. For these reasons, EPA and MDEQ have questioned whether GMBW1 and GMBW2 are effective in capturing contaminated ground-water at the Paint Shop. The VWF Group is currently constructing improvements to the southern blocking well line to ensure capture of the Paint Shop plume. The improvements will include at least one additional southern blocking well screened across the sand and gravel and upper sandstone aquifers. It should be noted that any ground-water that bypasses GMBW1 and GMBW2 should be recovered by the northern blocking well line.

Design of the Treatment System: The approved design provides for a combined extraction rate from the dual blocking well lines and the Annex extraction wells of 2700 gpm. This is considerably less than the rate that was anticipated in the FS of 3330 gpm. As a result of this reduced flow rate, the design engineers found that the wet-well, air stripper, and vapor phase carbon adsorption unit from the IRM could be modified to treat all of the extracted ground-water. This eliminated the need to construct separate new air stripper/carbon absorption units for the southern blocking wells and at each source area, as was anticipated in the FS.

Since the initiation of operation of the dual blocking well / Paint Shop and Annex extraction well system in December 1996, 1100 pounds of VOCs have been removed by the system (no estimate is available for 1984-1996 when operation and monitoring was conducted by MDEQ / EPA). In 2001, because of the low and decreasing VOC concentrations, EPA and MDEQ approved decommissioning of the carbon adsorption treatment of the air stripper emissions, and revising the treatment system to allow discharge of the effluent from the northern blocking well line to the Battle Creek River without treatment. The air treatment was decommissioned in 2001. The bypass of the

[11] letter, Geraghty & Miller, Inc., October 12, 1994.

air stripper for the northern blocking wells was constructed and started operation in May 2003. Effluent from the southern blocking wells and the Annex continue to be treated in the air stripper.

IV. OUTSIDE AGREEMENTS TO IMPROVE OR ENHANCE THE REMEDIAL ACTION

Following completion of construction of the dual blocking well/ Paint Shop source area/ Annex source area pump and treatment system, the City of Battle Creek and MDEQ raised concern about a number of elements of the remedy. The primary concern is that the remedy is not designed to provide protection of the City water supply in case City water production rates increase in the future.[12] Other concerns include: 1. that the rate of source area aquifer cleanup may be prolonged compared to what was anticipated in the ROD and may result in delay in the City's ability to regain full use of their well field; and 2. that the ground-water monitoring may not be adequate to detect contaminant breakthrough into the active City well field. In response to these concerns, the City of Battle Creek, MDEQ, EPA and the VWF Group have been in cooperative discussions since 1997 aimed at development of a overall *Verona Well Field Management Plan*, improved monitoring, and defining system enhancements.

In September 2000, EPA, the City, MDEQ and the VWF Group completed development of an *Interim Commitment*, which was signed by the City and the VWF Group. EPA and MDEQ provided letters supporting the *Interim Commitment*. The major technical provisions of the *Interim Commitment* include:

- the VWF Group will implement enhancements to the 1991 ROD requirements for the dual blocking well system generally by increasing extraction rates as necessary to protect the City water supply at pumping rates up to 30 mgd (monthly average);

[12] It should be noted that anticipated potential increases in the City water supply pumping rate of 30 mgd (monthly average) was within the capacity of the City production wells in 1984. The City claims that it should be entitled to protection at a water production rate of at least 30 mgd because its developed wellfield capacity at the time the contamination occurred exceeded 30 mgd. The City has also informed EPA that it has studied other options for production of water and determined that use of the VWF is the City's only viable source of water at the production rate and quality levels necessary to satisfy customer demands. Presently only 5 of the original 30 or more wells are routinely used for water production. The City has 25 production wells, use of 8 of the original wells is restricted by the City because of proximity to the blocking wells, 5 of the original wells were routinely used, and 12 production wells have been added (3 by EPA in 1984, and 9 wells were added by the City at a later date). The wells added in 1984 and after are located in the northern portion of the VWF to reduce interference with the blocking wells.

- the VWF Group will implement measures to ensure capture of the ground-water contamination from the Paint Shop along the northeastern portion of the southern blocking well line;
- the VWF Group will implement enhancements to Annex and Paint Shop cleanups;
- the parties will develop a list of contaminants of potential concern and update the GW CUOsand soil CUOs;
- the VWF Group shall assure that water at the influent to the City's iron removal plant will be "non-detect" for chemicals of actual concern;[13]
- the parties will develop a revised long-term ground-water monitoring plan;
- the City and the VWF Group will adopt a *Verona Well Field Management Plan* to define reasonable joint operating principles for the City's well field and the Group's operation of the dual blocking well system.

At this time, more formal agreements are being negotiated to address the provisions of the *Interim Commitment*. In each case, the agreement will take the form of separate, but complementary, consent decrees. It is EPA's understanding that the enhancements provided for in the *Interim Commitment* will be components of consent decrees between the VWF Group and the State of Michigan, and the VWF Group and the City of Battle Creek. EPA supports the enhancement efforts to ensure protection of the City water supply up to a production rate of 30 mgd, the enhancements to accelerate source area ground-water cleanup, and the commitment that contaminants of actual concern will be non-detect at the influent to the iron removal plant. With the exception of the revised list of Contaminants of Known Concern, Contaminants of Potential Concern, and updated cleanup objectives, the technical provisions of the *Interim Commitment* are consistent with or go beyond the requirements of the 1991 ROD

V. DESCRIPTION OF SIGNIFICANT DIFFERENCES AND THE BASIS FOR THOSE DIFFERENCES

A. CONTAMINANTS OF CONCERN, MONITORING, AND CLEANUP OBJECTIVES

Since 1991, the State and Federal standards and risk-assessment toxicity factors and assumptions applying to ground-water and soil cleanups have changed significantly for many contaminants. Furthermore, additional data is available, and historical data has been comprehensively reviewed. As a result, EPA has concluded that it is appropriate

[13] Detections of contaminants at the plant's influent, which are not chemicals of actual concern or which can be attributed to a source other than TSRR, the Annex or Paint Shop or which can be demonstrated to be reflective of naturally occurring local background concentrations, shall not represent non-compliance with this criteria.

to update the investigation summary, list of Contaminants of Known Concern, Contaminants of Potential Concern, monitoring requirements, GW CUOs and soil CUOs applying to the Site. Therefore, Tables 6, 16, 17 and 21 from the 1991 ROD are replaced with the description in this Section and 2003 ESD Table 1 in Attachment 1.

1. Contaminants of Known Concern, Contaminants of Potential Concern, and Monitoring Requirements: As further described below, Contaminants of Known Concern are contaminants that are either: known to have been released as a result of on-site disposal activities; or are documented to exceed GW CUOs. Ground-water cleanup of Contaminants of Known Concern is required to the GW CUOs. Contaminants of Potential Concern are contaminants that require further monitoring to evaluate their significance as a ground-water contaminant. Therefore, ground-water monitoring and risk evaluation are required for Contaminants of Potential Concern, but this ESD does not establish cleanup requirements for these contaminants.

ESD Table 1 lists the Contaminants of Known Concern for both soil and ground-water, which include:

- VOCs of Known Concern, which apply both to ground-water in the whole site and to vadose zone soils in all source areas; and
- arsenic, which applies only to ground-water in and possibly downgradient from the Annex source area.

The VOCs of Known Concern are known to have been released as a result of activities at TSRR, the Annex, or the Paint Shop, and will be included in the long-term ground-water monitoring and in the statistical sampling in the SVSP. Compared to the 1991 ROD, carbon tetrachloride has been added as a VOC of Known Concern in ground-water, and vinyl chloride and chloroform have been added as VOCs of Known Concern in soil. The only non-VOC Contaminant of Known Concern is arsenic which exceeds its GW CUO only in the ground-water at the Annex. Arsenic was not found to be elevated in Annex soils and there is no record of disposal of arsenic at the Annex, but arsenic is well documented to be present in Annex ground-water above risk-based concentrations, applicable or relevant and appropriate requirements (ARARs), and background concentrations. Therefore, Arsenic must be included in the long-term ground-water monitoring for the Annex.

ESD Table 1 also identifies a reduced list of Contaminants of Potential Concern in ground-water, which apply only to certain of the three source areas and potentially to ground-water downgradient from these source areas. This list includes only dieldrin and 1,1,2,2-tetrachloroethane at the Annex; and aluminum, iron and sodium at the Paint Shop. Each of these contaminants will be included in the long term ground-water monitoring for the relevant source area unless or until the contaminant is demonstrated not to present a significant human health risk. In general, such a demonstration will require at least three rounds of source area ground-water samples with results less than the most stringent of the criteria and risk goals listed in Table 1, or less than the target

detection limit (TDL) if the TDL exceeds the most stringent criteria or risk goal. Filtered samples may be collected for aluminum and iron to help determine their actual concentrations in ground-water. The risk goals and criteria for aluminum, iron and sodium can also be adjusted based on further evaluation of their toxicities.

This is a reduction in the list of Potential Contaminants of Concern compared to the list in Table 21 of the 1991 ROD. This reduced list resulted from a thorough review and evaluation of historical source area ground-water data, and additional soil and ground-water sampling by staff of MDEQ, EPA, and Progressive Engineering and Construction, Inc (Progressive, the consultants for the VWF Group), and additional ground-water and soil sampling. Ground-water sample results were screened using MDEQ ground-water criteria for protection of drinking water. Soil sample results were screened using the MDEQ soil criteria for direct contact and drinking water protection, the PRGs for direct contact, and the SSLs.

2. UPDATED GROUND-WATER CLEANUP OBJECTIVES (GW CUOs)

ESD Table 1 lists the updated GW CUOs for the Contaminants of Known Concern, including VOCs of Known Concern and arsenic in the Annex source area ground-water and displays the process of deriving them. The derivation uses the same categories of State and Federal standards, and risk-based goals as used in Table 16 of the 1991 ROD. Please note that Table 1 does not identify the Safe Drinking Water Act Maximum Contaminant Level Goals even though they were identified in Table 16 of the 1991 ROD because these goals were not actually used to derive the GW CUOs in the 1991 ROD.

The updated GW CUOs are the lowest of the following standards and risk-based goals, with the following exceptions: if the resulting GW CUO would have been less than the TDL, then the TDL becomes the GW CUO; and for metals if the resulting GW CUO would have been less than the background ground-water concentration, then the background concentration becomes the GW CUO:

- the concentration estimated to cause a 10^{-6} incremental lifetime risk of cancer due to usage of the ground-water for residential purposes (Cancer Risk Goal);[14]
- the concentration estimated to produce an exposure rate equal to the reference dose for health effects other than cancer due to usage of ground-water for

[14] The Cancer and Non-Cancer Risk Goals have been updated from the 1991 ROD using formulas and default assumptions identified in the *Risk Assessment Guidance for Superfund, Volume 1–Human Health Evaluation Manual (Part B, Development of Risk-based Preliminary Remediation Goals)* OSWER Directive 9285.7-01B, December 1991. This included standard assumptions to account for potential exposure to VOCs in tap water via inhalation, which was not included in the goals in the 1991 ROD. The goals also were calculated using updated carcinogenic potency factors and reference doses. The calculation procedures and toxicity factors are identified in the November 5, 2002 letter from Progressive.

residential purposes (Non-cancer Risk Goal).[14]

- the current Safe Drinking Water Act Maximum Contaminant Levels (MCLs); and
- the State of Michigan Part 201 residential ground-water cleanup criteria.[15]

As stated in the 1991 ROD, the GW CUOs apply to the entire aquifer (this includes the Annex, Paint Shop, and TSRR source areas).

ESD Table 1 includes an updated arsenic GW CUO, which applies only to the Annex source area and potentially to downgradient ground-water. A GW CUO for arsenic is appropriate because arsenic has been demonstrated to exceed the background ground-water concentrations, risk goals and ARARs in Annex source area ground-water. In addition, the high arsenic detections appear to be associated with the area of highest VOC contamination. Just like the VOCs of Known Concern, arsenic in Annex source area ground-water must be reduced below its GW CUO before the Annex source area pump-and-treat system can be discontinued.

ESD Table 1 does not include CUOs for the Contaminants of Potential Concern. These contaminants did not have cleanup requirements in the 1991 ROD. Before adding new or more stringent cleanup requirements, EPA must demonstrate that the requirements are necessary to protect human health or the environment. At this time, EPA is not able to make this demonstration for dieldrin or 1,1,2,2-tetrachloroethane because, although the soil data indicates that there is a potential threat to ground-water, both compounds tend to adsorb to the soil and there is insufficient ground-water data to determine whether or not significant ground-water contamination has occurred.

Aluminum, iron and sodium are different from the Contaminants of Known Concern at the Paint Shop for a number of reasons:

- they are normal constituents of ground-water;
- they are necessary human nutrients;
- their toxic effects are produced only at relatively high doses;
- Ground-water problems from iron and sodium are often caused by area-wide conditions, such as naturally high dissolved iron, salt water intrusion in coastal areas, or impacts from use of road salt;

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[15] The Part 201 criteria have replaced the Michigan Act 307 criteria used in Tables 16 and 17 of the 1991 ROD. The applicable criteria are defined in MDEQ, Environmental Response Division Operation Memorandum #18, Revision 1 dated June 7, 2000.

- Aluminum and iron are major components of aquifer solids, and, as a result, elevated detections of aluminum and iron in ground-water are often from aquifer solids suspended in the ground-water sample;
- The aluminum, iron and sodium salts that are normally in ground-water are not hazardous substances, and it is unlikely that the presence of these metals in ground-water at the Paint Shop resulted from a release of a hazardous substance.
- the areas of high concentration do not appear to be associated with disposal in the former drum pit.

A comparison of the range of aluminum, iron and sodium detections in Paint Shop ground-water with MDEQ ground-water criteria for protection of drinking water criteria from Operational Memorandum #18, and PRGs for tap water is shown in 2003 ESD Table 2 in Attachment 2. Review of Table 2 indicates that there is a large variation of concentrations of these metals in ground-water at the Paint Shop, and that there is a large diversity of opinion regarding the toxicity of these metals. There was only one detection of aluminum from a Paint Shop monitoring well that exceeded MDEQ's criteria (4,200 ug/l in W13), but this detection is well below the Region 9 PRG. It is possible that the elevated aluminum from W13 was actually from suspended solids in the sample. 9 of the 13 Paint Shop samples exceeded MDEQ's criteria and background for iron, and 6 of the 13 samples exceeded the PRG. However, there was a wide variation in the results from monitoring wells where multiple samples were collected: 610 – 32,800 ug/l in CH140; 220 – 72,900 ug/l in CH145; and 8,500 – 12,000 ug/l in CH146. For each of these monitoring wells, the iron concentrations ranged from less than the PRG to much more than the PRG. This suggests that the differences in iron concentrations are caused by variations in the amount of solids in the samples rather than due to actual variations in iron concentrations in ground-water.

6 of the 13 samples exceeded MDEQ's criteria and background for sodium. Unlike iron, the results of multiple samples from the same well were reasonably consistent, but there were large variations among wells. W13 and CH146I are both close downgradient wells from the former drum pit and have similar VOC concentrations, but sodium was less than 500 ug/l in W13, but was detected at 190,000 – 240,000 ug/l in CH146I. This suggests that the drum pit was not the source of the sodium. A PRG has not been developed for sodium.

Considering the uncertainties about the actual ground-water concentrations, sources and toxicities of aluminum, iron and sodium, EPA is unable to demonstrate a risk from these detections at this time. Therefore, no cleanup requirements are included in this ESD for these metals, but EPA has decided that further monitoring of these metals in Paint Shop ground-water should be conducted. The toxicities of these metals can be further evaluated during the next Five-Year Review.

3. <u>UPDATED SOIL CUOs AND EVALUATION OF ACHIEVEMENT OF SOIL CUOs AT</u>

TSRR

ESD Table 1 also lists the updated soil CUOs for the VOCs of Known Concern and displays the process of deriving them.[16] The 2001 soil sampling at TSRR and the 2002 soil sampling at the Annex and Paint Shop demonstrated that SVOC, pesticide, PCB and metal parameters are not present above concentrations of concern in source area soils. For this reason, achievement of the soil CUOs will be determined using only the sampling results for VOCs of Known Concern.

Either total constituent VOC concentrations (total VOCs) or SPLP test results can be used to demonstrate achievement of soil CUOs. The SPLP test can be used because all of the soil CUOs are for protection of ground-water. Because the SPLP test provides a more direct indication of the potential for causing ground-water contamination than the total VOC test, if SPLP test results are available then compliance with the soil CUOs shall be determined by comparing the concentration in the SPLP leachate with the GW CUOs. The SVSP, provides the VWF Group with the option to test soil samples using the SPLP if the soil CUOs based on Total VOCs are exceeded.

The derivation of the soil CUOs based on total VOC concentrations uses the same categories of State and Federal standards and risk-based goals as used in Table 17 of the 1991 ROD. The soil CUOs are the most stringent of the following categories of standards and risk-based goals, except that if the resulting soil CUO would have been

[16] As long as the ground-water extraction system for the Annex is operated to capture all on-Site ground-water exceeding the updated GW CUOs, and Grand Trunk implements institutional controls requiring maintenance of industrial land use and prohibiting consumption of ground-water from below the Annex, it will be acceptable for Annex soils to remain at concentrations greater than the updated soil CUOs but less than Michigan criteria for industrial and commercial II, II, and IV from the Part 201 Generic Cleanup Criteria Tables, Revision 1, Environmental Response Division Operational Memorandum #18, June 7, 2000.

less than the TDL, then the TDL becomes the soil CUO.

- Twenty times the GW CUO;[17]
- the Michigan Part 201, Soil: Residential and Commercial I criteria for protection of drinking water;[15]
- the concentration estimated to cause a 10^{-6} incremental lifetime risk of cancer due to ingestion of soil by residents;[14]
- the concentration estimated to produce an exposure rate equal to the reference dose for health effects other than cancer due to ingestion of soil by residents.[14]

Please note that ESD Table 1 does not include the cancer risk goals and risk ratio goals for residential soil ingestion, which were in Table 17 of the 1991 ROD, because for the VOCs of Known Concern these goals were always less stringent than the cleanup goals designed for protection of ground-water.[18]

The soil CUOs are not to exceed levels and are intended to prevent additional contamination of ground-water above the ground-water CUOs through leaching of source area soils.[19] However, MDEQ has decided that the soil data should be

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[17] The 20 X GW CUO risk goal for protection of ground-water is the concentration in soil that would result in a concentration in the aqueous phase from an SPLP or TCLP leaching test equal to the ground-water CUOs, assuming that all of the VOCs in the soil leach into the liquid phase. In the SPLP and TCLP tests, the solid phase is leached with an amount of aqueous solution equal to twenty times the weight of the soil sample.

[18] 1991 ROD Table 17; letter, Progressive, November 5, 2002 letter.

[19] 1991 ROD Summary, Section X, p. 38.

statistically evaluated to determine whether the soil CUOs are achieved.

As previously mentioned, achievement of the soil CUOs at TSRR can be evaluated by comparing the results of the soil sampling for VOCs conducted by EPA in 1992 with the updated soil CUOs. Perchloroethylene (PCE) was the only VOC with soil sampling results that exceeded its updated CUO. PCE was detected in 69 of the 112 soil sample locations. The highest PCE concentration at a sampling location was 711 ug/kg.[20] The following table presents data on the PCE detections.

Number of sample locations	104
Range	ND – 711 ug/kg
Number of detections exceeding GW CUO (20 ug/kg)	12
Number of detection exceeding MDEQ Criteria (100 ug/kg)	2 (140 and 711 ug/l)
95% Upper Confidence Limit (UCL) of the Average Calculated by MDEQ	38

By comparing the 95% UCL of the average to the cleanup requirement, MDEQ determined that the MDEQ criteria is met, but that the soil CUO is not met. However, without the 711 ug/kg detection the soil CUO would be achieved using MDEQ's statistical procedure. For this reason and because statistical tests identified the 711 ug/kg detection as a potential outlier, an MDEQ reviewer has advised that further field sampling be conducted in the vicinity of the 711 ug/kg detection. EPA disagrees with this because the 711 ug/kg detection and the other remaining PCE concentrations do not indicate a significant risk to ground-water for the following reasons:

- the soil CUO for protection of ground-water for PCE is conservative because it does not take into account the tendency of PCE to adsorb to soil;
- the PCE concentrations in vadose zone soils are expected to gradually naturally attenuate during the operation of the ground-water extraction system, which is expected to continue for many years;
- if significant PCE does leach to ground-water above ground-water CUOs, then it will be detected in the ground-water monitoring network and, as a result, the ground-water pump-and-treat system will have to operate longer;
- the concentrations of VOCs detected in TSRR monitoring wells appears to be decreasing rapidly rather than plateauing, which suggests that the vadose zone

[20] The 711 ug/kg detection is the average of detections in duplicate samples of 370 and 1053 ug/kg (quantitation estimated for both analyses).

soils are no longer leaching significant concentrations of VOCs.

In addition, no further action is justified for the soil because VOCs have been reduced as much as is practicable using SVE because:

- the SVE system operated for approximately 4 years;
- VOC emission data indicated that the rate of VOC removal had been reduced to very low levels; and
- the soil sampling data indicates that only an estimated 0.5 pounds of VOCs remained in the soil compared to the estimated total of 50,000 pounds that had been removed.

Finally, a considerable cost would be involved in removal of what little PCE remains in the soil. For these reasons, EPA has determined that further soil sampling is unnecessary, and that soil treatment at TSRR is complete.

B. CLEANUP OF DOWNGRADIENT GROUND-WATER PLUME AT TSRR

The 1991 ROD provided for expansion of the TSRR extraction system to capture highly contaminated ground-water detected during 1989 RI sampling of CH139S. It was generally considered that the TSRR downgradient plume area started near the corner of Emmet Street and Raymond Road and extended to the northwest possibly as far the Grand Trunk Railroad tracks (see Attachments 5 and 6). Active ground-water extraction in the TSRR downgradient plume area was never implemented. The purpose of this section of the ESD is to document EPA's conclusion that active ground-water extraction from the TSRR downgradient plume area is no longer a required component of the remedy.

It has been estimated that active ground-water extraction of the downgradient plume area would cost an additional $500,000 for construction of an extraction system and a larger treatment system.[21] It was estimated that ground-water CUOs would be met in the downgradient plume area in 7 years with downgradient plume extraction compared to 20 years via natural attenuation. The same memorandum documented sampling results from December 1992, which indicated that total VOC concentrations in CH139S (which is in the middle of the livestock yard) had decreased from as high as 22,300 ug/l in 1989 to 330 ug/l in 1992. In 2000, the water sample from CH139 only contained 83 ug/l total VOCs. Based on this information, EPA staff believe that as long as the remaining contaminated ground-water in the source area is contained by the TSRR pump and treatment system, the continuing process of migration of the remaining contamination to the southern blocking wells in conjunction with other natural attenuation processes, will result in achievement of the ground-water CUOs and restoration of the aquifer to its beneficial use in the downgradient plume area in an amount of time comparable to the estimates in the 1991 ROD. Therefore, expansion of the TSRR pump and treatment system is not necessary.

[21] See a February 26, 1993 technical memorandum from the EPA contractor, CH2M-Hill, Inc.

C. ADDRESSING THE ANNEX PIPELINE:

Currently a single walled 4 inch SDR11 HDPE pipeline is used to transport contaminated ground-water through a 30 inch storm sewer on its way to the Verona Well Field treatment facility. The storm sewer discharges to the Battle Creek River. Until the last year, there had been no defined procedures to detect leaks of contaminated ground-water into the storm sewer and then into the Battle Creek River. To address concern about leaks in the Annex pipeline, the VWF Group proposed the following measures to detect and respond to leaks in the Annex pipeline, which will be incorporated into an updated Operation and Maintenance Manual:

- an annual static pressure test;
- addition of a flow meter to measure instantaneous and totalized flow of Annex ground-water where it enters the Verona Well Field air stripper;
- visual inspection at least three times per week of the following measurements to detect leakage: ground-water flow rates from the Annex recovery wells; Annex flow entering the Verona Well Field Air Stripper; Annex pipeline pressure;
- systematic evaluation at least weekly of at least the following measurements to determine whether the Annex pipeline may be leaking: ground-water flow rates from the Annex recovery wells; and Annex flow entering the Verona Well Field Air Stripper;
- a plan for responding to detection of a possible leak.

The VWF Group has also provided a preliminary evaluation of the impact of a short-term discharge of contaminated ground-water from the Annex to the Battle Creek River.

The VWF Group states that compliance with 265.193 by replacing the Annex pipeline with a double-lined pipe with a leak detection system would be impractical. The VWF Group also stated that they may comply by constructing a separate treatment system for the Annex 5 – 7 years in the future, but indicated that construction of a separate treatment system for the Annex at this time would be unnecessarily expensive.

Because this pipeline transports ground-water containing listed hazardous wastes, it is EPA's policy that the pipeline transport should comply with the requirements of the Resource Conservation and Recovery Act. In this case, EPA considers the requirements of 40 CFR 265.193 to be relevant and appropriate. Specifically, this would require a secondary containment and leak detection system (265.193(f)) unless a variance is approved (265.193(g)). Approval of a variance requires demonstration that either: 1. "an alternative design and operating practices, together with location characteristics, will prevent the migration of hazardous waste or hazardous constituents into the ground water or surface water at least as effectively as secondary containment during the active life of the tank system"; or 2. "that in the event of a release that does migrate into ground water or surface water, no substantial present or potential hazard will be posed to human health or the environment.

EPA and MDEQ are presently reviewing whether the present system with the new leak detection and response measures complies with the substantive requirements of Section 265.193. If the substantive requirements of a variance are not met, the VWF Group would have to comply with the requirements of Section 263.193.

VI. EXPECTED IMPACTS OF THE 2003 ESD

A. UPDATED GROUND-WATER CLEANUP OBJECTIVES

ESD Table 1 shows that the updated ground-water CUOs are not significantly changed from the 1991 ROD CUOs for most of the parameters, including benzene, ethylbenzene, methylene chloride, PCE, TCE, toluene, VC, and xylene. The updated CUOs are less stringent for the following contaminants: 1,1-DCA ; 1,1-DCE, and cis-1,2-dichloroethylene (Cis). A CUO is added for carbon tetrachloride, and the updated CUO is more stringent for chloroform. Arsenic is redesignated as a Contaminant of Known Concern in ground-water instead of a Contaminant of Potential Concern. The GW CUO for arsenic is based on the local background arsenic concentration.

The only potential impact of the changes in CUOs is on the time period required for operation of the blocking well and source area extraction well systems. 2003 ESD Table 3 in Attachment 3 was prepared to help evaluate the significance of the change in the CUOs. Table 3 identifies the maximum contaminant detections in ground-water in certain areas of the site during monitoring conducted in 1999, 2000, and 2001 and calculates the ratios of the maximum detections to the 1991 CUOs and the updated CUOs. The higher this ratio is for a specific parameter, the more likely that this parameter will control the length of time required for operation of a blocking well line or source area extraction well system. However, the actual duration of operation cannot be calculated directly from this ratio. If the ratio is less than 1.0, the concentration was less than the CUO. The areas of the site for which ratios are listed in Table 3 include:

- the northern blocking wells and monitoring wells upgradient from the northern blocking wells (assuming that the bypass of shallow ground-water around the northeastern end of the southern blocking wells will be cut-off in the near future), which are considered relevant to the length of time of operation of the northern blocking wells;
- the southern blocking wells and for monitoring wells upgradient from the southern blocking wells, which are considered relevant to the length of time of operation of the southern blocking wells;
- the Annex extraction and monitoring wells, which are considered relevant to the length of time of operation of the Annex source area extraction well system; and
- the TSRR extraction and monitoring wells, which are considered relevant to the length of time of operation of the TSRR source area extraction well system.

The addition of a CUO for carbon tetrachloride and more stringent CUO for chloroform are unlikely to affect the operating time. During the RI carbon tetrachloride was detected in Paint Shop ground-water and in TSRR subsurface soils, but was not identified as one of the more prevalent nor highly concentrated VOCs. Carbon tetrachloride was detected in TSRR extraction and monitoring well samples in 1987-1988, but has not been detected in more recent sampling. Chloroform also has not been detected in recent sampling, except when attributable to chemicals used for well

cleaning.
1,1-DCA and Cis had some of the highest ratios using the 1991 ROD CUOs in all areas of the ground-water remediation system. The less stringent updated CUOs for 1,1-DCA and Cis will result in these parameters becoming relatively unimportant in controlling the duration of the ground-water cleanup. This may result in shortening the duration of pumping, but this is uncertain because other parameters such as PCE are still well above the updated CUOs. Overall, PCE, whose CUO is not being changed, will probably be the most important parameter controlling the duration of the ground-water cleanup. TCE appears to be the next most important parameter, and VC is also important due to its low CUO and because PCE and TCE can degrade to VC. In addition, arsenic may be important at the Annex.

B. UPDATED SOIL CLEANUP OBJECTIVES AND EVALUATION OF COMPLETION OF SOIL TREATMENT AT TSRR

ESD Table 1 shows that the updated CUOs for soils are either approximately equal to or are less stringent compared to the 1991 ROD CUOs. VOCs that may control the pace of soil cleanup that have less stringent soil updated CUOs include: 1,1-DCA; Cis; and PCE The updated CUOs are likely to make it easier to comply with soil cleanup requirements. For PCE, this ESD increases the CUO from 10 to 20 ug/kg. Because some TSRR sampling results exceeded both the 1991 CUO and the updated CUO, this change had only a minor impact on evaluation of completion of soil treatment at TSRR.

C. UPDATED MONITORING AND INVESTIGATION REQUIREMENTS

The historical data review; source area soil sampling for SVOCs, pesticides, PCBs, and metals; the source area ground-water baseline sampling; and background ground-water sampling have assured that all site-related contaminants that may present a significant health threat will be included in the monitoring program while eliminating unnecessary analyses.

D. ELIMINATION OF THE REQUIREMENT FOR DIRECT GROUND-WATER EXTRACTION IN THE TSRR DOWNGRADIENT PLUME AREA

Because very high concentrations of VOCs are no longer present in the TSRR downgradient plume area (generally between monitoring wells W10 and W6), implementing an extraction system for the downgradient plume area would not have provided a significant benefit for the additional $500,000 estimated implementation cost.

E. ANNEX PIPELINE REVISION

A leak in the Annex pipeline occurred in January 2003. As a result of discussions with the VWF Group, specific procedures have been defined to detect and respond to leaks

in the Annex pipeline. Therefore, if a leak occurs in the future, it should be detected more promptly and response actions implemented more quickly. If EPA determines that the present system does not satisfy the substantive requirements for a variance in accordance with 40 CFR 265.193(f), then it is anticipated that compliance with 40 CFR 265.193 would entail considerable capital costs for either: construction of a double walled pipe with a leak detection system to transport water from the Annex to the Verona Well Field treatment system; or construction of a separate ground-water treatment system for the Annex.

VII. SUPPORT AGENCY AND PRIVATE PARTY COMMENTS

MDEQ, the City of Battle Creek, and the VWF Group were involved in the development of this ESD. Their comments and concerns are identified in more detail in documents in the administrative record for this ESD.

VIII. AFFIRMATION OF THE STATUTORY DETERMINATION

EPA believes that the VWF remedy remains protective of human health and the environment. The remedy complies with the Federal and State requirements, which are applicable or relevant and appropriate. In addition, the selected remedy continues to utilize permanent solutions and alternative treatment to the maximum extent practicable for the VWF site.

IX. PUBLIC PARTICIPATION ACTIVITIES

EPA has worked closely with the City of Battle Creek Public Works Department regarding issues addressed in the 2003 ESD. In addition, EPA will post a notice of issuance of this ESD and invite public comments in local newspapers.

An index of the Administrative Record supporting the 2003 ESD is attached. The Administrative Record for this ESD and other EPA decision documents is available for public review at repositories located at the following locations:

Willard Library
7 West Van Buren
Battle Creek, Michigan

U.S. EPA, Region 5, Records Center
77 W. Jackson Blvd., 7th floor
Chicago, Illinois

Comments or questions are invited and can be directed to:

United States Environmental Protection Agency
P-19J
77 West Jackson Blvd.
Chicago, IL 60604

Michigan Department of Environmental Quality
Project Manager – Verona Well Field
Superfund Section, Remediation and Redevelopment Division
Constitution Hall – 3rd Floor South
P.O. Box 30426
Lansing, Michigan 58909

City of Battle Creek
Public Works Department
P.O. Box 1717
Battle Creek, Michigan 49016-1717
Attention: Charles K. Kohs, P.E.

_____ _____

William E. Muno DATE
Director Superfund Division

LIST OF ACRONYMS AND ABBREVIATIONS

Annex:	One of the three areas that are major sources of contamination to the Verona Well Field site. This property is owned by Grand Trunk that was leased to Thomas Solvent Company.
ARARs	Applicable or relevant and appropriate requirements
CH2M-Hill:	CH2M-Hill, Inc. has been EPA's contractor for conducting the RI/FS at the Site, for implementation of remedial actions at TSRR and for oversight of remedial actions by private parties
Cis:	cis-1,2-dichloroethylene
City:	City of Battle Creek
CUO:	Cleanup Objective
1,1-DCA:	1,1-Dichloroethane
EPA:	The United States Environmental Protection Agency
ESD:	Explanation of Significant Differences
Grand Trunk:	Grand Trunk Western Railroad Company
GW CAL	Ground-water Cleanup Objective
IRIS:	EPA's Integrated Risk Information System
HDPE:	High density polyethylene
MCL:	Safe Drinking Water Act Maximum Contaminant Level
MDL:	Method detection limit for a chemical analysis as identified in Tables 16 and 17 of the 1991 ROD
MDEQ:	The Michigan Department of Environmental Quality
mgd:	Water flow rate in million gallons per day
Paint Shop:	One of the three areas that are major sources of contamination to the Verona Well Field site. The Paint Shop was used for

Maintenance by Grand Trunk.

PCE: Perchloroethylene (tetrachloroethylene)

PRG: Preliminary Remedation Goals developed by Region 9, EPA to screen water or soil data for potential risks from water usage and direct contact with soils

Progressive: Progressive Engineering and Construction, Inc, a consultant representing the VWF Group

RI/FS: Remedial Investigation/Feasibility Study

ROD: EPA's Decision Document Called a Record of Decision

SPLP: Synthetic Precipitation Leaching Procedure (EPA Method 1312)

SSLs: Soil Screening Levels developed by Region 9, EPA to screen soil data for its potential to cause ground-water contamination above the PRGs

SVE: Soil Treatment by Soil Vapor Extraction

SVOCs: Semivolatile organic compounds

SVSP: EPA-approved plan to assess achievement of soil CUOs at the Annex and Paint Shop entitled *Final Soil Verification Sampling Plan*, Progressive, January 2001

TCE: Trichloroethylene

TDL: Target detection limit, as identified in Table 1 of this ESD

TSRR: The Thomas Solvent Raymond Road Source Area. TSRR was one of the three areas that are major sources of contamination to the Verona Well Field site.

UAOs: Two unilateral administrative orders (unilateral means they were issued without agreement from the VWF Group) issued to the VWF Group requiring them to implement the 1991 ROD for the blocking wells, the Annex and Paint Shop.

ug/kg: Concentration of a Contaminant in Soil in Micrograms of Contaminant per Kilogram of Soil

ug/l: Concentration of a Contaminant in Water in Micrograms of Contaminant Per Liter of Water (or parts per billion)

VC: Vinyl chloride

VOCs: Volatile Organic Compounds

VWF Group: Grand Trunk and a group of potentially responsible generators who are implementing remedial actions under UAOs with EPA.

2003 ESD TABLE 1: VERONA WELL FIELD, BATTLE CREEK, MICHIGAN
IDENTIFICATION OF CONTAMINANTS OF KNOWN CONCERN FOR SOIL AND GROUND-WATER (GW) MONITORING; IDENTIFICATION OF POTENTIAL CONTAMINANTS OF CONCERN FOR SOURCE AREA GW MONITORING (the relevant source area or areas are identified in parenthesis following the name of the contaminant); IDENTIFICATION AND DERIVATION OF UPDATED GW CUOs, WHICH ARE ALSO THE SOIL CUOs if SPLP LEACHING TEST RESULTS ARE AVAILABLE (by comparing the leachate concentration with the GW CUOs); AND SOIL CUOs FOR TOTAL VOC ANALYSES (which are applicable if SPLP tests are not run)
(Units are in micrograms/liter for ground water and soil leachate, and micrograms per kilogram for soil)

VOC GW AND Soil Contaminants of Known Concern	1991 ROD GW CUO	TDL[i]/ BKGR	GW Cancer Risk Goal[ii]	GW Non-Cancer Risk Goal[2]	MCL[iii]	Michigan GW Criteria[iv]	GW and Soil SPLP CUO[v]
Acetone	700	100	--	768	--	730	730
Benzene	1	1	0.54	14	5	5	1
Carbon tetrachloride	0.3	1	0.26	5	5	5	1
Chlorobenzene	100	1	--	135	100	100	100
Chloroform	6	1	77	77	100	100	77
1,1-Dichloroethane (1,1-DCA)	1	1	--	1008	--	880	880
1,2-Dichloroethane	1	1	0.2	13	5	5	1
1,1-Dichloroethylene	1	1	–	425	7	7	7
cis-1,2-Dichloroethylene (Cis)	1	1	–	77	70	70	70
trans-1,2-Dichloroethylene	100	1	–	154	100	100	100
Ethylbenzene	70	1	--	1,592	700	74	74
Methylene Chloride	5	5	6.2	1,735	5	5	5
Tetrachloroethylene or Perchloroethylene (PCE)	1	1	0.86	275	5	5	1
Toluene	800	1	--	934	1,000	790	790
1,1,1-Trichloroethane	200	1	--	578	200	200	200

TABLE 1 CONTINUED							
VOC GW and Soil Contaminants of Known Concern	**1991 ROD GW CUO**	**TDL/ BKGR**	**GW Cancer Risk Goal**	**GW Non-Cancer Risk Goal**	**MCL**	**Michigan GW Criteria**	**GW and Soil SPLP CUO**
1,1,2-Trichloroethane	1	1	0.32	31	5	5	1
Trichloroethylene (TCE)	3	1	2.5	46	5	5	2.5
Vinyl Chloride (VC)	1	1	0.1	79	2	2	1
Xylene (total)	300	3	--	1,896	10,000	280	280
Non-VOC GW Contaminants of Known Concern in Source Area							
Arsenic (Annex only)	0.02	15	0.015	10.95	10	50	15
GW Contaminants of Potential Concern in Source Areas							
Aluminum (Paint Shop only)	NONE	1,549	--	36,000	--	1,549[vi]	Not Established
Iron (Paint shop only)	NONE	8,357	--	11,000	--	8,357[6]	Not Established
Sodium (Paint Shop only)	NONE	122,544	--	--	--	122,544[6]	Not Established
Dieldrin (Annex only)	NONE	0.02	0.0042	–	–	0.11	Not Established
1,1,2,2-Tetrachloroethane (Annex only)	NONE	1	0.055	–	–	8.5	Not Established

TABLE 1 CONTINUED					
Soil VOC Contaminants of Known Concern	**1991 ROD CUO for Total VOCs in Soil**	**TDL for soil analysis[1]**	**20 X GW CUO for Protection of Ground-water[vii]**	**Michigan Soil Drinking Water Protection Criteria[viii]**	**Soil CUO Total VOCs**
Acetone	14,000	100	14,600	15,000	14,600
Benzene	20	10	20	100	20
Carbon Tetrachloride	10	10	20	100	20
Chlorobenzene	2,000	10	2,000	2,000	2,000
Chloroform	100	10	1,540	2,000	1,540
1,1-Dichloroethane	20	10	17,600	18,000	17,600
1,2-Dichloroethane	10	10	20	100	20
1,1-Dichloroethylene	10	10	140	140	140
cis-1,2-Dichloroethylene	20	10	1,400	1,400	1,400
trans-1,2-Dichloroethylene	2,000	10	2,000	2,000	2,000
Ethylbenzene	1,400	10	1,480	1,500	1,480
Methylene Chloride	100	10	100	100	100
Perchloroethylene	10	10	20	100	20
Toluene	16,000	10	15,800	16,000	15,800
1,1,1-Trichloroethane	4,000	10	4,000	4,000	4,000
1,1,2-Trichloroethane	10	10	20	100	20
Trichloroethylene	60	10	50	100	50
Vinyl Chloride	0.4	10	20	40	20
Xylenes (total)	6,000	30	5,600	5,600	5,600

i. The CUO defaults to the number in this column if it exceeds the lowest of the risk goals and ARARs. For organic compounds, this column lists the target detection limits (TDLs) from "Environmental Response Division Operational Memorandum #6, Revision 5, Analytical Method Detection Level Guidance for Environmental contamination Response Activities under Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act", MDEQ, November 16, 1998. For arsenic, aluminum, iron and sodium, this column lists the background ground-water concentrations for the relevant source area determined in Statistical Analysis of VWF Metals Background Data, Progressive, March 6, 2003 (Table 3), because background exceeded the TDLs

ii. The Cancer Risk Goals correspond to the 1 X 10^{-6} carcinogenic risk level for lifetime exposure via ingestion and inhalation of the contaminant resulting from residential water usage. Dashed lines mean that the parameter is not considered to be carcinogenic. The Non-Cancer Risk Goals are concentrations in water that would result in an exposure rate equal to the reference dose for health effects other than cancer due to ingestion and inhalation of the contaminant from residential water usage. The calculation procedures and toxicity factors are provided in a letter from Progressive Engineering and Construction, Inc. dated November 5, 2002 except that the oral and inhalation slope factors for tetrachloroethylene were updated as provided for in OSWER No. 8285.7-75, dated June 12, 2003.

iii. Safe Drinking Water Act Maximum Contaminant Levels. Dashed lines indicate that no MCL has been established for the parameter.

iv. Generic criteria for residential and commerical I drinking water from "Environmental Response Division Operational Memorandum #18, Part 201 Generic Cleanup Criteria Tables, Revision 1", MDEQ, June 7, 2000.

v. This column identifies the CUOs for the ground-water cleanup, and also, if leach test results are available, for soil cleanup by comparing the concentrations in the leachate to the GW CUOs (see Section V.C).

vi. The criteria for aluminum, iron and sodium are set equal to background concentrations, in accordance with MDEQ's Operational Memorandum #18..

vii. The 20 X GW CUO for protection of ground-water is the concentration in soil that would result in a concentration in the aqueous phase from an SPLP or TCLP test equal to the ground-water CUOs, assuming that all of the VOCs in the soil leach into the liquid phase. In the SPLP and TCLP tests, the solid phase is leached with an amount of aqueous solution equal to twenty times the weight of the soil sample.

viii. Generic criteria for drinking water protection for Soil: Residential and Commercial I from "Environmental Response Division Operational Memorandum #18, Part 201 Generic Cleanup Criteria Tables, Revision 1", MDEQ, June 7, 2000.

ATTACHMENT 2

2003 ESD TABLE 2: COMPARISON OF RANGE OF ALUMINUM, IRON AND SODIUM DETECTIONS IN PAINT SHOP GROUND-WATER WITH BACKGROUND, MDEQ HEALTH-BASED DRINKING WATER CRITERIA, AND EPA REGION 9 PRGs FOR TAP WATER (all units in ug/l)

CONTAMINANT	RANGE OF DETECTIONS[22]	BACKGROUND	MDEQ CRITERIA	REGION 9 PRG
ALUMINUM	_50 – 4,200	1,549	300	36,000
IRON	220 – 129,000	8,357	2,000	11,000
SODIUM	_500 – 240,000	122,544	120,000	None

[22] The ranges of detections are from Table 8 of *Source Area Groundwater Metals and SVOCs Assessment Summary Report*, Progressive, May 23, 2003. However, the following samples were not included:

- samples from GM7 because ground-water flow is upward from the lower aquifer in these wells and, as a result, this well would not be impacted by releases at the Paint Shop;
- samples from PS-PBB-1, PS-PBB-2 and PS-PBB-3 because these were temporary wells and probably were not well developed.

ATTACHMENT 3

2003 ESD TABLE 3: RATIO OF MAXIMUM DETECTIONS (SAMPLING FROM 1999 AND 2001) TO 1991 ROD CUOs AND 2003 ESD CUOs
(monitoring wells where no ratios exceeded 5 are not listed)

PARAMETER/ LOCATION	MAXIMUM DETECT (ug/l)	RATIO TO 1991 ROD CUO	RATIO TO 2003 ESD CUO
RESULTS AFFECTING NORTHERN Blocking WELL LINE			
1,1-DCA/ MW DEQ-8A	7.5	7.5	0.009
Cis/ Northern Blocking Well V-24	9.6	9.6	0.14
Cis/ Northern Blocking Well V-25	15	15	0.21
Cis/ MW DEQ-7	14	14	0.2
Cis/ MW DEQ-8A	12	12	0.17
PCE/ Northern Blocking Well V-27	7	7	7
PCE/ MW DEQ08A	6.5	6.5	6.5
PCE/ MW DEQ-8B	20	20	20
TCE/ MW DEQ-8A	9.1	3	3.6
TCE/ MW GM-8	7.6	2.5	3
RESULTS AFFECTING SOUTHERN Blocking WELL LINE			
1,1-DCA/ Southern Blocking Well GMBW-06	5.2	5.2	0.006
1,1-DCA/ MW W-6I	21	21	0.02
Cis/ Southern Blocking Well GMBW-04	7.1	7.1	0.1
Cis/ Southern Blocking Well GMBW-05	13	13	0.2
Cis/ Southern Blocking Well GMBW-06	48	48	0.7
Cis/ Southern Blocking Well GMBW-07	42	42	0.6
Cis/ MW CH-105I	13	13	0.2
Cis/ MW CH-150I	98	98	1.4
Cis/ MW W-4I	50	50	0.7

Cis/ MW W-8I	200	200	3
Cis/ Paint Shop Well W-13	5.4	5.4	0.08
Cis/ Paint Shop Well W-14	6.8	6.8	0.1
PCE/ Southern Blocking Well GMBW 01	8.2	8.2	8.2
PCE/ Paint Shop Well CH-140I	4.5	4.5	4.5
PCE/ MW CH-144S	4.6	4.6	4.6
PCE/ MW CH-144I	7.4	7.4	7.4
PCE/ Paint Shop Well CH-145I	700	700	700
PCE/ Paint Shop Well CH-146I	5.6	5.6	5.6
PCE/ MW CH-150I	10	10	10
PCE/ MW W-8I	15	15	15
PCE/ Paint Shop Well W-13	83	83	83
PCE/ Paint Shop Well W-14	450	450	450
TCE/ Southern Blocking Well GMBW-06	10	3.3	4
TCE/ Southern Blocking Well GMBW-07	8.6	2.9	3.4
TCE/ MW CH-150I	11	3.6	4.4
TCE/ MW W-6I	120	40	48
TCE/ MW W-8I	33	11	13
TCE/ Paint Shop Well W-13	8.3	2.8	3.3
TCE/ Paint Shop Well W-14	8.6	2.6	3.4
VC/ MW CH-150I	28	28	28
VC/ MW W-8I	38	38	38
RESULTS AFFECTING ANNEX EXTRACTION SYSTEM			
Arsenic / B-8S	350	23,000	23
Arsenic/ B-9S	52	350	3.5
Arsenic/ B-25S	140	9,300	9.3
1,1-DCA/ MW B-25	20	20	0.2

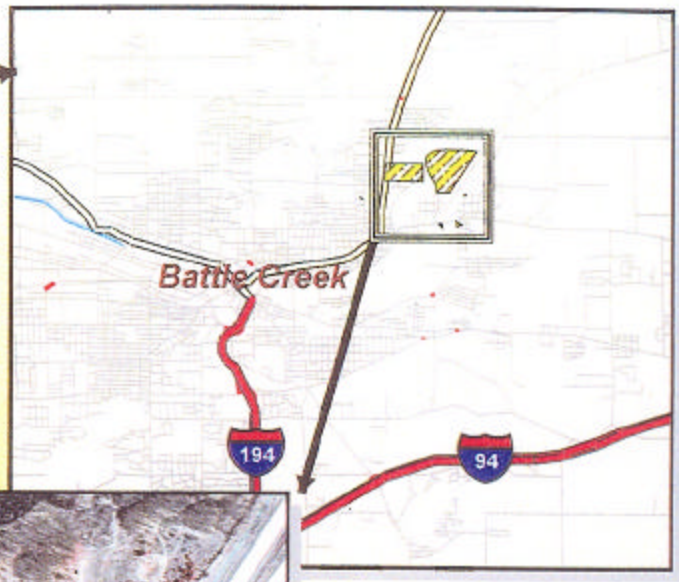
Cis/ Extraction Well GMA-1D	86	86	1.2
Cis/ Extraction Well GMA-2D	5.8	5.8	0.08
Cis/ MW-1	7.7	7.7	0.11
Cis/ MW B-8S	500	500	7.1
Cis/ MW B-09	660	660	9.4
Cis/ MW B-25	550	550	7.9
Cis/ MW GMA-9	23	23	0.3
Ethyl benzene/ MW B-8S	2000	28	27
PCE/ Extraction Well GMA-1D	26	26	26
PCE/ Extraction Well GMA-2D	17	17	17
PCE/ MW MW-2A	83	83	83
PCE/ MW MW-3	81	81	81
PCE/ MW B-8S	500	500	500
PCE/ MW B-09	44	44	44
PCE/ MW B-25	3500	3500	3500
PCE/ MW GMA-9	180	180	180
TCE/ Extraction Well GMA-1D	13	4.3	5.2
TCE/ MW MW-2A	10	3.3	4
TCE/ MW B-8S	150	50	60
TCE/ MW B-09	26	8.6	10
TCE/ MW B-25	890	300	360
TCE/ MW GMA-9	87	29	35
VC/ Extraction Well GMA-1D	8.2	8.2	8.2
VC/ MW B-09	610	610	610
Xylenes/ MW B-8S	1800	6	6.4
RESULTS AFFECTING TSRR EXTRACTION SYSTEM			
Cis/ EW-6	1002	1002	14

PCE/ MW B-18S	73	73	73
TCE/ EW-6	29	9.6	12

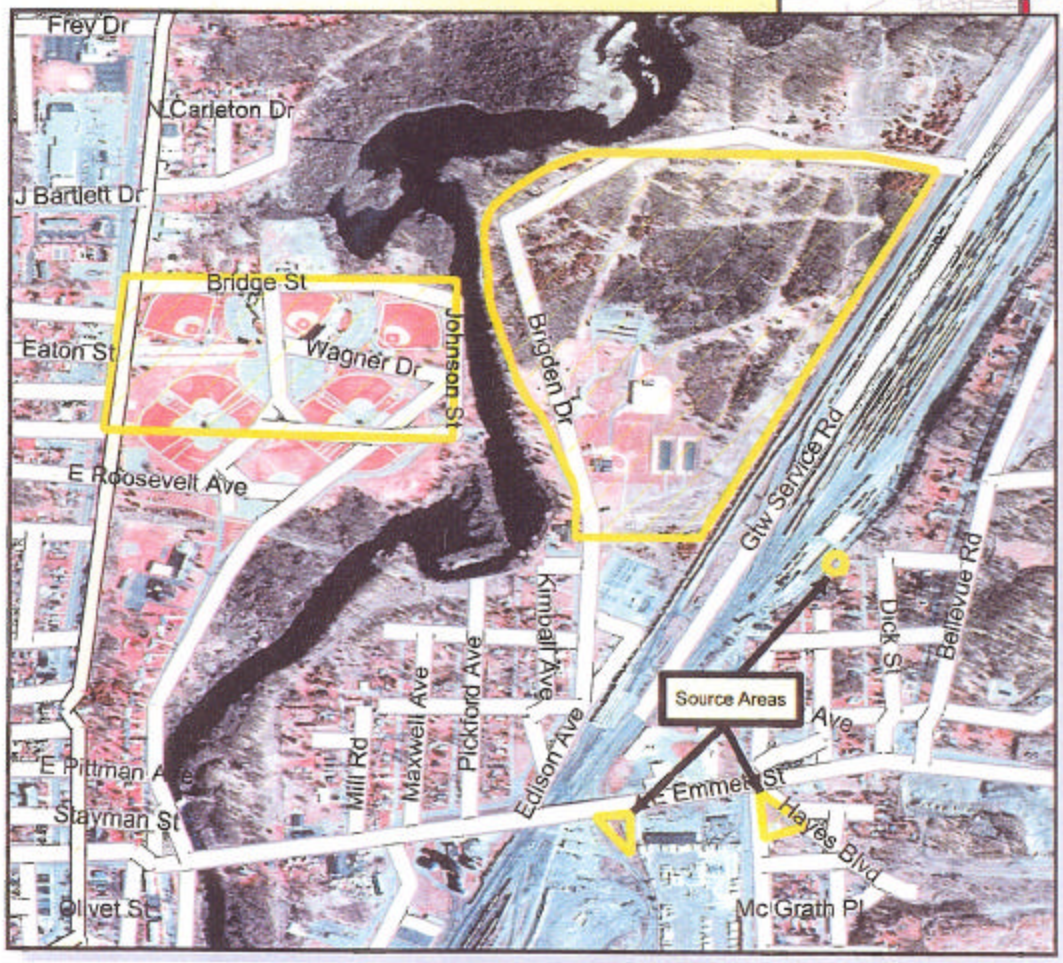
Verona Well Field Superfund Site
Calhoun County, Michigan

1) State

2) City of Battle Creek



3) Verona Well Field Superfund Site

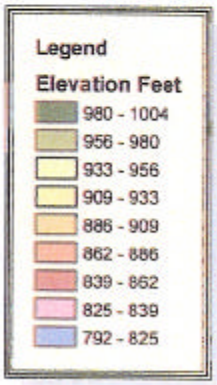


SEPA Region 5 Superfund GEOS

Plot created by David Wilson U.S. EPA Region 5/19/2002
Color Infra-Red Image Date: 4/8/1999

Figure 1

Verona Well Field Superfund Site
3D Surface Terrain Model



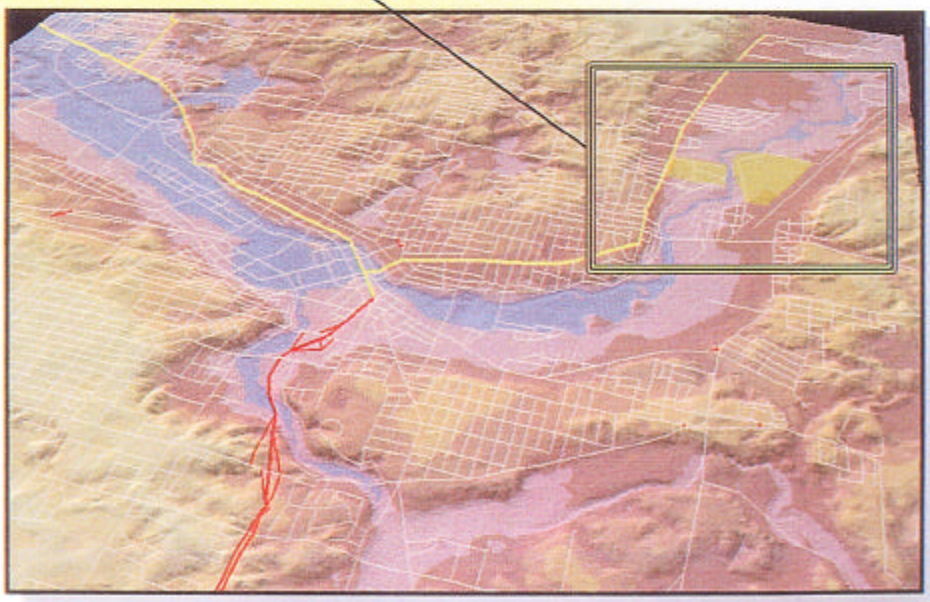


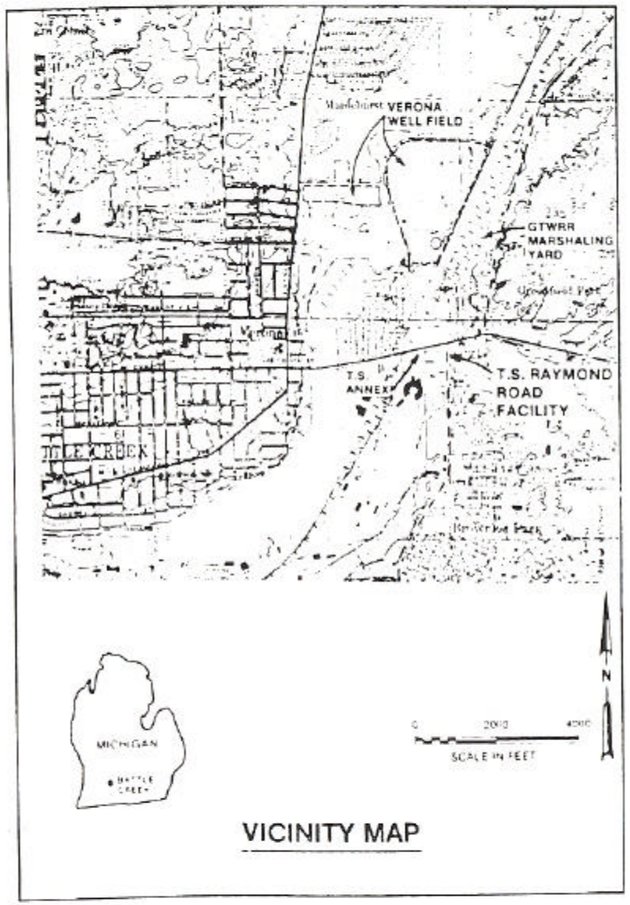
Figure 2

EPA Region 5 Superfund GEOS

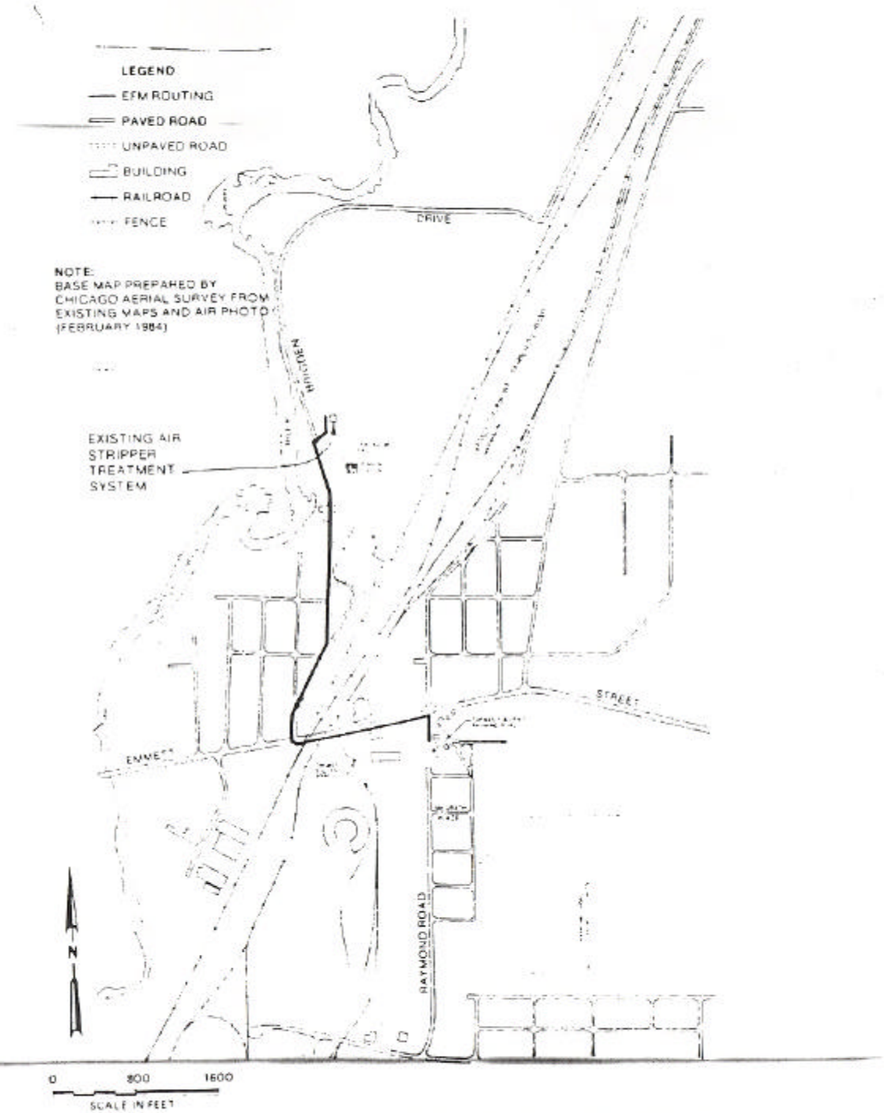
Plot created by David Wilson U.S. EPA Region 5 on 9/4/2002
B&W Image Date 4/5/1998

REMEDIAL ACTION EXTRACTION WELL SYSTEM

BATTLE CREEK, MICHIGAN



VICINITY MAP



EXTRACTION WELL FORCE MAIN (EFM) ROUTING

INDEX TO DRAWINGS

SHEET NO.	DRAWING NO.	TITLE
		GENERAL
1	G-1	COVER SHEET, INDEX TO DRAWINGS, VICINITY MAP, AND EFM ROUTING
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VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

THOMAS SOLVENT
RAYMOND ROAD FACILITY
REMEDIAL EXTRACTION WELL SYSTEM
BATTLE CREEK, MICHIGAN

GENERAL
COVER SHEET, INDEX TO DRAWINGS, VICINITY MAP, AND EFM ROUTING

SHEET 1
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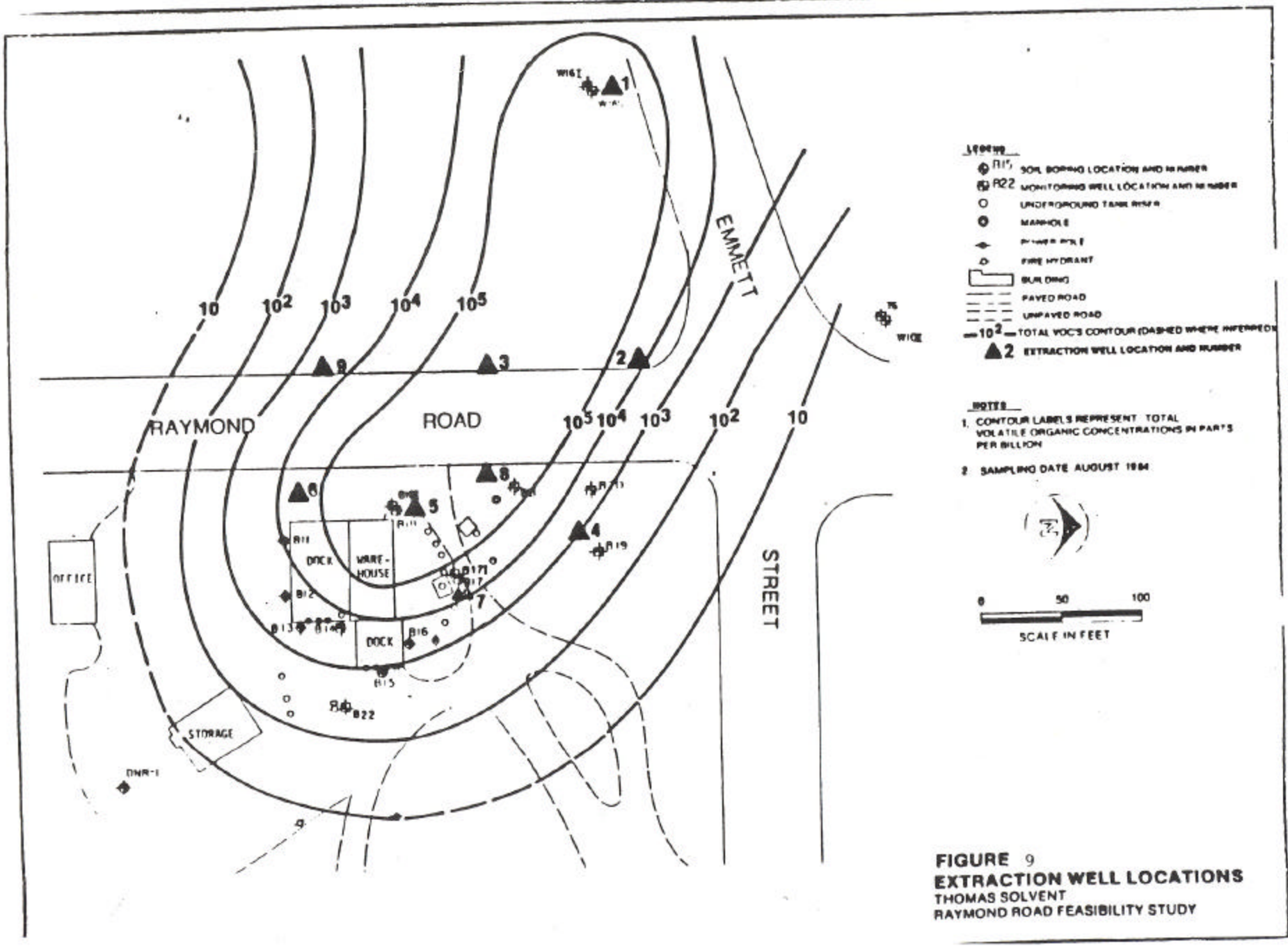

FIGURE 9
EXTRACTION WELL LOCATIONS
THOMAS SOLVENT
RAYMOND ROAD FEASIBILITY STUDY

FIGURE 9

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U.S. ENVIRONMENTAL PROTECTION AGENCY

ADMINISTRATIVE RECORD
FOR
VERONA WELL FIELD
REMEDIAL ACTION
BATTLE CREEK, MICHIGAN

UPDATE #3
SEPTEMBER 26, 2003

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1	06/00/88	CH2M Hill	U.S. EPA	Thomas Solvent Raymond Road Groundwater Extraction Well Treatment System Monitoring Report	
2	08/25/89	Danko, J., CH2M Hill	Ferrier, D., MDNR	Letter re: Soil Vapor Extraction Emissions Control at the TSRR Facility	
3	12/00/89	Black & Veatch, Engineers-Architects	City of Battle Creek	Report on Water Supply Needs Verona Wellfield Protection Plan for the City of Battle Creek	
4	02/16/90	Danko, J., Ch2M Hill	File	Memorandum re: Results of the Second Round of Soil Sampling at the TSRR Facility	
5	04/00/91	U.S. EPA	File	Performance Evaluation Report for the Thomas Solvent Raymond Road Operable Unit at the Verona Well Field Site	
6	09/12/91	Boersma, P., CH2M Hill	Geurriero, M., U.S. EPA	Memorandum re: Air Injection and Sparging Pilot Tests at Thomas Solvent Raymond Road	
7	01/22/92	Boersma, P., CH2M Hill	M. Martin & B. Haubold, U.S. EPA	Memorandum re: Operation of SVE System During 1992 at Thomas Solvent Raymond Road	
8	02/20/92	Ullrich, D., U.S. EPA	Hupp, C., Bodman, Longley & Dahling	Administrative Order for Remedial Design and Remedial Action re: the Verona Well Field Site w/ Cover Letter	
9	05/07/92	Ullrich, D., U.S. EPA	Ponitz, J., Grand Trunk Western Railroad Company	Administrative Order for Remedial Design and Remedial Action re: the Verona Well Field Site w/ Cover Letter	

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10	08/31/92	Boersma, P., CH2M Hill	Guerriero, M., U.S. EPA; B. O'Brien & N. Leeman, MDNR	Memorandum re: Review of Nitrogen Sparging at Thomas Solvent Raymond Road	
11	10/30/92	Boersma, P., et al., CH2M Hill	Guerriero, M. & B. Haubold, U.S. EPA	Memorandum re: Draft Analytical Data from Performance Objective Soil Sampling at TSRR	
12	02/26/93	Boersma, P., CH2M Hill	Guerriero, M. & B. Haubold, U.S. EPA	Memorandum re: Report on the TSRR Groundwater Groundwater Extraction System and Assessment of the Downgradient Plume at the Verona Well Field Site	
13	04/07/93	Morello, B., Geraghty & Miller, Inc.	Haubold, W., U.S. EPA	Blocking Well Phased Approach Technical Memorandum w/ Cover Letter	20
14	07/13/93	Geraghty & Miller, Inc.	Grand Trunk Western Railroad Company & Verona Well Field RD/RA Group	SVE Systems Final Design Report for the Verona Well Field Superfund Site (Revision to June 3, 1993 Report)	
15	08/13/93	Geraghty & Miller, Inc.	Grand Trunk Western Railroad	Draft Final Remedial Design/Remedial Action Work Plan for the Grand Trunk Western Railroad Paint Shop	
16	08/13/93	Geraghty & Miller, Inc.	Verona Well Field RD/RA Group	Draft Final Remedial Design/Remedial Action Work Plan for the Thomas Solvent Company Annex	
17	09/01/93	Geraghty & Miller, Inc.	Grand Trunk Western Railroad Company & Verona Well Field RD/RA Group	Annex and Paint Shop SVE Systems Monthly Operating Report for July 15-August 16, 1993 for the Verona Well Field Superfund Site	
18	09/02/93	Geraghty & Miller, Inc.	Verona Well Field RD/RA Group	Blocking Well Technical Memorandum No. 2 for the Verona Well Field Superfund Site	
19	09/29/93	CH2M Hill	U.S. EPA	Remedial Action Report for the Thomas Solvent Raymond Road Source Area	

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20	10/00/93	Geraghty & Miller, Inc.	Verona Well Field RD/RA Group	Quality Assurance Project Plan for Remedial Design/ Remedial Action Activities at the Verona Well Field Site (Revision to February 1993 QAPP)	
21	10/01/93	Geraghty & Miller, Inc.	Grand Trunk Western Railroad Company & Verona Well Field RD/RA Group	Annex and Paint Shop SVE Systems Monthly Operating Report for August 17-September 15, 1993 for the Verona Well Field Site	
22	10/15/93	Geraghty & Miller, Inc.	Verona Well Field RD/RA Group	Annex Groundwater Recovery System Preliminary Design Design Report for the Verona Well Field Site	
23	11/05/93	Geraghty & Miller, Inc.	Grand Trunk Western Railroad Company & Verona Well Field RD/RA Group	Annex and Paint Shop SVE Systems Monthly Operating Report for September 16-October 15, 1993 for the Verona Well Field Site	
24	11/16/93	Plomb, D., CH2M Hill	Guerriero, M., U.S. EPA	Memorandum re: Review of Blocking Well System at the Verona Well Field Site	
25	11/30/93	Geraghty & Miller, Inc.	Grand Trunk Western Railroad Company & Verona Well Field RD/RA Group	Annex and Paint Shop SVE Systems Monthly Operating Report for October 16-November 15, 1993 at the Verona Well Field Site	
26	12/22/93	Ohland, C., & P. Boersma, CH2M Hill	Guerriero, M., U.S. EPA	Memorandum re: Inspection Report for PRP Soil Vapor Extraction Operations at the Verona Well Field Site	
27	1993	Geraghty & Miller, Inc.	Guerriero, M., U.S. EPA	Monthly Progress Reports for the Period January-December 1993 for the Verona Well Field Paint Shop and Annex	33
28	01/03/94	Geraghty & Miller, Inc.	Grand Trunk Western Railroad Company & Verona Well Field RD/RA Group	Annex and Paint Shop SVE Systems Monthly Operating Report for November 16-December 15, 1993 for the Verona Well Field Site	

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29	01/03/94	Harris, W., U.S. EPA	Mayka, J., U.S. EPA	Memorandum re: Partial Approval of the Second Revision to the QAPP for the RD/RA Activities at the Verona Well Field Site	
30	01/31/94	Egg, M. & G. Rorech, Geraghty & Miller, Inc.	Guerriero, M., U.S. EPA	Letter Re: Soil Vapor Extraction Systems at Annex and Paint Shop at the Verona Well Field Site	35
31	03/22/94	Hupp, C., *Bodman, Longley & Dahling*	U.S. EPA	Verona Well Field RD/RA Group Petition to Amend the June 1991 ROD and Request for §121(c) Five-Year Remedy Review for the Verona Well Field Site: Volumes I-II (Petition, Exhibits and Appendix)	
32	03/31/94	Hupp, C., *Bodman, Longley & Dahling*	Muno, W., U.S. EPA	Letter re: Verona Well Field RD/RA Group's Petition to Revise the Remedy Under the June 1991 Record of Decision for the Verona Well Field Site	
33	05/05/94	Geraghty & Miller, Inc.	Grand Trunk Western Rail-road Company & Verona Well Field RD/RA Group	Annex and Paint Shop SVE Systems Quarterly Operating Report for January 16-April 15, 1994 for the Verona Well Field Site w/ Cover Letter	
34	06/28/94	Geraghty & Miller, Inc.	Grand Trunk Western Rail-road Company & Verona Well Field RD/RA Group	SVE Construction Completion Report for the Verona Well Site w/ Cover Letter	
35	09/26/94	Maumee Bay Environmental, Inc.	Verona Well Field RD/RA Group	Final RD/RA Design Report for the Verona Well Field Site	
36	10/11/94	Kovalick, W., U.S. EPA	Bosshard, B., Terra Vac, Inc.	Letter re: Soil Vapor Extraction Project at the Verona Well Field Site, Thomas Solvent Raymond Road Area	

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37	10/12/94	Morello, B., et al., Geraghty & Miller, Inc.	Guerriero, M., U.S. EPA	Letter re: Supplementary Modeling Information Supporting the U.S. EPA's Explanation of Significant Differences(ESD)for the Verona Well Field Site	
38	1994	Geraghty & Miller, Inc.	Guerriero, M., U.S. EPA	Monthly Progress Reports for the Period January-December 1994 for the Verona Well Field Paint Shop and Annex	21
39	04/00/95	CH2M Hill	U.S. EPA	Final Design Report for the Thomas Solvent Raymond Road Facility	
40	04/00/95	CH2M Hill	U.S. EPA	Final Groundwater Monitoring Plan for the Thomas Solvent Raymond Road Facility	
41	08/08/95	McCracken, W., MDNR	File	Permit: MDNR Authorization to Discharge Under the National Pollutant Discharge Elimination System (NPDES) for the Verona Well Field Thomas Solvents-Raymond Road Facility	
42	09/01/95	Geraghty & Miller. Inc.	Bartlett, J., U.S. EPA	Letter re: Modification of Explanation of Significant Differences for the Verona Well Field Site	
43	10/18/95	McCracken, W., MDNR/Surface Water Division	MDNR/ Environmental Response Division	Letter: MDNR Authorization to Discharge for the Verona Well Field Thomas Solvents-Raymond Road Facility	
44	12/04/95	Kohs, C., City of Battle Creek	O'Brien, B., MDEQ	Letter: PRPs Requested Changes to Clean-up Approach for the Source Areas at the Verona Well Field Site	
45	05/00/96	CH2M Hill	U.S.EPA	Quality Assurance Project Plan for the Groundwater Monitoring Plan for the Verona Well Field Thomas Solvent Raymond Road Site	
46	06/14/96	O.Brien, B., MDEQ	Bartlett, J., U.S. EPA	Letter re: Summary of Disposal Requirements of	

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47	06/20/96	Geraghty & Miller, Inc.	Verona Well Field RD/RA Group	Final Groundwater and Air Monitoring Plan for the Remedial Action System at the Verona Well Field Site	
48	06/26/96	Kohs, C., City of Battle Creek	O'Brien, B., MDEQ	Letter re: PRP Associated Changes to the Verona Well Field Site Record of Decision	
49	07/08/96	Morello, B. & G. Rorech, Geraghty & Miller, Inc.	Bartlett, J., U.S. EPA	Letter re: Waste Generator Information for Spent Packing at the Verona Well Field Site	
50	08/00/96	CH2M Hill	U.S. EPA	Verona Well Field TSRR Monthly Reports for May-July 1996	
51	08/30/96	Howard, A., MDEQ	Bartlett, J., U.S. EPA	Letter re: MDEQ's Comments to Proposed Changes to the ESD for the Verona Well Field Site	
52	09/09/96	Morello, B. & G. Rorech, Geraghty & Miller, Inc.	Boice, R., U.S. EPA	Letter: Residual Disposal Procedures for the Remedial Action Construction at the Verona Well Field Site	
53	09/18/96	Boice, R., U.S. EPA	Rorech, G., Geraghty & Miller, Inc.	Letter re: U.S. EPA/MDEQ's Response to G&M's Proposed Procedures for the Handling of Water and Soil Residuals at the Verona Well Field Site	
54	10/14/96	O'Brien, B., MDEQ	Morello, B., Geraghty & Miller, Inc.	Letter re: Requirements for Disposal of Spent Carbon Generated from Off-Gas Treatment of the Verona Well Field Air Stripper	
55	10/23/96	O'Brien, B., MDEQ	Rorech, G. & B. Morello, Geraghty & Miller, Inc.	Letter re: Substantive Requirements Document for the Verona Well Field PRP Group's Operation of Air Stripper w/ Attachments	
56	12/00/96	CH2M Hill	U.S. EPA	Construction Activities Documentation Report	
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58	12/18/96	U.S. EPA, et al.	File	Prefinal Inspection Record for the Verona Well Field Site	
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60	06/00/97	Geraghty & Miller, Inc.	Verona Well Field RD/RA Group	Remedial Action Construction Completion Report for the Verona Well Field Superfund Site	
61	06/00/97	Geraghty & Miller, Inc.	Verona Well Field RD/RA Group	Operation & Maintenance Manual for the Verona Well Field Remedial Action	
62	06/26/97	U.S. EPA	File	Preliminary Closeout Report for the Verona Well Field Site	
63	07/00/97	Geraghty & Miller, Inc.	Verona Well Field RD/RA Group	Monitoring Report for the First Quarter of Operation at the Verona Well Field Site (Revised April 1997 Report): Volume 1 (Text, Tables, Figures and Appendices A-G)	
64	07/00/97	Geraghty & Miller, Inc.	Verona Well Field RD/RA Group	Monitoring Report for the First Quarter of Operation at the Verona Well Field Site (Revised April 1997 Report): Volume 2 (Appendices H-I)	
65	12/01/97	CH2M Hill	U.S. EPA	Cost and Performance Report for the Verona Well Field Thomas Solvent Raymond Road Site	
66	01/00/98	ARCADIS Geraghty & Miller	Verona Well Field RD/RA Group	Annual Monitoring Report for the Verona Well Field Remedial Action: 2 Volumes (Text, Tables, Figures and Appendices A-G)	
67	01/15/98	Boice, R., U.S. EPA	Rorech, G., Geraghty & Miller, Inc.	Letter re: (1) Required Flow Rates in the Verona Well Treatment System, (2) Annex and Paint Shop Soil Cleanup Verification Sampling Plan and (3)	

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69	03/00/98	U.S. EPA	File	Explanation of Significant Differences for the Verona Well Field Site (DRAFT)	
70	03/06/98	Boice, R., U.S. EPA	Rorech, G., Geraghty & Miller, Inc.	Letter re: Treatment System Flow Capacity for the Verona Well Field Remedial Action	
71	03/23/98	Boice, R., U.S. EPA	Rorech, G., ARCADIS Geraghty & Miller, Inc.	Letter re: Approval, with Modifications, of the January 1998 Annual Monitoring Report for Verona Well Field Remedial Action	4
72	04/00/98	ARCADIS Geraghty & Miller, Inc.	Verona Well Field RD/RA Group	Annual Monitoring Report Addendum for the Verona Well Field Remedial Action	
73	04/08/98	Kohs, C., City of Battle Creek	Boice, R., U.S. EPA	Letter re: U.S. EPA's Draft Copy of the ESD for the Verona Well Field Site	
74	04/17/98	Morello, B. & G. Rorech, ARCADIS Geraghty & Miller, Inc.	Boice, R., U.S. EPA	Letter re: Response to U.S. EPA Letter Dated March 23, 1998 for the Verona Well Field Site	2
75	04/17/98	Morello, B. Arcadis Geraghty & Miller, Inc.	Kohs, K., City of Battle Creek	Letter re: Request for Monitoring Data from the City's Iron/Manganese ese Treatment System	2
76	05/12/98	Morello, B. & G. Rorech, ARCADIS Geraghty & Miller, Inc.	O'Brien, B., MDEQ	Letter re: Response to Request for Electronic Modeling Information for the Verona Well Field Site	10
77	06/01/98	Morello, B. & G. Rorech, ARCADIS Geraghty & Miller, Inc.	Boice, R., U.S. EPA	Letter re: Project Update and Request for Approval of Modification of Monitoring Program at the Verona Well Field Site	2
78	07/22/98	Morello, B. &	Boice, R.,	Letter re: Response to	4

		G. Rorech, ARCADIS Geraghty & Miller, Inc.	U.S. EPA	Recent Correspondence Concerning the Verona Well Field Site

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80	10/07/98	Rorech, G., Arcadis Geraghty & Miller, Inc.	Boice, R., U.S. EPA	Letter: Summary of Issues Discussed at the September 30, 1998 Meeting for the Verona Well Field Site	2
81	1998	ARCADIS Geraghty & Miller, Inc.	U.S. EPA	Project Progress Reports for the Period January-December 1998 for the Verona Well Field Paint Shop and Annex	
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84	03/11/99	Morello, B. & G. Rorech, Arcadis Geraghty & Miller, Inc.	O'Brien, B., MDEQ and R. Boice, U.S. EPA	Memorandum re: Comments on MDEQ Model Review Letter for the Verona Well Field Site	18
85	03/11/99	Morello, B. & G. Rorech, ARCADIS Geraghty & Miller, Inc.	Westjohn, D., U.S.	Memorandum re: Comments on Draft USGS Proposal for Verona Well Field Studies	
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87	04/09/99	Morello, B. & G. Rorech, ARCADIS Geraghty &	Boice, R., U.S. EPA	Letter re: Comments on Revised USGS Proposal for VWF Studies for the Verona Project	2
88	04/23/99	Morello, B. & G. Rorech, ARCADIS Geraghty &	Boice, R., U.S. EPA	Memorandum re: Results of Packer vs. Non-packer Testing at Sentinel Wells at the Verona Project	

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90	05/20/99	Morello, B. & G. Rorech, ARCADIS Geraghty & Miller, Inc.	Boice, R., U.S. EPA	Letter re: Y2K Compliance of the VWF RA for the Verona Well Field Site	14
91	06/01/99	Morello, B. & G. Rorech, ARCADIS Geraghty & Miller, Inc.	Boice, R., U.S. EPA	Letter: U.S. EPA Comments on the 1998 Annual Monitor-ing Report for the Verona Well Field Site	1
92	09/09/99	Hupp, C., *Bodman, Longley & Dahling LLP*	VWF Group Executive Committee	Memorandum re: VWF Long Range Planning Process	7
93	09/14/99	Morello, B., ARCADIS Geraghty & Miller, Inc.	Boice, R., U.S. EPA; et al.	Memorandum re: Summary of Summer 1999 Activities for the Verona Project	
94	11/17/99	Morello, B., Progressive Engineering & Construction, Inc.	Distribution List	Memorandum re: November 10, 1999 VWFMP Technical Committee Meeting Minutes	9
95	11/22/99	Kladias, M., ARCADIS Geraghty & Miller, Inc.	Morello, B., Progressive Engineering & Construction, Inc.	Memorandum re: Summary of Model Comparisons to USGS Stream Loss Estimates and Tracer Tests for the Verona Well Field Site	
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97	12/07/99	Morello, B., Progressive Engineering & Construction, Inc.	Boice, R., U.S. EPA; et al.	Memorandum re: Work Plan for Additional Shallow Investigation for the Verona Project	5

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101	01/11/00	Hupp, R., Bodman, Longley & Dahling, LLP	Boice, R. & R. Grimes, U.S. EPA	Letter re: VWF PRP Group's Request for Reduction in U.S. EPA's Past Costs and Future Oversight Costs at the Verona Well Field Site	
102	01/17/00	Morello, B., Progressive Engineering & Construction, Inc.	Boice, R., U.S. EPA; et al.	Memorandum re: Summary Report for December 1999 Additional Shallow Inves-tigation for the Verona Project	
103	01/18/00	Morello, B. & G. Rorech, Progressive Engineering & Construction, Inc.	Distribution List	Memorandum: Comprehensive Summary of 1999 Activities for the Verona Project	12
104	02/17/00	Progressive Engineering & Construction, Inc.	Verona Well Field RD/RA Group	1999 Annual Monitoring Report for Verona Well Field Remedial Action: 2 Volumes(Text, Tables, Figures and Appendices A-J)	
105	02/24/00	Morello, B., Progressive Engineering & Construction,	Baltusis, M., MDEQ	Memorandum re: Soil Quality Documentation for the Verona Well Field Site w/ Attachments	

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107	03/21/00	Morello, B. & G. Rorech, Progressive Engineering & Construction, Inc.	Distribution List	Memorandum re: Discussion of Lagoon Impacts on the Verona Well Field Remedial Action w/ Attachments	14
108	03/27/00	Boice, R., U.S. EPA	Morello, B., Progressive Engineering & Construction, Inc.	Letter re: U.S. EPA's Comments on the 1999 Annual Monitoring Report for the Verona Well Field Site	
109	03/31/00	Morello, B. & G. Rorech, Progressive Engineering & Construction, Inc.	Boice, R., U.S. EPA; et al.	Memorandum re: Well Maintenance Schedule for the Verona Project (ATTACHMENT 2 HAS BEEN REDACTED–CONTAINS CONFIDENTIAL BUSINESS INFORMATION)	7
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112	05/10/00	Morello, B. & G. Rorech, Progressive Engineering & Construction, Inc.	Kohs, K., City of Battle Creek; et al.	Memorandum re: General Contact Information for VWF Management at the Verona Project	3
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118	07/31/00	Morello, B., Progressive Engineering & Construction, Inc.	Boice, R., U.S. EPA; et al.	Memorandum re: Well Maintenance and Discharge of Cleaning Fluids at the Verona Project	2
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252	04/16/03	Boice, R., U.S. EPA	Morello, B., Progressive Engineering & Construction, Inc.	Letter re: Construction of the Enhanced System Bypass Piping and Schedule for Improvements to Annex and Paint Shop Ground Water Containment at the Verona Well Field Site

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253	05/00/03	Muno, W., U.S. EPA	Chezik, M., U.S. DOI	Letter re: Notice to U.S. DOI of Negotiations Between Private Parties and U.S. EPA Toward a Consent Decree for Remedial Actions at the Verona Well Field Site	
254	05/20/03	Baltusis, M., MDEQ	Mead-O'Brien, B., MDEQ	Memorandum re: MDEQ's Proposed Locations for Piezometers at the Annex at the Verona Well Field Site	
255	05/23/03	Progressive Engineering & Construction, Inc.	Verona Well Management Plan Parties; et al.	Source Area Groundwater Metals and SVOCs Assessment Summary Report for the Verona Well Field Site	
256	06/09/03	Boice, R., U.S. EPA	File	Conversation Record for the June 9, 2003 Conference Call re: the Verona Well Field Site	
257	06/12/03	U.S. EPA/ OSWER	Bailey, M., U.S. EPA	Letter re: Use of the Cal EPA Air Toxic Hot Spots Program Inhalation Unit Risk for PCE at Superfund Sites	
258	06/20/03	Progressive Engineering & Construction, Inc.	Verona Well Field RD/RA Group	Final Annex Recovery System Upgrades Design Build Document for the Verona Well Field Site (May 22, 2003 Draft Revised as Final)	
259	07/18/03	Boice, R., U.S. EPA	Morello, B., Progressive Engineering &	Letter re: U.S. EPA's Approval, with Modifications, of the June 20,	

			Construction, Inc.	2003 Annex Recovery System Upgrades Design Build Document for the Verona Well Field Site w/ Attachment
260	07/28/03	Boice, R., U.S. EPA	O'Brien, B., MDEQ	Memorandum re: Verona Well Field Annex Source Area
261	08/15/03	Boice, R., U.S. EPA	Morello, B., Progressive Engineering & Construction, Inc. & E. Mead-O'Brien, MDEQ	Letter re: List of Contaminants that Require Future Monitoring which U.S. EPA Intends to Approve through an ESD for the Verona Well Field Site

NO.	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
262	08/18/03	Mead-O'Brien, B., MDEQ	Boice, R., U.S. EPA	FAX Transmission re: August 6, 1993 CH2M Hill Memorandum Concerning Analytical Data from Performance Objective Soil Sampling at the TSRR Source Area	
263	08/22/03	Lovelace, K., U.S. EPA	Boice, R., U.S. EPA	E-Mail Transmission re: Comments on the Draft ESD for the Verona Well Field Site	
264	08/25/03	Morello, B., Progressive Engineering & Construction, Inc.	Boice, R., U.S. EPA	Memorandum re: Response to August 12, 2003 E-Mail Request for Copies of Project Documents for U.S. EPA's Administrative Record for the Verona Well Field Site	
265	08/26/03	Hupp, R., Bodman, Longley & Dahling, LLP	Boice, R., U.S. EPA	Letter re: VWF Group's Comments on the August 15, 2003 Draft ESD for the Verona Well Field Site	
266	08/29/03	Trepod, G., Hubbard, Fox, Thomas, White & Bengston, P.C.	Boice, R., U.S. EPA	Letter re: City of Battle Creek's Comments on the August 15, 2003 Draft ESD for the Verona Well Field Site	
267	09/22/03	Morello, B., Progressive Engineering & Construction, Inc.	Sliver, S., MDEQ	Letter re: Additional Information in Support of the Request for Variance from Compliance with 40 CFR 264.193 for the Annex Pipeline at the Verona Well Field Site w/ Attachments	

268	09/24/03	Browne, E., MDEQ	Mayka, J., U.S. EPA	Letter re: MDEQ's Comments on the August 15, 2003 Draft ESD for the Verona Well Field Site
269	00/00/00	U.S. EPA	Public	Explanation of Significant Differences for the Verona Well Field Site **(PENDING)**

Comments or questions are invited and can be directed to:

United States Environmental Protection Agency
P-19J
77 West Jackson Blvd.
Chicago, IL 60604

Michigan Department of Environmental Quality
Project Manager – Verona Well Field
Superfund Section, Remediation and Redevelopment Division
Constitution Hall – 3rd Floor South
P.O. Box 30426
Lansing, Michigan 58909

City of Battle Creek
Public Works Department
P.O. Box 1717
Battle Creek, Michigan 49016-1717
Attention: Charles K. Kohs, P.E.

WEM 9/29/03

KEB 9/26/03

PMS 9/25/03

William E. Muno
Director Superfund Division

DATE

CK 9/29/03

DJB.
RES#6/9-26-03

9/29/03

ATTACHMENT 4

Trust Management Agreement

March 2005

TRUST MANAGEMENT AGREEMENT

This Trust Management Agreement (this “Agreement”) is entered into as of the Effective Date (defined below) by and among U.S. Bank National Association as Trustee (successor to Comerica Bank), 535 Griswold Street, Suite 550, Detroit, MI 48226 ("Trustee"), the State of Michigan and its Department of Environmental Quality (together, "State), and the members of the Verona Well Field Site RD/RA Group (collectively, “the Group” or in the State Consent Decree “Defendants,” as identified on Attachment 1), a voluntary unincorporated association, with regard to certain Remedial Action at the Verona Well Field Battle Creek Superfund Facility, except the Raymond Road Source Area (“Relevant Facility”).

R E C I T A L S

A. The Group has previously established and funded the Verona Well Field Site RD/RA Trust (the “Trust”) by and pursuant to a separate trust agreement (the “Trust Agreement”) under which U. S. Bank National Association presently serves as Trustee and which, with this Agreement, serves as a financial assurance mechanism for the performance of its Remedial Action obligations at the Relevant Facility.

B. On _____, 2006, the State and the Group entered into a Judicial Consent Decree, the Attorney General of the State of Michigan v. Grand Trunk Western Railroad, Incorporated, et al., Case No. 5:06-CV-13 (W.D.MI) (“State Consent Decree”).

C. The United States Environmental Protection Agency and the Group have entered into a consent decree (“Federal Consent Decree”), one term of which is a requirement that the Group establish a financial assurance mechanism to assure performance of certain identified obligations under the Federal Consent Decree (“Federal Remedial Obligations”). The State acknowledges that the Trust will also serve as a financial assurance mechanism for the performance of Federal Remedial Obligations.

D. Pursuant to the terms of the State Consent Decree, the Group will fund the Trust sufficiently such that its assets meet the agreed upon financial assurance requirements as set forth in the State Consent Decree and the anticipated Federal Consent Decree. The Group may deposit additional cash into the Trust as may be required from time to time by the State Consent Decree, the Federal Consent Decree or to serve the Group’s own interests.

E. The State Consent Decree provides that the State may seek reimbursement of certain expenses incurred by the State in conducting certain response activities pursuant to Section IX and Paragraph 23.1 in the State Consent Decree.

F . The Trustee shall hold, invest and disburse funds in the Trust subject to the terms and conditions provided below.

NOW, THEREFORE, in consideration of the premises herein, the parties hereto agree as follows:

DEFINITIONS

1. "Effective Date" means the date upon which this Agreement becomes effective which shall be 28 days after the date that the Trustee receives written notice from the Group that the State Consent Decree has been executed by both parties.

2. "Future O&M Costs" means the present worth of the costs of monitoring, operations and maintenance of all response activities for the Relevant Facility required to carry out all response activities required by the State Decree and operate and maintain the Enhanced System, the Source Area Enhancements and the Annex Source Area for the lesser of thirty (30) years or the expected duration of the remedial activities as approved by the MDEQ.

3. "Designated Representatives" means those individuals authorized by the Group to provide direction to the Trustee and are initially designated in Section VII.

4. Terms not expressly defined herein shall have the meaning as defined in the State Consent Decree if defined therein.

I. DEPOSITS INTO TRUST

1.1 Segregation of the Trust Into Four Parts

a) Funds in the Trust will be segregated, as provided in Section 1.1(b) below, into four subaccounts: "Part A - Enhanced System" ("Part A"), "Part B - Source Area Enhancements" ("Part B"), "Part C - Annex Source Area" ("Part C"), and "Part D – Other" ("Part D"), as provided pursuant to Paragraph 6.13 of the State Consent Decree. The assets in the Trust may be commingled and managed as a single fund.

b) The segregation of the funds shall occur when the first valuation of Future O&M Costs is performed pursuant to Paragraph 6.13 g) (ii) and (iii) of the State Consent Decree. The Group by its Designated Representatives shall provide a written notice to the Trustee of the first valuation of Future O&M Costs which shall specify the required balances in Parts A, B and C of the Trust. Funds remaining in the Trust after segregating funds for Parts A, B and C, if any, will be considered as belonging to Part D. The Group shall promptly provide the Trustee with a copy of the written approval by MDEQ of the first valuation of Future O&M Costs.

c) If, when the first valuation of Future O&M Costs is performed and approved by MDEQ, the market value of the Trust assets is insufficient to fully fund Parts A, B and C, the Group will deposit with the Trustee within 8 weeks after the written approval an amount sufficient to fund each Part. The Trustee shall notify MDEQ in writing within 14 days after the deposit, stating the amount of deposit into Parts A, B and C and stating the market value of each Part after the deposit.

d) The Trustee shall notify MDEQ in writing within 10 weeks after the Group has received written MDEQ approval of such first valuation of Future O&M Costs, stating the market value of Parts A, B and C of the Trust.

1.2 Part D Confidentiality

All information with regard to Part D of the Trust shall be treated as confidential between the Group and the Trustee. The MDEQ waives and releases any claim or right to discover such information.

1.3 Notification To Trustee of Valuation of Future O&M Costs

The Group by its Designated Representatives shall notify the Trustee in writing, with a copy to MDEQ, of each valuation of Future O&M Costs, and the allocation to Parts A, B and C of the Trust within 14 days after the Group receives approval from MDEQ of any valuation performed after the initial valuation pursuant to Paragraph 6.13(a)(ii) and (g) of the State Consent Decree. The Trustee shall be entitled to rely for all purposes under this Agreement on the most recently received valuation of Future O&M Costs provided by the Group (and copied by the Group to MDEQ) and shall have no obligation to investigate the same or to confirm that MDEQ has approved same but may conclusively rely on written notices from the Designated Representatives of the Group. Receipt of the valuation of Future O&M Costs does not impose upon Trustee any duty or obligation to monitor, oversee, or enforce the Group's duty to make deposits to Parts A, B and C.

1.4 Subsequent Deposits

If required by the terms of Paragraph 6.13 of the State Consent Decree, the Group shall deposit with the Trustee additional cash to be credited to Parts A, B, and/or C of the Trust. The Trustee shall notify MDEQ in writing within 14 days after receipt of such a deposit, stating the amount of the deposit into Parts A, B and C and stating the market value of each such Part after the deposit.

1.5 Earnings on Deposits

Earnings from the Trust assets shall be invested as part of the principal. The Group shall be responsible for any tax associated with the earnings on assets in the Trust. Changes in asset value and income shall be allocated to the four Parts of the Trust *pro rata* by the market value of assets attributed to each Part.

1.6 Certification Of Trust Value

Annually on or before March 1st, the Trustee shall certify to the State what, as of December 31st of the previous year, the market value of Trust assets in Parts A, B, and C was.

II. Right to Draw Against The Parts of the Trust

2.1 Authority To Make Draws

a) Except as provided in Section 3.1 below, the MDEQ shall have the right to draw against Part A of the Trust to perform response activities associated with the Enhanced System or pursuant to Paragraph 23.1 or Section IX (Emergency Response) of the State Consent Decree. The State agrees that if the USEPA performs the required response activities, then the USEPA may draw against Part A.

b) The MDEQ shall have the exclusive right to draw against Part B of the Trust to perform Source Area Enhancements.

c) The State shall have no right to draw against Part C of the Trust to perform Annex Source Area remedial activities, unless the USEPA does not elect to perform the required response activities and agrees that the MDEQ may perform the required response activities. Then the MDEQ may draw against Part C but only if a written certification is issued by the USEPA which specifically identifies the obligations which the Group has failed or refused to perform and states that the USEPA waives its right to draw against Part C for any costs it may incur in performing the same specifically identified obligations which the Group has failed or refused to perform.

d) The Group shall have the exclusive right to draw against Part D of the Trust. At no time and under no circumstances shall the MDEQ have any right to assert a claim to or against assets held in Part D of the Trust and the MDEQ herby waives and releases any right it has now or in the future to assert such a claim.

2.2 **No Duplicative Draws**

Under no circumstances shall MDEQ make a draw to cover the same work for which a prior draw has been made by USEPA. The Trustee shall have no obligation to monitor or investigate compliance with this Section 2.2 by the MDEQ but the Trustee may conclusively rely on the written notices or court orders which it receives pursuant to Section 3.1 a) for the purpose of disbursing funds.

III. CONDITIONS FOR PAYMENT FROM THE TRUST

3.1 **Use of Parts A, B and C of the Trust for Costs Incurred for the Performance of Remedial Obligations Not Performed By the Group**

a) The Trustee shall disburse funds from the Trust to the MDEQ under either of the following two circumstances:

1) Upon receipt of a written notice executed by the Designated Representatives of the Group and the MDEQ, directing the payment of a specific sum or disbursement from a specifically designated Part of the Trust, the Trustee shall disburse funds as directed from the designated Part of the Trust but only to the extent there are funds in the designated Part to satisfy the amount specified.

2) Upon receipt of a court order directing payment to the MDEQ or their contractors from a specifically designated Part of the Trust, the Trustee shall disburse funds as directed by and according to the terms of the court order but only to the extent that there are funds in the designated Part to satisfy the amount specified in the court order.

b) Disbursement shall be made within fourteen (14) days after receipt by the Trustee of the written notice or court order to the extent that funds are available in the designated Part of the Trust.

c) The Group agrees to pay the amount specified in the court order directing payment to the MDEQ.

d) If either the payment agreed to in writing by the parties or the

court-ordered payment exceeds the amount in the designated Part of the Trust, or if the required payments reduce the market value of the assets in the relevant Part of the Trust below the relevant Future O&M Costs, the Group shall deposit a sum into the Trust within sixty (60) days of the written notice or the court order which shall be an amount sufficient to fully pay all the State's costs and restore the market value of the relevant Part to equal or exceed the Future O&M Costs. The Trustee shall disburse the additional funds to the MDEQ, as required by the applicable written notice or court order within fourteen (14) days of receipt of the additional deposit.

e) State costs paid from the Trust, shall be remitted to the State as follows:

Revenue Control Unit
Department of Environmental Quality
525 West Allegan Street
P.O. Box 30657
Lansing, MI 48909-8157

or as otherwise directed in writing by the MDEQ or by the court order.

f) The Group may draw against Part D of the Trust upon delivery of a written request by its Designated Representatives to the Trustee specifying the amount of the draw.

3.2 Reduction of Escrow Amount

The Group may draw against the relevant part of the Trust to pay Future O&M Costs as they are incurred by delivery to the Trustee of a written notice specifying the amount of the draw, the payee, a brief description of the purpose of the payment and the Part of the Trust against which the draw shall be made. The Group may also withdraw funds from Parts A, B, and C of the Trust by delivery to the Trustee of a written notice specifying the amount of the draw, the payee and the Part of the Trust against which the draw shall be made for any other use whatsoever so long as the Trustee certifies to the MDEQ before making a disbursement in accordance with such a withdrawal request that the market value of the remaining assets will be at least equal to the most recent valuation of Future O&M Costs. There is no restriction on the Group from withdrawing funds from Part D of the Trust.

IV. MANAGEMENT AND INVESTMENT OF TRUST ASSETS

4.1 Preservation of Income and Principal

The Trustee shall at all times hold, invest and disburse the assets of the Trust subject to the terms of this Agreement.

4.2 Investment of Trust Funds

a) The Trustee shall invest and reinvest all or any part of the Trust, including any earnings there from, exclusively in the investments hereinafter listed: in United States direct obligations, obligations guaranteed by the United States or agencies of the United States, common trust funds or mutual funds which invest solely in United States direct or guaranteed obligations, bank certificates of deposit to the extent they are insured by the federal government, and long-term debt, fixed-income, government-sponsored, government-backed, corporate, or asset-backed securities, having a rating of A- or A3 or better by Moody's or Standard and Poor's at the time of purchase.

b) Securities or other obligations of any member of the Group or any other owner or operator of the facility, or any of their affiliates as defined in the Investment Company Act of 1940, as amended, 15 U.S.C. 80a-2(a), shall not be acquired or held in Parts A, B, and C of the Trust, unless they are securities or other obligations of the United States of America or the State of Michigan;

c) The Trustee is authorized to invest the Trust assets in time or demand deposits of the Trustee, to the extent insured by an agency of the United States of America or the State of Michigan; and

d) The Trustee is authorized to hold cash while awaiting investment or distribution uninvested for a reasonable time and without liability for the payment of interest thereon.

e) In all cases, however, the total investments must be sufficiently liquid to enable the Trustee to fulfill the purpose of the Trust and to satisfy obligations of the Trust.

V. POWERS, DUTIES AND OBLIGATIONS OF THE TRUSTEE

5.1 Duties of Trustee

This Agreement expressly sets forth all the duties of the Trustee with respect to any and all matters pertinent hereto. No implied duties or obligations shall be read into this Agreement against the Trustee. The Trustee shall not be

bound by the provisions of any agreement among the other parties hereto that conflicts with this Agreement.

5.2 Authority of Trustee

The Trustee shall have the authority to make, execute, acknowledge and deliver any and all documents of transfer and conveyance and any and all instruments and employ employees, attorneys and agents that may be necessary or appropriate to carry out the powers herein described.

5.3 Designation of Investments

The Trustee may register or hold any security in bearer form or in book entry, or to deposit or arrange for the deposit of such securities in a qualified central depository even though, when so deposited, such securities may be merged and held in bulk in name of the nominee of such depository with other securities deposited therein by another person, or to deposit or arrange for the deposit of any securities issued by the United States Government, or any agency or instrumentally thereof, with a Federal Reserve Bank, but the books and records of the Trustee will at all times show that all such securities are part of this Trust.

5.4 Accounting for the Trust

The Trustee shall keep all records of the Trust concerning assets held by it pursuant to this Agreement on a calendar-year basis. The Trustee shall provide to the MDEQ an annual accounting of disbursements from Parts A, B and C of the Trust and market value and income earned from these Parts.

The annual accounting shall show in reasonable detail the following:

1. The total funds deposited into Parts A, B and C of the Trust;
2. Accrued earnings on the funds deposited into Parts A, B and C of the Trust;
3. The amount of the Future O&M Costs that have been paid for Remedial Action out of the Trust from Parts A, B & C;
4. Any other release of Trust funds from the Parts A, B or C of the Trust to the Group; and
5. The market value of Parts A, B, and C of the Trust at the beginning and end of the year.

5.5 Standard of Care

In investing, reinvesting, exchanging, selling and managing the Trust, the Trustee will discharge its duties with respect to the Trust solely in the interest of the parties hereto, and with the care, skill, prudence, and diligence under the circumstances then prevailing which persons of prudence, acting in a like capacity and familiar with such matters, would use in the conduct of an enterprise of a like character and with like aims.

5.6 Liability

The Trustee shall not be personally liable for any action or inaction taken in good faith reliance on the advice of an investment advisor or manager, nor for delegation in good faith of investment decision-making authority to such advisor or manager.

Each Trustee, whether initially named or appointed as a successor Trustee, acts as a Trustee only and not personally; and in respect of any contract, obligation or liability made or incurred by the Trustee in good faith and in compliance with this Agreement, all persons shall look solely to the Trust and not the Trustee personally. Except as set forth below in this Section 5.6, the Trustee initially named or appointed as successor Trustee by the Group or any person(s) acting on its behalf shall be indemnified and held harmless by the Trust and jointly and severally by the members of the Group with respect to obligations or liabilities incurred through the performance of his duties under this Agreement; in particular such indemnification shall extend to any act taken or any omission to act, at the direction of the Group or any person(s) acting on its behalf or in reliance on any notice from the Group or any person(s) acting on its behalf. Except as set forth below in this Section 5.6, this indemnification and hold harmless provision shall cover all fees, costs and expenses reasonably incurred by such Trustee in defense of the aforementioned acts or omissions of the Trustee or the members or the Group. This indemnification shall not apply to: (i) any liability arising from a criminal proceeding where the Trustee had reasonable cause to believe that the conduct in question was unlawful; (ii) any reckless or grossly negligent act by the Trustee; (iii) any breach of a Trustee's obligations; or (iv) any willful misconduct (by omission or commission). This section shall survive the resignation or removal of the Trustee and/or the termination of the Trust.

5.7 Entitled To Rely

The Trustee shall be entitled to rely upon any order, judgment, certification, demand, notice, instrument or other writing delivered to it hereunder without being required to determine the authenticity or the correctness of any fact stated therein or the propriety or validity of the service thereof. The Trustee may act in reliance upon any instrument or signature reasonably believed by it to be genuine.

5.8 Advice of Counsel

The Trustee may from time to time consult with counsel with respect to any question arising as to the construction of this Trust Management Agreement or any action to be taken hereunder. The Trustee shall be fully protected, to the extent permitted by law, in acting upon the advice of counsel. The expense related to the advice of counsel shall be covered as part of the services rendered for the monthly fee paid to the Trustee.

The parties acknowledge that Bodman, LLP is regular counsel for Trustee on matters of trustee authority and agree and consent that Trustee may retain Bodman, LLP to provide such advice with regard to the Trust so long as counsel providing such advice keep all information gained in retention strictly confidential from all other lawyers and employees in the firm.

5.9 Resignation or Removal of Trustee

The Trustee may be removed by a joint written notice of removal signed by the MDEQ and the Designated Representatives of the Group and delivered to the Trustee. The Trustee may resign by giving 30 days prior written notice to the MDEQ and the Designated Representatives of the Group. Such removal or resignation shall take effect at the end of 30 days following delivery of the notice of removal or resignation as the case may be, or when a successor Trustee has been appointed by the Group and has assumed the responsibilities of the Trustee hereunder, whichever is earlier.

5.10 Disputes Re: Action of Trustee

In the event that the Trustee in good faith is in doubt as to what action it should take hereunder, the Trustee shall be entitled to retain funds in its possession until the Trustee shall have received (i) a written notice executed by the Designated Representatives of the Group and the MDEQ directing the delivery of the sum or disbursement demanded; or (ii) a final non-appealable order from the Federal Court having jurisdiction over The Attorney General of the State of Michigan v. Grand Trunk Western Railroad, Incorporated, et al., Case No. 5:06-CV-13 (W.D. MI) directing the delivery of the sum or disbursement demanded. Any court order referred to in (ii) above shall be accompanied by a legal opinion by counsel for the presenting party satisfactory to the Trustee to the effect that said court order is final and non-appealable. The Trustee shall act on such court order and legal opinion without further question.

5.11 Payment of Trustee

Fees for the services to be rendered by the Trustee hereunder shall not be paid to the Trustee from Parts A, B or C of the Trust. The Group is solely responsible for the Trustee's fees and expenses.

VI. SUCCESSORS/GOVERNING JURISDICTION/MODIFICATION

6.1 Successors and Assigns

This Agreement shall be binding upon and inure solely to the benefit of the parties hereto and their respective successors and assigns, heirs, administrators and representatives and shall not be enforceable by or inure to the benefit of any third party. No party may assign any of its rights or obligations under this Agreement without the written consent of the other parties.

6.2 Modification

This Agreement may only be modified by written agreement signed by both of the parties hereto, and no waiver hereunder shall be effective unless in writing and signed by the affected parties.

VII. Notices

All notices, deliveries or other communications required or permitted hereunder shall be in writing and shall be deemed given when sent by facsimile transmission and confirmed by certified or registered mail (unless otherwise specified) addressed as follows:

(a) if to Trustee, to

U.S. Bank National Association as Trustee
Attn: Susan Taylor Payne
535 Griswold Street, Suite 550
Detroit, MI 48226
(313) 234-4711
(313) 963-9428
susan.payne@usbank.com

(b) if to State For Escrow Review and/or Financial Issues, to:

David Koski, Accounting Specialist
Compliance and Enforcement Section
Remediation and Redevelopment Division
Department of Environmental Quality
P.O. Box 30426
Lansing, Michigan 48909-7926
Telephone No. 517-373-4818
FAX No. 517-241-9581

c) if to Group, to its Designated Representatives:

Mary P. Sclawy, Esq.
Fabrizio & Brook P.C.
City Center Building
888 West Big Beaver Rd., Suite 1470
Troy, MI 48083
Telephone: (248) 362-2600
Fax: (248) 269-8503
msclawy@sclawy.biz

and

R. Craig Hupp
Bodman, LLP
100 Renaissance Center, 34th Floor
Detroit, MI 48243
Telephone: (313) 393-7599
Fax: (313) 393-7579
chupp@bodmanllp.com

or to such other address as the person to whom notice is given may have previously furnished to the others in writing in the manner set forth above. Such communications shall be deemed to have been delivered on the day of delivery if delivered personally, or if delivered, upon the date of delivery as shown on the certified receipt; provided that notice of any change of address shall be effective only upon receipt thereof.

VIII. Execution

Execution of this Agreement by the Trustee will constitute its acceptance of the terms hereof.

IX. Counterparts

This Agreement may be executed in two or more counterparts, each of which shall be deemed an original, and all of which, when taken together, shall constitute one and the same instrument.

X. Term

10.1 This Agreement will continue until the Trustee receives written notice from the MDEQ delivered to the Trustee that either i) Group has provided an alternative financial assurance mechanism that has been approved by the MDEQ, or ii) a financial assurance mechanism pursuant to Paragraph 6.13 of the State Consent Decree is no longer required.

10.2 Parts A, B, and C of the Trust and this Agreement will continue in the event the Group dissolves or otherwise terminates as a voluntary unincorporated association before its Members have completed their obligations under the State Consent Decree.

XI. Applicable Law

11.1 State Laws

This Agreement shall be construed in accordance with and governed by the internal laws of the State of Michigan.

11.2 Trustee Jurisdiction

The Trustee agrees to personal jurisdiction in the U.S. District Court for the Western District of Michigan.

11.3 Enforcement

The Parties agree this Trust Management Agreement may be enforced in the U.S. District Court for the Western District of Michigan.

XII. Conforming Amendments To The Trust

The Trust Agreement shall be amended as necessary to be consistent with the terms of this Agreement.

XIII. Authorization Of Trustee To Execute

Execution of this Agreement by the Group represents authorization and direction by the Executive Committee of the Group to the Trustee to enter into this Agreement.

IN WITNESS WHEREOF, each of the parties has caused this Agreement to be executed on its behalf by its officers thereunto duly authorized, all as of the day and year first above written.

U. S. BANK NATIONAL ASSOCIATION AS TRUSTEE

By:_____

Its:_____

STATE OF MICHIGAN

By:_____

Its:_____

VERONA WELL FIELD SITE RD/RA GROUP

By:_____

Its:_____

ATTACHMENT 1

VERONA WELL FIELD SITE RD/RA GROUP

Grand Trunk Western Railroad, Incorporated
Kraft Foods Global, Inc. (f/k/a Kraft Food North America, Inc., f/k/a General Foods Corporation)
Emhart Industries, Inc. (USM)
Hoover Group, Inc. (as successor entity to Hoover Universal, Inc.) (AE Division)
The O'Brien Corporation
Bayer Cropscience Inc. (Aventis Cropscience USA Inc.) (corporate successor to Stauffer Chemical Company)
General Electric Company
Fort James Operating Company (responding for James River Corporation of Virginia)
Arkwright, Inc.
Eaton Corporation
Metaldyne Corporation (f/k/a Metaldyne Machining and Assembly Company, Inc.) (on behalf Of Edon Machine)
Rieke Corporation
Honeywell International, Inc. (f/k/a Honeywell, Inc.) (as successor to Sinclair and Valentine Company, Inc.)
The Leisure Group, Inc.
Ford Motor Company
Clark Equipment Company
Inx International Ink Company (f/k/a Acme Printing Ink Company)
Ferro Corporation
Tomkins Industries, Inc. (f/k/a Bath Fixtures Corporation and Phillips Industries, Inc.)
HLI Operating Company, Inc. (f/k/a Motor Wheel Corporation)
Bayer Corporation (f/k/a Bayer HealthCare, Inc., f/k/a Miles, Inc.)
Acheson Industries, Inc.
E.I. DuPont de Nemours and Company
Edonis Corporation (as successor to Kysor Industrial Corporation)
UIS, Inc. (f/k/a Interkal, Inc.)
The Valspar Corporation

ATTACHMENT 5

Contaminants of Concern

ATTACHMENT 5
Contaminants of Concern in Source Area Soil and Site-wide Groundwater
Verona Well Field Superfund Site, Battle Creek, Michigan

Contaminant/Analyte	Groundwater Cleanup Objective (CUO) [1]
Contaminants of Known Concern in Source Area Soil and Site Groundwater [1]	
Acetone	730
Benzene	1
Carbon Tetrachloride	1
Chlorobenzene	100
Chloroform	77
1,1-Dichloroethane	880
1,2-Dichloroethane	1
1,1-Dichloroethene	7
cis-1,2-Dichloroethene	70
trans-1,2-Dichloroethene	100
Ethylbenzene	74
Methylene Chloride	5
Tetrachloroethene	1
Toluene	790
1,1,1-Trichloroethane	200
1,1,2-Trichloroethane	1
Trichloroethene	2.5
Vinyl Chloride	1
Xylenes (total)	280
Arsenic *(Annex groundwater only)*	15
Contaminants of Potential Concern in Source Area Groundwater [1]	
Aluminum *(Paint Shop only)*	NA
Iron *(Paint Shop only)*	NA
Sodium *(Paint Shop only)*	NA

Notes:
All concentrations in micrograms per liter (ug/L).
NA - Not applicable

[1] Contaminants of known and potential concern, and groundwater Cleanup Objectives (CUOs) are per USEPA's Explanation of Significant Difference (ESD), Table 1, effective 9/30/03. The CUO for arsenic in Annex groundwater reflects the site-specific background. Note that the two potential contaminants of concern listed in the ESD for Annex groundwater (dieldrin and 1,1,2,2-tetrachloroethane) are excluded from this table and from any further monitoring pursuant to approval letters from the USEPA (dated 3/23/05) and MDEQ (dated 3/3/05).

ATTACHMENT 6

Verona Well Field
Management Plan Outline

ATTACHMENT 6

VERONA WELL FIELD MANAGEMENT PLAN OUTLINE

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ATTACHMENT 6

VERONA WELL FIELD MANAGEMENT PLAN OUTLINE

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ATTACHMENT 6

VERONA WELL FIELD MANAGEMENT PLAN OUTLINE

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(to be incorporated by reference, VWFMP appendices will likley only include cover pages and table of contents of each of the following)

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B. Operation and Maintenance Plan Addenda for Enhanced System Upgrades (when submitted to and approved by the MDEQ)
C. Operation and Maintenance Plan for Source Area Enhancements (when submitted to and approved by the MDEQ)
D. Operation and Maintenance Plan for TSRR
E. Access Agreements (pursuant to Paragraph 7.2 (Access) of the Consent Decree between the VWF Group and the MDEQ)
F. Health and Safety Plans (HASPs)
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    a. VWF Group's QAPP (pursuant to Paragraph 6.4 of the Consent Decree between the VWF Group and the MDEQ)
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ATTACHMENT 7

Group Contingency Plan

ATTACHMENT 7
March 2005

CONTINGENCY PLAN FOR THE ENHANCED SYSTEM AND ANNEX UPGRADES

Verona Well Field Superfund Site
Battle Creek, Michigan

Prepared for

Verona Well Field RD/RA Group

November 21, 2002

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1.0 INTRODUCTION

This Contingency Plan was developed to document the process for addressing planned and unplanned events that may adversely affect the operation and/or performance of the Enhanced System and/or Annex Upgrades at the Verona Well Field (VWF) Superfund Site. The VWF Group is responsible for the design, construction, operation and maintenance of these systems in accordance with specific requirements of consent decrees between the VWF Group and the EPA, State of Michigan/MDEQ, and City of Battle Creek (City) (collectively, the VWFMP parties). This Contingency Plan also is designed to support proper management of the common VWF aquifer subject to remediation and public water supply.

1.1 Purpose

The purpose of this Contingency Plan is to outline the major conditions that would trigger implementation of the contingency process, including implementation of corrective measures (where applicable), to ensure adequate operation and/or performance of the Enhanced System and Annex Upgrades at the VWF Superfund site, and to document the contingency process itself. To a lesser extent, this Contingency Plan also outlines methods to evaluate the impact of, and implement corrective measures in response to, actions outside the control of the VWF Group, e.g., fuel/chemical releases at nearby industrial facilities, natural disasters. It should be noted that this Contingency Plan is not intended to address every possible scenario of problems/conditions that might affect the operation and/or performance of the Enhanced System and/or Annex Upgrades or the quality of the public water supply, but to set forth the process for evaluating adverse conditions and developing appropriate response measures to lessen the impact of such conditions. In addition, separate contingency plans will be prepared by the MDEQ and City to outline the process for ensuring proper operation of their respective operations at this site, i.e., the TSRR source area remedy and the City water production system, respectively.

The perceived and/or actual degree of adverse impacts associated with potential future conditions/problems that would trigger contingency actions varies widely depending upon the portion of the site/system that is affected. This plan does not restrict the types of corrective measures that might be employed to lessen or offset the impact of adverse conditions. Ultimately, each event that triggers the contingency process will be evaluated independently with the goals of ensuring or restoring compliance with all applicable decrees/permits and ensuring proper management of the common aquifer, and will involve direct communication among all VWFMP parties.

The VWFMP parties have jointly developed a non-exclusive list of potential conditions that would trigger contingency actions (see Section 1.2), as well as the basic process for evaluating adverse conditions and implementing corrective measures (see Section 2). The contingency process for the Enhanced System and Annex Upgrades, as developed by the VWFMP parties throughout the past few years of discussions regarding system enhancements and overall management of the VWF aquifer, is outlined herein. Proper management of the Enhanced System and Annex Upgrades in

conjunction with the VWF drinking water supply system plays a critical role in limiting the impact of adverse conditions. Accordingly, the procedures described in the City's Wellhead Protection Program (dated August 29, 2000) will be incorporated into the separate contingency plan being developed by the City.

1.2 Definition of Trigger Event

A "trigger event" is defined as an event and/or set of conditions that (1) has the potential to adversely affect the operation and/or performance of the Enhanced System and/or Annex Upgrades, or the proper management of the VWF aquifer; or (2) suggests that the performance of the Enhanced System and/or Annex Upgrades is or may be inadequate. For purposes of this Contingency Plan, trigger events have been separated into "planned" and "unplanned" categories due to the different contingency steps to be taken for each.

Planned trigger events include routine and non-routine maintenance efforts, and typical (likely types of) mechanical/electrical problems associated with operation of remedial equipment that cause/require partial or complete shutdown of the Enhanced System and/or Annex Upgrades. Specific measures to address such problems/maintenance efforts will be documented in the O&M Manual, and are only briefly described in this Contingency Plan.

Unplanned trigger events include "performance" or "other" problems that trigger (activate) the contingency process outlined herein, and which may require development and implementation of corrective measure(s) to ensure that Operational Compliance Criteria are achieved at all Points of Operational Compliance (POCs).

1.2.1 Planned Trigger Events

Planned trigger events are those that can be predicted in sufficient detail to have a contingency process/response readily implemented prior to or as soon as such an event occurs. Planned trigger events include, but may not be limited to, the following:

1) Planned increase in City drinking water production and/or significant change in pumping distribution.

2) Mechanical/electrical problems or routine maintenance needs which require (partial or total) treatment system or blocking/recovery well shutdown.

Examples of events or conditions that might cause a planned trigger event are listed in Table 1.

1.2.2 Unplanned Trigger Events

Unplanned trigger events are those that cannot be predicted in sufficient detail to have a contingency response in place prior to the event. They include, but may not be limited to, the following:

1) Non-decreasing or increasing concentration trends of COCs in groundwater at POCs located downgradient of the Annex or Paint Shop source areas, as follows:
   a) Beyond the northern blocking wells (between the northern blocking wells and City production wells) as measured at POCs GM3I, GM4I, GM4D, GM5I, GM6I, DEQ1A, DEQ1B, DEQ2A, DEQ2B, GMP7D, and GMP8D.
   b) Between the southern and northern blocking wells (downgradient of the southern blocking wells) as measured at POCs GMP1I,D, GMP2I,D, GMP3I,D, GMP5I,D, GMP6I,D, DEQ3A,C, and DEQ8A,B. The northeastern-most of these POCs also serve as the Paint Shop POCs.
   c) Downgradient of the Annex source area and upgradient of the southern blocking wells as measured at POCs MW1, MW2A, MW2B, and MW3.
2) Loss of hydraulic capture at the northern blocking wells, southern blocking wells, and/or Annex source area recovery wells. Methods to assess hydraulic capture/prevention of migration of contaminants are to be defined by the VWFMP parties once the planned piezometer study is complete (approximately 12 months after startup of the Enhanced System).
3) COCs as measured at treatment system outfalls (VWF RA, Raymond Road, and potential future Annex system) approach or exceed NPDES discharge limitations.
4) COCs as measured at the City's iron removal plant influent tap exceed applicable method detection limits (i.e., exceed non-detect as defined elsewhere in the VWFMP).
5) Unplanned or unannounced increase in City drinking water production and/or change in City pumping distribution.
6) New, or non-decreasing, impacts from other known or unknown sources of contamination to the common VWF aquifer (e.g., Davis Oil sites, Raymond Road source area, industrial facilities, fueling stations, electrical power stations, chemical handling at City pumping station).
7) Natural or other disasters (fire, flood, vandalism, etc.).

Examples of events or conditions that might cause an unplanned trigger event are listed in Table 2.

2.0 CONTINGENCY PROCESS

For planned trigger events, the contingency process will begin prior to the planned trigger event. The contingency process for planned events is detailed in the O&M Manual, and varies depending upon the type of problem/maintenance to be performed. Section 2.1 provides an example of the typical contingency process for planned events.

For unplanned trigger events, the contingency processes outlined in Section 2.2 will be implemented to: 1) assess the nature of the trigger event and degree of adverse impacts, 2) determine whether corrective measures are necessary, 3) develop the scope and implementation schedule for any required corrective measures and implement those measures, and 4) determine improvements to current processes to allow for earlier detection and/or prevention of similar trigger events in the future.

2.1 Contingency Process for Planned Trigger Event

Because the nature of a planned trigger event is known in advance, contingency procedures specific to the triggering action can be developed and implemented before or immediately upon the occurrence of such an event, thereby minimizing system downtime and the potential for adverse effects on the overall remediation program. Such conditions and contingency actions are addressed in O&M Manual for the Enhanced System and Annex Upgrades.

A summary of the general process for implementing contingencies for mechanical/electrical problems and/or maintenance events (routine or non-routine) is outlined below:

1) Document the need for action (e.g., air stripper packing material replacement).
2) Estimate the length of time required to implement action and to return remediation system to normal operating conditions.
3) Refer to pre-established procedures or Standard Contingency Procedures (SCPs) per the Final O&M Manual, for implementation of action, including procedures for:
    a) Notifying pertinent parties of problem/planned action, including procedures and timeframes.
    b) Obtaining required approvals.
    c) Shutting down or modifying operation of blocking/recovery wells during action.
    d) Shutting down or modifying operation of treatment system during action;
    e) Performing required action.
    f) Increasing monitoring during action, as applicable, at:
        i) Treatment system influent/effluent;
        ii) Groundwater monitoring wells, blocking/recovery wells, POCs;
        iii) City iron removal plant influent tap; and/or
        iv) Individual City production wells.
    g) Implementing required measures for long-term shutdown and/or operational change.
4) Coordinate implementation of action with pertinent parties.
5) Implement required action.
    a) Evaluate the effectiveness of contingency procedures and modify, if applicable.
6) Return system to normal operation.

7) Notify all pertinent parties of system status after completion.
8) Document actions in next routine status report to agencies.

The operator of the Enhanced System and Annex Upgrades is responsible for initiating this basic contingency process for planned trigger events, in accordance with applicable SCPs listed in the O&M Manual. Tables 3 and 4 illustrate example SCPs for the two hypothetical planned trigger events: 1) treatment system shutdown for planned maintenance, and 2) shutdown of specific blocking/recovery well for planned maintenance.

2.2 Contingency Process for Unplanned Trigger Event

When an unplanned trigger event is identified, the contingency process must include an initial evaluation stage after the event has occurred, or is projected to occur, to ensure that the most effective and proper action is implemented. The process for implementing a contingency for an unplanned trigger event is illustrated in flow chart format on Figure 1. That process consists of the following types of activities:

1) Confirm Conditions
    a) Confirm that a trigger event has or is about to occur by collecting Confirmation Sample(s) by resampling the location(s) exhibiting the problem, and evaluate sampling protocol, analytical methods, quality assurance and control protocol, etc.;
        i) If Confirmation Sample(s) results meet applicable objectives, resume normal operation.
        ii) If Confirmation Sample(s) results exceed applicable objectives, proceed to next step of contingency process.
    b) Notify pertinent agencies/personnel, as listed in Table 5.

2) Implement Initial Response Measure(s) if applicable and Evaluate Conditions that Caused Trigger Event;
    a) Notify pertinent agencies/personnel, as listed in Table 5, of contingency measures/status;
    b) Implement Initial Response Measure(s) to correct and/or lessen the adverse impacts of the trigger event, such as:
        i) Modify operating conditions (rates, pressures);
        ii) Add, remove, or modify equipment;
        iii) Modify ongoing monitoring, maintenance, inspection and/or other procedures, including frequencies, locations, and/or methods;
        iv) Work with VWFMP parties to determine appropriate actions to be taken by any VWFMP parties or other parties if adverse condition is caused by outside party.
    c) Evaluate and determine, to the extent possible, the cause of a confirmed trigger event (such as conditions/events listed in Table 2), by activities such as:
        i) Collect additional samples or other pertinent data, including, but not limited to: hydraulic data, groundwater quality, operating data (flow

rates, pressures, pumping distributions), local weather data, etc. from the affected location(s) and other locations.

ii) Perform statistical evaluation, if necessary;
iii) Inspect suspect equipment;
iv) Analyze blocking/recovery well rates;
v) Analyze City production rates/pumping rotation, distribution.

3) Recommend Corrective Measure(s) and Develop a Work Plan for Corrective Measure(s), if applicable:
   a) Notify pertinent agencies/contacts of Recommended Corrective Measure(s). Such measures could include, but are not limited to, the examples described in Section 3.
   b) Prepare Corrective Measure(s) Work Plan for review and approval by pertinent agencies/contacts. The Corrective Measure(s) Work Plan will provide the following types of information: problem description, recommended corrective measure(s), implementation schedule, method for evaluating/verifying effectiveness of the corrective measure(s), and the anticipated schedule for demonstrating Achievement of Operational Compliance.

4) Implement Corrective Measure(s) and/or Implement Measure(s) to Prevent Similar Trigger Events from Recurring;
   a) Develop improvements to current operating, monitoring, reporting, or other procedures, as applicable, to limit recurrence of trigger event/problem, such as:
      i) Improve communication between VWFMP parties and/or between VWFMP parties and other outside entities whose operations may adversely influence the activities at this site;
      ii) Evaluate effectiveness of current operating, maintenance, monitoring, reporting, etc. procedures, and modify accordingly;
      iii) If determined, make known the actual set of conditions/events that caused the trigger event, and clearly document that information, so that operators and others can promptly recognize such conditions.
   b) Evaluate the effectiveness of corrective measure(s) by collecting confirmatory samples;
      i) If corrective measure(s) and confirmatory sampling demonstrate Achievement of Operational Compliance, resume normal operation;
      ii) If corrective measure(s) and confirmatory sampling demonstrate that continued implementation of the corrective measure(s) is likely to demonstrate Achievement of Operational Compliance, continue operation and confirmatory sampling in accordance with the approved work plan;
      iii) If corrective measure(s) and confirmatory sampling fail to demonstrate Achievement of Operational Compliance, or that such restoration of compliance is unlikely under continued

implementation, evaluate and Recommend Alternate Corrective Measure(s).

(1) Prepare a new work plan to outline the process and schedule for the Alternate Corrective Measure(s) for review and approval by pertinent agencies/contacts.

The operator of the Enhanced System and Annex Upgrades is responsible for initiating this basic contingency process for unplanned trigger events. To the extent possible, this process is intended to be interactive among the EPA, MDEQ, City and VWF Group, so that all VWFMP parties concur that the contingency process and corrective measure(s) are adequate and acceptable. Key VWFMP parties, as listed in Table 5, shall be notified and kept abreast of all contingency activities related to the Enhanced System and/or Annex Upgrades.

Figure 2 illustrates an example of how this basic contingency process would work in the event of a hypothetical trigger event, namely detection of contaminants above Operational Compliance Criteria at a northern blocking well line POC. Figure 2 is provided as an example and illustrates the basic decision path and responses to address this hypothetical problem; actual decisions, corrective measures, etc. for such a problem could include other measures not illustrated in this example.

3.0 EXAMPLE CORRECTIVE MEASURES

It is not possible to list all of the specific corrective measures for each potential adverse condition or problem that might affect the operation and/or performance of the Enhanced System and/or Annex Upgrades. Corrective measures can range from increased monitoring or minor operational adjustments to complex equipment modification or remedy upgrades. This section lists potential corrective measures that might be selected for implementation at this site depending upon the type and severity of the trigger event, and specifically focuses on potential corrective measures to address unplanned trigger events because corrective measures for planned events are discussed in the O&M Manual.

The following list presents examples of potential corrective measures for this site; actual corrective measures may include, but are not limited to, those listed below:

1) Operational Modifications:
   a) Adjust the flow rates from all or select blocking/recovery wells.
   b) Adjust air flow rates through the air stripper.
   c) Adjust City pumping distribution.
   d) Modify the timing and/or number of backwash events at the City iron/manganese removal system.

2) Equipment Modifications:
   a) Improve controls, telemetry, alarm notification systems.
   b) Add or remove (shutdown) select blocking/recovery wells.

c) Install larger capacity well pumps.
d) Improve amount and types of spare parts onsite, or ensure the ability to readily obtain spare parts on short notice for prompt delivery to the site.

3.1 Example Emergency Stop-Gap Corrective Measures

In the event of a natural disaster, vandalism, imminent danger from a new source of contamination, or other catastrophic incident, it may be necessary to implement corrective measures to address or offset the impact of such events. Even though the VWF Group is not responsible for rectifying such unplanned events, the VWF Group will implement the following types of stop-gap measures:

1) If a natural disaster (fire, tornado, flood, lightning, blizzard, etc.) or vandalism prevents normal operation of the Enhanced System and/or Annex Upgrades, potential stop-gap corrective measures might include:
    a) Coordinate emergency response actions to minimize damage to remedial equipment (e.g., firefighting, sandbagging, snow removal).
    b) Coordinate repair and/or replacement of affected equipment.
    c) Arrange for use of temporary remedial equipment while repairs are ongoing or replacement parts are on order.

2) If a new source of imminent danger arises and jeopardizes the performance of the Enhanced System and/or Annex Upgrades, potential stop-gap corrective measures might include:
    a) Coordinate an investigation of the source of contamination/danger via applicable agencies.
    b) If possible, determine whether continued operation of the Enhanced System and/or Annex Upgrades will compound the problem (e.g., pull the contamination deeper and/or closer to the well field), and if so, seek concurrence from applicable agencies to temporarily cease operation of the Enhanced System and/or Annex Upgrades.
    c) Work with VWFMP parties and other entities to determine the best and fastest method for mitigating the imminent threat; and seek enforcement support from applicable agencies to ensure the situation is properly addressed.

To the extent possible, these measures should be implemented immediately or as soon as feasibly safe to do so, depending upon the severity of the problem, and subject to support from all VWFMP parties. Once the emergency is rectified, other corrective measures may be necessary to evaluate the impact of the emergency on the progress of site remediation.

4.0 MODIFICATIONS TO CONTINGENCY PLAN

This Contingency Plan should be reviewed periodically to ensure that the contingency process and procedures described herein remain applicable to the operation and performance of the Enhanced System and Annex Upgrades. If significant changes are

made to the City's water extraction rates and/or pumping distribution, additional contingency measures may need to be considered in this plan. Also, information listed in Table 5 of this plan should be confirmed (by Progressive) at least every six months, or when a change is known to occur, to ensure that appropriate parties are notified and kept abreast of the contingency process and any corrective measures.

TABLES

Table 1. Examples of Factors that Contribute to Planned Trigger Events

Type of Trigger Event Factors that Might Potentially Cause this Trigger Event
1 ***Planned increase in City drinking water production and/or significant change in City pumping distribution*** • City water demand increases (new or existing clients) • Individual or multiple production well maintenance (extended downtime) • Loss of other drinking water sources
2 ***Mechanical/electrical problems and routine or non-routine maintenance*** • Treatment System – Blower failure/repair – Power failure/troubleshooting – Piping/Fitting leak, repair, replacement – Flow meter repair/replacement – Telemetry or autodialer failure – Stripper packing changeout – Stripper/piping sandblasting/painting – Annex double containment piping alarm/leak – Stripper crack/structural damage – Obstruction at discharge line to river – Portable treatment (carbon) unit connection – Activated carbon changeout (if air phase system restarted) • Recovery/Blocking Wells – Well pump failure – Reduced flow rate with control valve wide open – Piping/Fitting leak, repair, replacement – Flow meter repair/replacement – Well cleaning – Pump house telemetry or autodialer failure – Power failure • Controls/alarms/telemetry system troubleshooting • System upgrade requiring shutdown during tie-in/installation

Table 2. Examples of Factors that Contribute to Unplanned Trigger Events

Type of Trigger Event Factors that Might Potentially Cause this Trigger Event
1 Non-decreasing or increasing concentration trends at points of operational compliance • Reduced recovery well efficiency/capture zone • Individual or multiple recovery well failure • Residual concentrations or rebound concentrations in applicable portion of aquifer • Changes in City production/pumping distribution without prior notice to remedy operators • Sampling/analytical error
2 Loss of hydraulic capture (to be defined by VWFMP parties once piezometer study is complete and long term hydraulic monitoring method is finalized) • Individual or multiple recovery well failure • Routine or non-routine well or system maintenance (extended downtime) • Increased discharge to City's wastewater lagoons • Extended period of heavy rainfall • Changes in City production/pumping distribution without prior notice to remedy operators
3 Outfalls approach or exceed NPDES discharge limitations • Treatment system fouling or inefficiency • Significant increase in one or more system influent headers
4 COCs in excess of cleanup criteria detected at City iron removal plant influent tap • Individual or multiple recovery well failure • Routine or non-routine well or system maintenance • Changes in City production/pumping distribution without prior notice to remedy operators • Sampling/analytical error
5 Unplanned increase in City drinking water production and/or significant change in City pumping distribution • City water demand unexpectedly increases • Individual or multiple production well failure • Loss of other drinking water sources
6 New, or non-decreasing, impacts from known or unknown sources • Fuel/chemical release sites • Residual contamination from area previously thought to not be impacted • City wellhead protection program identifies area of concern
7 Natural or other disasters, or unplanned events • Fires, floods, drought, severe lightning, snow/rain storms, etc. • Burglary, vandalism, terrorism, etc. • Train derailment and or release at CN/GTWRR fueling station • New source of contamination affects City's production wells • New source of contamination near BWs or original source areas • City production well distribution/pumping rates vary from design scenarios • City iron removal plant failure • City underground reservoir rupture/leak • City lagoon discharge/infiltration affects BW performance • Increased production by City/BWs causes increased river leakage and fouling problems • MDEQ fails to contain TSRR plume • Davis Oil fails to contain plume

Table 3. Example Standard Contingency Plan for Planned Shutdown of Treatment System

Several planned events can result in a treatment system shutdown. These events are mostly related to performing periodic maintenance on treatment equipment, including the air stripper, blower, controls, etc., which cannot be bypassed during maintenance activities. An example SCP to be implemented for a planned shutdown of the Enhanced System is as follows, the actual SCPs for specific problems/maintenance events will be provided in the O&M Manual:

1) Notify all pertinent parties regarding upcoming event, schedule, estimated length of system downtime, etc., at least 10 working days prior to planned event, if possible:
    a) Notify parties listed on Table 5 of the Contingency Plan for the Enhanced System and Annex Upgrades.
    b) Notification shall be in writing (via email, facsimile, or mail).

2) Obtain necessary approvals, if applicable, for work to be performed.

3) If the planned shutdown is expected to last more than 14 consecutive days, attempt to schedule shutdown during periods of normal to low City production (i.e., avoid performing such work during City's high production period [summer months]). Prior to shutting down the treatment system conduct expedited sampling and analysis (3-day turnaround) of southern blocking well line header and Annex header and calculate the anticipated discharge concentrations as if the flow from these headers would bypass treatment and combine with the northern blocking well line flow prior to discharge to the river, and:
    a) If the resulting concentrations are below NPDES discharge criteria, adjust valving to allow all flow to bypass the VWF RA treatment system and proceed with the planned treatment system shutdown.
    b) If the resulting concentrations are above NPDES criteria, determine whether shutdown period warrants Installation of temporary treatment units (e.g., carbon adsorption units) at specific southern blocking wells and/or the Annex, and coordinate delivery and connection of such temporary treatment unit(s), then adjust valving to allow all flow to bypass the main (VWF RA) treatment system and proceed with the planned treatment system shutdown.

4) Shut down treatment system:
    a) Maintain normal operation of the northern blocking wells since flow from these wells already bypasses the treatment system.
    b) Shut down the air stripper blower.
    c) Turn off main disconnect and lockout/tagout ALL electrical panels.

5) Implement increased monitoring program, if applicable:
    a) For treatment system shutdown periods of 14 or fewer days, no additional monitoring need be performed.
    b) For shutdown periods greater than 14 days, additional monitoring may be necessary to assess discharge water quality in the untreated combined outfall, or discharge water quality from temporary treatment unit(s). Such monitoring would be performed in addition to normal ongoing monitoring.

6) Perform planned maintenance work.

7) When planned shutdown is completed, return system to normal operation and discontinue additional monitoring program.

8) Notify all pertinent parties of work completion and system status within 5 days of completion via same process as Step 1.

Table 4. Example Standard Contingency Plan for Planned Shutdown of Enhanced System Blocking Well(s) and/or Annex Recovery Well(s)

Several planned events can result in reduced extraction rates from one or more blocking/recovery wells, and are mostly related to performing periodic maintenance on the groundwater extraction pumps or performing well rehabilitation. Other activities include valve rotation/repair, and meter and controls troubleshooting, which cannot be performed with the well(s) online. The SCP for a planned single or multiple well shutdown is as follows:

1) Notify all pertinent parties regarding upcoming event, schedule, length of system downtime, etc., at least 10 working days prior to planned event, if possible:
    a) Notify parties listed on Table 5 of the Contingency Plan for the Enhanced System and Annex Upgrades.
    b) Notification shall be in writing (via email, facsimile, or mail).

2) Obtain necessary approvals, if applicable, for work to be performed.

3) Shut down affected well(s):
    a) Turn off power to pump(s) at electrical panel.
    b) After pump(s) has stopped, close flow control valve.
    c) Bleed-off line pressure (if performing piping repair).
    d) Lockout/tagout pump electrical panel(s).

4) Implement modified operation of adjacent or nearby blocking/recovery wells:
    a) Increase flow rates of adjacent/nearby wells to offset loss of flow from affected well(s).

5) Implement increased monitoring program, if applicable:
    a) For well/pump shutdown periods of 14 or fewer days, no additional monitoring need be performed.
    b) For shutdown periods longer than 14 days, additional monitoring may be necessary to assess the impact at nearby compliance wells, and to verify that the adjusted flow rates of nearby wells are helping to mitigate breakthrough.

6) Perform planned maintenance work.

7) When planned well/pump shutdown is completed, return well(s) to operation, resume normal flow rates/operations, and discontinue additional monitoring program.

8) Notify all pertinent parties of work completion and system status within 5 days of completion via same process as Step 1.

Table 5. Pertinent Agency/Contact List

Responsibility	Company and Contact	Responsibility	Company and Contact
VWF Group RA Project Manager	Progressive Engineering & Construction, Inc. 3912 W. Humphrey Street Tampa, FL 33614 Bridget Morello, P.E. Tel: (813) 930-0669 x205 Fax: (813) 930-9089 bmpec@tampabay.rr.com	City of Battle Creek Water Superintendent	City of Battle Creek Water Superintendent 350 W. Michigan Ave. Battle Creek, MI 49017 Dave Rich Tel: (616) 966-3481 Fax: (616) 966-3482 DLRich@ci.battle-creek.mi.us
VWF RA O&M Contractor	CETC, Inc. 11449 Doster Road Plainwell, MI 49201 David Gray Tel: (616) 664-4200 Fax: (616) 664-5007 Cell: (616) 370-1000	City of Battle Creek Consultant	Horizon Environmental, Inc. 4595 Broadmoor SE Suite 200 Grand Rapids, MI 49512 Bill Davidson Tel: (616) 554-3210 Fax: (616) 554-3211 wtdavidson@horizonenv.com
Raymond Road RA Project Manager	MDEQ RRD Constitution Hall, 3rd Floor S 525 W. Allegan Lansing, MI 48933 Joe Walczak Tel: (517) 335-3098 Fax: (517) 335-4887 walczakj@michigan.gov	VWF Group Primary Contact	Bodman, Longley & Dahling 100 Renaissance Center 34th Floor Detroit, MI 48243 Craig Hupp Tel: (313) 393-7599 Fax: (313) 393-7579 chupp@bodmanlongley.com
Raymond Road RA O&M Contractor	Earthtech, Inc. 5555 Glenwood Hills Pkwy SE Grand Rapids, MI 49588-0874 Mike Ringelberg Tel: (616) 975-4596 Fax: (616) 949-6023 mringelberg@earthtech.com	USEPA Region V Project Manager	USEPA Region V 77 W. Jackson Blvd., SR6J Chicago, IL 60604-3590 Richard Boice Tel: (312) 886-4740 Fax: (312) 886-4071 boice.richard@epamail.epa.gov
MDEQ RRD Project Manager	MDEQ RRD Constitution Hall, 3rd Floor S 525 W. Allegan Lansing, MI 48933 Cindy Fairbanks Tel: (517) 335-4111 Fax: (517) 335-4887 fairbanc@michigan.gov	**Local Fire, Police, Hospital**	**Phone: 911** **Fire: (616) 966-3519** **Police: (616) 966-3305** **Hospital: (616) 966-8000**

FIGURES

Figure 1. Contingency Process

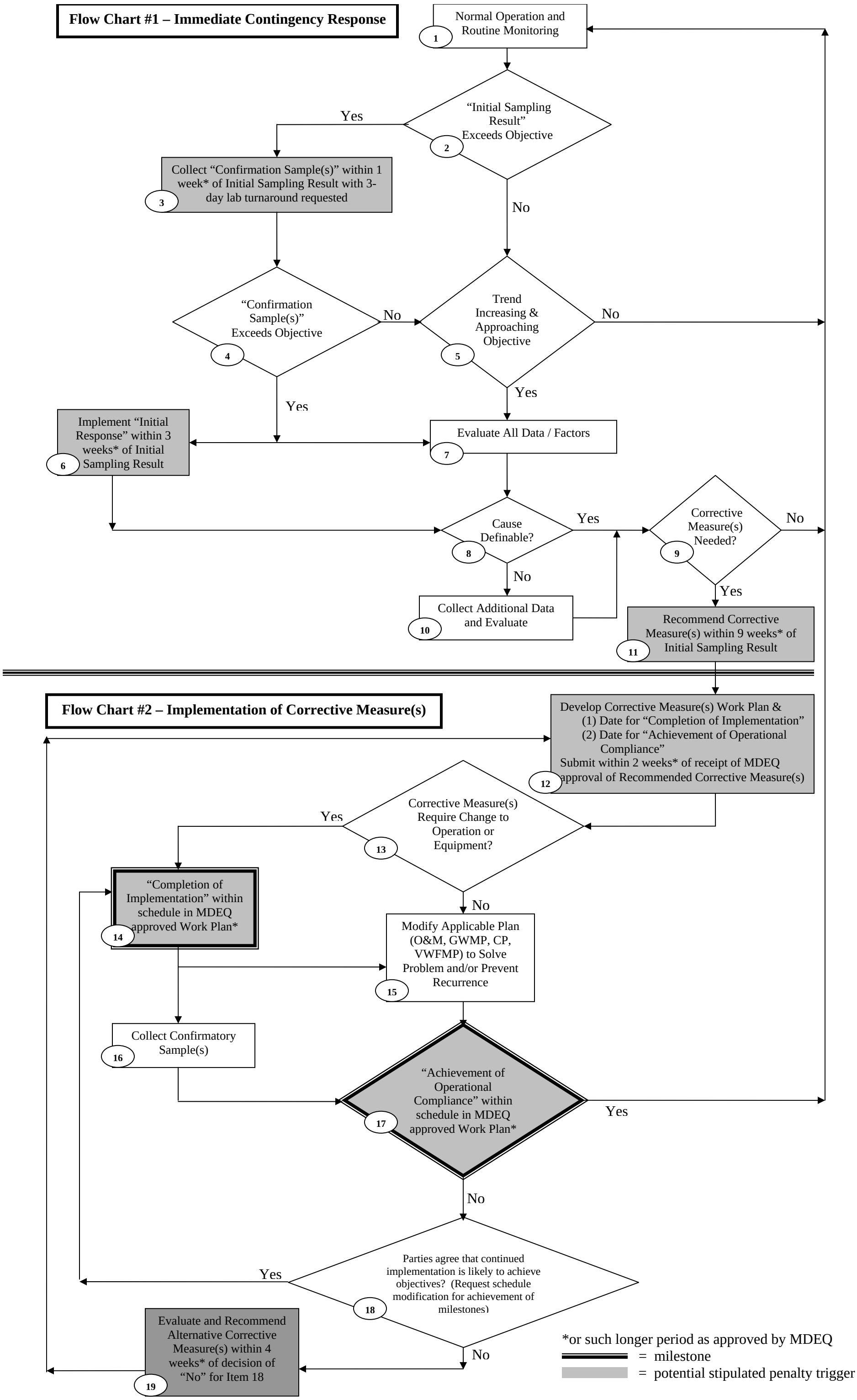
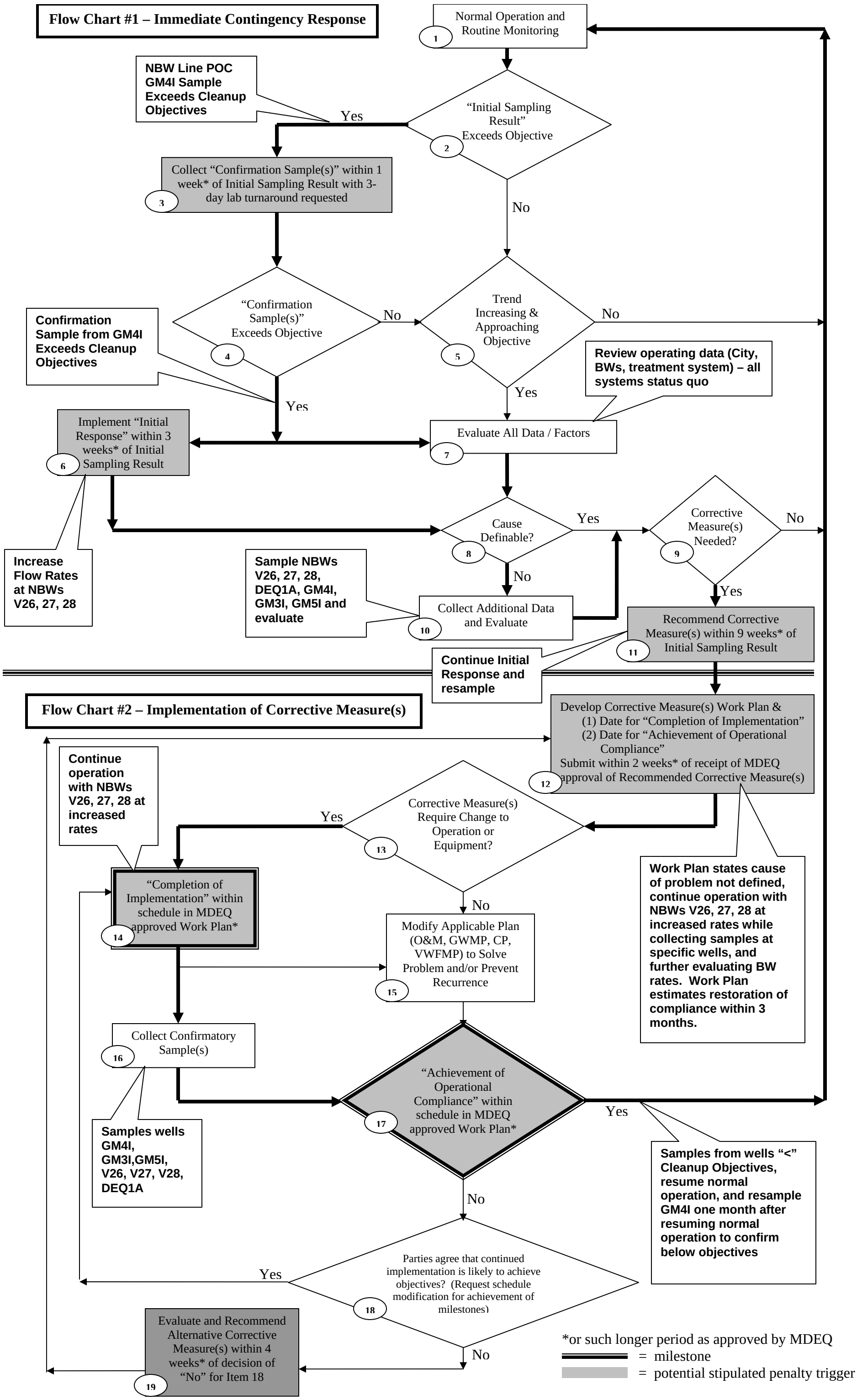


Figure 2. Example Contingency Process for Hypothetical Problem



ATTACHMENT 8

Coordinated Groundwater Monitoring Plan, Including the List of Points of Operational Compliance

ATTACHMENT 8

Groundwater Monitoring Plan including List of Points of Operational Compliance
Verona Well Field Superfund Site

Well [2,3,7]	Approximate Well Location	General Well Depth	Notes	Long Term Water Quality Locations and Frequency[1,3,4,6,11] Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Long Term WL Locations and Frequency[1,4,5] Year 1	Post Year 1	Northing (add 15,300,000)[10]	Easting (add 2,100,000)[10]	Surveyed T.O.C. Elevation[10]	Ground Elevation[10]	Stickup	Borehole / Screen Diameter	Screen Length
Annex Source Area and Immediate Up & Down Gradient Areas																						
APZ-1	Annex	Shallow	5c											4G	G	80674.98	42060.55	844.67	841.90	2.77	1.00	5.00
APZ-2	Annex	Shallow	5c											4G	G	80689.84	42099.77	845.40	842.90	2.50	1.00	5.00
APZ-3	Annex	Shallow	5c											4G	G	80683.65	42104.19	845.22	842.90	2.32	1.00	5.00
APZ-4	Annex	Shallow	5c											4G	G	80673.29	42128.05	845.48	843.10	2.38	1.00	5.00
APZ-5	Annex	Shallow	5c											4G	G	80712.34	42210.85	846.54	843.80	2.74	1.00	5.00
APZ-6	Annex	Shallow	5c											4G	G	80670.66	42210.05	844.71	842.30	2.41	1.00	5.00
APZ-7	Annex	Shallow	5c											4G	G	80703.53	42236.18	845.63	843.40	2.23	1.00	5.00
APZ-8	Annex	Shallow	5c											4G	G	80680.28	42262.30	845.94	843.40	2.54	1.00	5.00
ARW1S	Annex	Shallow	6b,f	4G	G	G	G	G	G	G	G	G	G	4G	G	80685.00	42117.00	843.95	842.90	1.05	6.00	15.00
ARW2S	Annex	Shallow	6b,f	4G	G	G	G	G	G	G	G	G	G	4G	G	80703.36	42197.64	844.47	843.50	0.97	6.00	15.00
B1	Annex	Shallow	8					G					G			80227.65	42349.84	843.69	841.90	1.79	2.00	10.00
B8S	Annex	Shallow	5c,6b,9	4G				G					G	4G	G	80589.73	42180.51	843.31	841.80	1.51	2.00	10.00
B8I	Annex	Intermed.	5c					G					G	4G	G	80600.65	42178.81	844.23	841.90	2.33	2.00	10.00
B9	Annex	Shallow	5c	G	G	G	G	G	G	G	G	G	G	4G	G	80697.52	42158.45	844.86	842.80	2.06	2.00	10.00
B23	Annex	Shallow	5c	G		G			G			G		4G	G	80584.99	42098.11	843.93	841.20	2.73	2.00	10.00
B24	Annex	Shallow	5c	2G				G					G	4G		80453.61	42226.68	843.23	840.80	2.43	2.00	10.00
B25	Annex	Shallow	5c,6b,9	4G	G	G	G	G	G	G	G	G	G	4G	G	80438.20	42179.22	843.29	841.00	2.29	2.00	10.00
CH107I	Annex	Intermed.		G	G	G	G	G	G	G	G	G	G		G	80671.60	42071.80	844.68	842.30	2.38	2.00	5.00
CH107D	Annex	Deep						G					G			80681.50	42089.90	844.95	842.50	2.45	2.00	5.00
GMA1D	Annex	Intermed.	6b,6f	4G	G	G	G	G	G	G	G	G	G	4G	G	80672.62	42096.07	844.32	842.70	1.62	10.00	Open borehole
GMA2D	Annex	Intermed.	6b,6f	4G	G	G	G	G	G	G	G	G	G	4G	G	80679.39	42242.92	843.81	843.00	0.81	10.00	Open borehole
GMP9S	Annex	Shallow												4G	G	80627.64	42142.34	845.84	843.07	2.77	2.00	5.00
MW-1	W/NW of Annex	Shallow	3d,e,5c,6b,e	4G	G	G	G	G	G	G	G	G	G	4G	G	80651.31	41989.59	841.85	842.38	-0.53	2.00	10.00
MW-2A	N of Annex	Shallow	3d,e,5c,6b,e	4G	G	G	G	G	G	G	G	G	G	4G	G	80800.81	42198.46	845.57	842.80	2.77	2.00	10.00
MW-2B	N of Annex	Intermed.	3d,e,5c,6b,e,9	4G	G	G	G	G	G	G	G	G	G	4G	G	80799.84	42193.30	845.88	842.80	3.08	2.00	5.00
MW-3	Annex	Shallow	3d,e,5c,6b,e	4G	G	G	G	G	G	G	G	G	G	4G	G	80718.30	42258.56	846.52	843.70	2.82	2.00	10.00
T5	N of Annex	Intermed.														80715.80	42031.53	--	843.26	--	2.00	5.00
T16	UG Annex	Intermed.	8													80150.55	42211.98	--	839.06	--	2.00	5.00
VE01	Annex	Shallow	SVE Well													80385.76	42202.31	844.79	841.80	2.99	4.00	15.00
VE02	Annex	Shallow	5c, SVE Well											4G		80430.32	42165.69	843.85	841.20	2.65	4.00	15.00
VE03	Annex	Shallow	SVE Well													80478.21	42147.07	844.77	842.30	2.47	4.00	15.00
VE04	Annex	Shallow	5c, SVE Well											4G		80521.75	42129.29	844.65	842.10	2.55	4.00	15.00
VE05	Annex	Shallow	SVE Well													80567.85	42110.59	844.36	842.30	2.06	4.00	15.00
VE06	Annex	Shallow	SVE Well													80375.49	42242.21	843.53	841.10	2.43	4.00	15.00
VE07	Annex	Shallow	SVE Well													80420.95	42223.29	843.47	841.20	2.27	4.00	15.00
VE08	Annex	Shallow	SVE Well													80467.37	42204.40	844.28	841.10	3.18	4.00	15.00
VE09	Annex	Shallow	SVE Well													80513.45	42185.25	843.54	841.30	2.24	4.00	15.00
VE10	Annex	Shallow	SVE Well													80559.92	42166.48	844.67	841.60	3.07	4.00	15.00
VE11	Annex	Shallow	SVE Well												G	80605.65	42147.50	844.53	841.90	2.63	4.00	15.00
VE12	Annex	Shallow	SVE Well												G	80651.56	42128.50	844.46	842.20	2.26	4.00	15.00
VE13	Annex	Shallow	5c, SVE Well											4G		80412.74	42281.38	847.08	844.20	2.88	4.00	15.00
VE14	Annex	Shallow	SVE Well													80463.08	42260.88	846.83	844.40	2.43	4.00	15.00
VE15	Annex	Shallow	5c, SVE Well											4G		80511.05	42242.36	847.61	844.80	2.81	4.00	15.00
VE16	Annex	Shallow	SVE Well													80556.27	42223.96	846.53	844.90	1.63	4.00	15.00
VE17	Annex	Shallow	SVE Well												G	80599.74	42204.09	844.57	841.80	2.77	4.00	15.00
VE18	Annex	Shallow	SVE Well												G	80646.14	42184.53	845.35	842.10	3.25	4.00	15.00
W9S	E of Annex	Shallow													G	80818.66	42600.59	851.10	845.00	6.10	2.00	10.00
W11D	UG Annex	Deep														80161.90	42176.56	841.38	838.90	2.48	2.00	10.00
Area Between Annex and Southern Blocking Wells																						
CH150D	DG (NW) Annex	Deep	3d													80970.50	41933.63	842.78	843.09	-0.31	--	10.00

ATTACHMENT 8

Groundwater Monitoring Plan including List of Points of Operational Compliance
Verona Well Field Superfund Site

Well [2,3,7]	Approximate Well Location	General Well Depth	Notes	Long Term Water Quality Locations and Frequency[1,3,4,6,11] Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Long Term WL Locations and Frequency[1,4,5] Year 1	Post Year 1	Northing (add 15,300,000)[10]	Easting (add 2,100,000)[10]	Surveyed T.O.C. Elevation[10]	Ground Elevation[10]	Stickup	Borehole / Screen Diameter	Screen Length
CH150I	DG (NW) Annex	Intermed.	3d												G	80976.05	41937.80	843.08	843.38	-0.30	--	10.00
T1	DG (NW) Annex	Shallow														82017.63	42228.71	--	842.85	--	2.00	5.00
W12D	DG (NW) Annex	Deep														82015.84	42160.54	844.79	842.90	1.89	2.00	10.00
W4D	Southern WF	Deep														82689.76	41978.91	842.92	841.50	1.42	2.00	10.00
W4I	Southern WF	Intermed.						G					G			82689.64	41989.21	843.50	841.60	1.90	2.00	10.00
W4S	Southern WF	Shallow														82689.50	42001.01	843.75	841.50	2.25	2.00	10.00
W8D	DG (NW) Annex	Deep														81377.36	41865.74	842.59	840.50	2.09	2.00	10.00
W8I	DG (NW) Annex	Intermed.						G					G			81372.58	41858.01	842.34	840.50	1.84	2.00	10.00
W8S	DG (NW) Annex	Shallow														81389.22	41867.20	842.29	840.50	1.79	2.00	10.00
Area West/Northwest of Annex																						
CH130I	N'hd NW of Annex	Intermed.														81067.43	40695.21	835.48	833.70	1.78	--	10.00
CH130S	N'hd NW of Annex	Shallow	8													81067.42	40691.87	835.46	833.80	1.66	--	10.00
CH131D	N'hd NW of Annex	Deep														82224.11	41256.76	838.40	838.30	0.10	--	10.00
CH131I	N'hd NW of Annex	Intermed.														82226.88	41243.99	840.28	838.20	2.08	--	10.00
CH131S	N'hd NW of Annex	Shallow														82227.24	41254.69	840.40	838.20	2.20	--	10.00
E21	N'hd NW of Annex	Intermed.														80831.13	39922.60	831.14	828.80	2.34	4.00	Open borehole
E22D	W of Annex	Deep														80421.35	40979.87	841.23	836.70	4.53	4.00	Open borehole
E22S	W of Annex	Deep														80421.35	40979.87	840.92	836.70	4.22	1.00	4.00
T2	N'hd NW of Annex	Shallow														81595.66	40645.53	--	836.38	--	2.00	5.00
T3	W of Annex	Shallow	8													80419.32	40564.29	--	833.43	--	2.00	5.00
T4	W-SW of Annex	Shallow	8													79978.66	40912.32	--	835.47	--	2.00	5.00
W5S	N'hd NW of Annex	Shallow	8													81448.46	41210.30	841.48	839.90	1.58	2.00	10.00
Area Far South-Southwest of Annex																						
CH129D	UG Annex	Deep														79942.69	42005.19	841.53	839.00	2.53	--	10.00
CH129I	UG Annex	Intermed.	8													79939.74	42001.02	841.65	839.00	2.65	--	10.00
E24	Far UG Annex	Deep														75856.64	43298.59	890.24	887.90	2.34	4.00	Open borehole
E25	Far UG Annex	Deep														75131.35	36383.09	825.70	823.90	1.80	4.00	Open borehole
E26	Far UG Annex	Deep														73017.98	40014.50	872.71	870.70	2.01	--	Open borehole
E28D	Far UG Annex	Deep														79106.23	42076.12	841.85	837.70	4.15	4.00	Open borehole
E28S	Far UG Annex	Shallow														79106.01	42072.53	840.85	837.70	3.15	1.00	3.50
E30	Far UG Annex	Deep														77583.62	42803.73	861.25	859.80	1.45	4.00	Open borehole
T15	Far UG Annex	Shallow														78399.50	42424.92	--	842.08	--	2.00	5.00
TSRR Source Area and Immediate Up & Down Gradient Areas																						
B17I	TSRR	Intermed.														--	--	--	--	--	2.00	10.00
B17S	TSRR	Shallow														--	--	--	--	--	2.00	7.50
B18I	TSRR	Intermed.						S					S	4S	4S	80727.69	42992.01	850.75	848.06	2.69	2.00	5.00
B18I(D)	TSRR	Deep														--	--	--	847.70	--	2.00	10.00
B18S	TSRR	Shallow	9					S					S	4S	4S	80715.11	42978.49	850.73	848.10	2.63	2.00	10.00
B19	TSRR	Shallow		S	S	S	S	S	S	S	S	S	S	4S	4S	80838.35	42996.11	850.61	848.40	2.21	2.00	10.00
B20	TSRR	Shallow						S					S	4S	4S	80835.21	42957.99	849.06	848.00	1.06	2.00	10.00
B21	TSRR	Shallow	9					S					S	4S	4S	80789.96	42957.33	849.91	848.00	1.91	2.00	10.00
CH101D	TSRR	Deep						S					S			80454.12	43336.72	857.80	855.20	2.60	--	10.00
CH101I	TSRR	Shallow	8	S	S	S	S	S	S	S	S	S	S	4S	4S	80450.45	43339.90	857.55	855.40	2.15	--	10.00
CH127S	W of TSRR	Intermed.	8											4S	4S	80626.76	42874.05	845.45	847.27	-1.82	--	10.00
CH151S	NE of TSRR	Shallow	8	S	S	S	S	S	S	S	S	S	S	4S	4S	80902.83	43023.53	850.04	848.40	1.64	2.00	5.00
DEQ9A	NW of TSRR	Shallow	3b,c,6e	4S	4S	4S	4S	4S	4S	4S	4S	4S	4S	4S	4S	--	--	--	--	--	--	--
DEQ9B	NW of TSRR	Intermed.	3b,c,6e	4S	4S	4S	4S	4S	4S	4S	4S	4S	4S	4S	4S	--	--	--	--	--	--	--
DEQ10	NW of TSRR	Shallow	3b,c,6e	S	4S	4S	4S	4S	4S	4S	4S	4S	4S	4S	4S	--	--	--	--	--	--	--
EW 1	TSRR	Shallow														--	--	--	--	--	8.00	17.00
EW 2	TSRR	Shallow	6f	S	S	S	S	S	S	S	S	S	S	4S	4S	80884.35	42900.17	842.58	846.29	-3.71	8.00	16.50
EW 3	TSRR	Shallow	6f	S	S	S	S	S	S	S	S	S	S	4S	4S	80776.19	42906.20	843.34	847.04	-3.70	8.00	16.50

ATTACHMENT 8

Groundwater Monitoring Plan including List of Points of Operational Compliance

Verona Well Field Superfund Site

Well [2,3,7]	Approximate Well Location	General Well Depth	Notes	Long Term Water Quality Locations and Frequency[1,3,4,6,11] Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Long Term WL Locations and Frequency[1,4,5] Year 1	Post Year 1	Northing (add 15,300,000)[10]	Easting (add 2,100,000)[10]	Surveyed T.O.C. Elevation[10]	Ground Elevation[10]	Stickup	Borehole / Screen Diameter	Screen Length
EW 4	TSRR	Shallow	6f	S	S	S	S	S	S	S	S	S	S	4S	4S	80673.95	42912.07	843.98	847.36	-3.38	8.00	16.50
EW 5	TSRR	Shallow	6f	S	S	S	S	S	S	S	S	S	S	4S	4S	80823.82	42986.94	849.69	848.46	1.23	8.00	17.00
EW 6	TSRR	Shallow	6f	S	S	S	S	S	S	S	S	S	S	4S	4S	80782.74	42957.44	850.34	847.76	2.58	8.00	17.00
EW 7	TSRR	Shallow	6f	S	S	S	S	S	S	S	S	S	S	4S	4S	80792.82	43026.23	849.30	846.96	2.34	8.00	17.00
EW 8	TSRR	Shallow	6f	S	S	S	S	S	S	S	S	S	S	4S	4S	80707.06	42973.44	848.36	847.80	--	8.00	24.00
EW 9	TSRR	Shallow	6f	S	S	S	S	S	S	S	S	S	S	4S	4S	80639.55	42973.49	848.89	847.86	1.03	8.00	16.50
T6	NW of TSRR	Shallow	3b,c,6e,9	4S	4S	4S	4S	4S	4S	4S	4S	4S	4S	4S	4S	81000.58	42857.87	848.34	845.86	2.48	2.00	5.00
T9	UG TSRR	Intermed.														80457.94	43334.46	857.30	855.06	2.24	2.00	5.00
W10D	NW of TSRR	Deep														81013.11	42832.75	847.53	844.76	2.77	2.00	10.00
W10I	NW of TSRR	Intermed.	3b,c,6e,9	4S	4S	4S	4S	4S	4S	4S	4S	4S	4S			81011.60	42851.37	847.98	845.70	2.28	2.00	10.00
W16I	W of TSRR	Intermed.		S	S	S	S	S	S	S	S	S	S			80849.57	42717.30	848.68	846.80	1.88	2.00	10.00
W16S	W of TSRR	Shallow		S	S	S	S	S	S	S	S	S	S	4S	4S	80849.04	42712.06	848.61	846.80	1.81	2.00	10.00
Area Between TSRR and Southern Blocking Wells																						
CH139I	DG (NW) TSRR	Intermed.						S					S			81156.69	42587.63	842.02	843.10	-1.08	--	10.00
CH139S	DG (NW) TSRR	Shallow												S	S	81158.68	42593.92	842.07	843.20	-1.13	--	10.00
E8	DG (NW) TSRR	Shallow														81466.08	42476.79	847.61	845.30	2.31	2.00	2.00
W6D	DG (NW) TSRR	Deep														81459.85	42483.68	847.92	845.50	2.42	2.00	10.00
W6I	DG (NW) TSRR	Intermed.						S					S			81467.72	42460.57	847.70	845.30	2.40	2.00	10.00
W6S	DG (NW) TSRR	Shallow												S	S	81468.05	42473.03	847.44	845.30	2.14	2.00	10.00
Area East-Northeast of TSRR																						
CH133I	E of TSRR	Intermed.														80974.40	45036.71	865.89	864.40	1.49	--	10.00
E29	E of TSRR	Deep														80978.59	45036.94	865.85	863.40	2.45	4.00	Open borehole
T8	NE TSRR	Shallow	8													81523.49	43935.98	853.33	851.36	1.97	2.00	5.00
W7S	DG (NE) TSRR	Shallow	8													81546.00	43135.00	--	843.90	--	2.00	10.00
Paint Shop Source Area and Immediate Up & Down Gradient Areas																						
CH106I	Paint Shop	Intermed.						G					G			82728.62	43292.52	843.86	844.70	-0.84	--	10.00
CH140I	Paint Shop	Intermed.			G		G		G		G		G	4G	G	82802.72	43395.58	843.66	844.55	-0.89	--	10.00
CH141I	Paint Shop	Intermed.						G					G			83061.95	43405.92	844.28	844.73	-0.45	--	10.00
CH142I	Paint Shop	Intermed.				G			G			G		4G	G	82884.61	43231.31	843.48	843.80	-0.32	--	10.00
CH143I	Paint Shop	Intermed.														82672.42	43091.01	841.90	843.88	-1.98	--	10.00
CH145I	Paint Shop	Intermed.	9	G	G	G	G	G	G	G	G	G	G	4G	G	82704.73	43354.66	844.15	843.70	0.45	--	10.00
CH146I	Paint Shop	Intermed.	9	G	G	G	G	G	G	G	G	G	G	4G	G	82800.47	43302.86	844.42	844.91	-0.49	--	10.00
GM7	Paint Shop	Intermed.						G					G			82858.99	43260.56	843.90	844.65	-0.75	2.00	5.00
PSRW1	Paint Shop	Shallow														--	--	--	--	--	--	--
PSRW1A	Paint Shop	Shallow		G	G	G	G	G	G	G	G	G	G	4G	G	82714.00	43350.00	843.77	844.33	-0.56	6.00	20.00
VS1	Paint Shop	Shallow	SVE Well													82690.50	43370.52	843.31	843.56	-0.25	4.00	10.00
VS2	Paint Shop	Shallow	SVE Well													82686.07	43317.70	844.08	844.39	-0.31	4.00	10.00
VS3	Paint Shop	Shallow	SVE Well													82723.27	43287.73	844.12	844.71	-0.59	4.00	10.00
VS4	Paint Shop	Shallow	SVE Well													82733.04	43347.65	844.54	844.86	-0.32	4.00	10.00
W13	Paint Shop	Intermed.			G		G		G		G		G	4G	G	82742.47	43290.65	844.27	844.62	-0.35	2.00	10.00
W14	Paint Shop	Intermed.			G		G		G		G		G	4G	G	82686.81	43367.40	843.85	844.13	-0.28	2.00	10.00
Area Far Upgradient and Area Far East-Northeast of Paint Shop																						
CH102I	UG (SE) Paint Shop	Intermed.	8													82108.35	43526.61	852.11	852.71	-0.60	--	10.00
CH103I	NE of Paint Shop	Intermed.	8													85258.87	44567.33	849.09	846.60	2.49	--	10.00
CH103S	NE of Paint Shop	Shallow	8													85253.21	44563.43	849.67	847.00	2.67	--	10.00
E12	E of Paint Shop	Intermed.														83576.44	48024.78	907.21	905.60	1.61	2.00	3.00
E13	NE of Paint Shop	Intermed.														86311.55	44853.84	856.80	852.90	3.90	2.00	Open borehole
E14	NE of Paint Shop	Intermed.														83724.10	44132.90	878.81	876.50	2.31	2.00	7.00
T7	UG (SE) Paint Shop	Shallow	8													82112.00	43234.00	--	845.84	--	2.00	5.00
Southern BW Line Immediate Vicinity & Area Between BW Lines																						
BW9	Southern WF	Int./Deep		G	G	G	G	G	G	G	G	G	G	4G	G	83974.28	43123.00	837.90	836.50	1.40	10.00	30.00

ATTACHMENT 8

Groundwater Monitoring Plan including List of Points of Operational Compliance
Verona Well Field Superfund Site

Well [2,3,7]	Approximate Well Location	General Well Depth	Notes	Long Term Water Quality Locations and Frequency[1,3,4,6,11]										Long Term WL Locations and Frequency[1,4,5]		Northing (add 15,300,000)[10]	Easting (add 2,100,000)[10]	Surveyed T.O.C. Elevation[10]	Ground Elevation[10]	Stickup	Borehole / Screen Diameter	Screen Length
				Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 1	Post Year 1							
CH105D	Southern WF	Deep														82886.64	42617.14	843.39	841.30	2.09	--	10.00
CH105I	Southern WF	Intermed.												4G	G	82881.73	42611.42	844.01	841.60	2.41	--	10.00
CH108I	Between BWs	Intermed.	6a											4G	G	84107.30	43282.65	842.15	839.80	2.35	--	10.00
CH109D (V32)	Between BWs	Deep												4G	G	83526.69	42932.16	839.87	838.50	1.37	--	10.00
CH144I	E of Southern WF	Intermed.						G					G	4G	G	83473.80	43035.40	841.80	840.40	1.40	--	10.00
CH144S	E of Southern WF	Shallow						G					G			83473.31	43038.77	842.52	840.70	1.82	--	10.00
DEQ-3A	Between BWs	Intermed.	6e	G		G		G		G		G		4G	G	82993.80	41822.60	840.03	838.00	2.03	2.00	5.00
DEQ-3B	Between BWs	Deep														82993.80	41822.60	840.09	838.00	2.09	2.00	5.00
DEQ-3C	Between BWs	Deep	6e					G					G			82995.00	41830.40	840.03	838.00	2.03	2.00	5.00
DEQ-3D	Between BWs	Deep														82995.00	41830.40	839.96	838.00	1.96	2.00	5.00
DEQ-4A	Between BWs	Intermed.						G					G			83195.20	42001.70	838.89	837.00	1.89	2.00	5.00
DEQ-4B	Between BWs	Intermed.														83189.20	42006.10	839.00	837.00	2.00	2.00	5.00
DEQ-4C	Between BWs	Deep						G					G			83189.20	42006.10	839.08	837.00	2.08	2.00	5.00
DEQ-5A	Between BWs	Intermed.		G		G		G		G		G				83402.20	42263.70	837.44	835.60	1.84	2.00	5.00
DEQ-5B	Between BWs	Deep														83402.20	42263.70	837.79	835.60	2.19	2.00	5.00
DEQ-5C	Between BWs	Deep						G					G			83392.80	42265.50	837.65	835.60	2.05	2.00	5.00
DEQ-5D	Between BWs	Deep														83392.80	42265.50	837.83	835.60	2.23	2.00	5.00
DEQ-6	Between BWs	Deep			G		G		G		G		G			83712.60	42576.90	836.47	834.30	2.17	2.00	5.00
DEQ-7A	Between BWs	Intermed.		G		G		G		G		G		4G	G	84066.80	42742.00	829.84	827.99	1.85	2.00	5.00
DEQ-7B	Between BWs	Deep						G					G			84066.80	42742.00	829.98	827.99	1.99	2.00	5.00
DEQ-7C	Between BWs	Deep														84063.70	42751.50	829.75	828.39	1.36	2.00	5.00
DEQ-7D	Between BWs	Deep			G		G		G		G		G			84063.70	42751.50	830.01	828.39	1.62	2.00	5.00
DEQ-8A	Between BWs	Shallow	3a,5a,6e		G		G		G		G		G	Logger	G	84006.00	43085.80	839.11	836.60	2.51	2.00	5.00
DEQ-8B	Between BWs	Intermed.	3a,5a,6e	G		G		G		G		G				84005.00	43095.00	838.93	836.60	2.33	2.00	5.00
DEQ-8C	Between BWs	Intermed.						G					G			84005.00	43095.00	838.84	836.60	2.24	2.00	5.00
DEQ-8D	Between BWs	Deep						G					G			84010.00	43091.80	838.87	836.60	2.27	2.00	5.00
DEQ-8E	Between BWs	Deep														84010.00	43091.80	838.98	836.60	2.38	2.00	5.00
E16	Between BWs	Intermed.		G		G		G		G		G				83769.40	42558.22	834.00	832.30	1.70	2.00	12.00
E31	Between BWs	Shallow														84413.24	43322.43	834.79	831.40	3.39	2.00	3.50
GM1	Between BWs	Deep			G		G		G		G		G			83425.65	42269.13	837.39	835.20	2.19	4.00	5.00
GM2	Between BWs	Deep			G		G		G		G		G			84251.80	42873.65	836.27	833.40	2.87	4.00	5.00
GM8	Between BWs	Shallow			G		G		G		G		G			84075.66	42742.23	830.91	828.21	--	2.00	5.00
GMBW1	Southern WF	Int./Deep	6f	G	G	G	G	G	G	G	G	G	G		G	83804.54	43058.11	837.93	837.10	0.83	10.00	Open borehole
GMBW2	Southern WF	Int./Deep	6f	G	G	G	G	G	G	G	G	G	G		G	83664.33	42986.05	837.79	837.00	0.79	10.00	Open borehole
GMBW3	Southern WF	Int./Deep	6f	G	G	G	G	G	G	G	G	G	G	4G	G	83350.35	42861.88	839.60	838.80	0.80	10.00	Open borehole
GMBW4	Southern WF	Int./Deep	6f	G	G	G	G	G	G	G	G	G	G	4G	G	83122.61	42755.47	840.14	839.20	0.94	10.00	Open borehole
GMBW5	Southern WF	Int./Deep	6f	G	G	G	G	G	G	G	G	G	G	4G	G	82906.84	42638.72	841.73	841.00	0.73	10.00	Open borehole
GMBW6	Southern WF	Int./Deep	6f	G	G	G	G	G	G	G	G	G	G		G	82916.56	42429.41	841.96	841.00	0.96	10.00	Open borehole
GMBW7	Southern WF	Int./Deep	6f	G	G	G	G	G	G	G	G	G	G	4G	G	82901.60	42251.43	841.53	840.70	0.83	10.00	Open borehole
GMBW8	Southern WF	Int./Deep	3f,6f		G		G	G	G	G	G	G	G	4G	G	82911.04	42061.27	840.41	839.75	0.66	10.00	Open borehole
GMP1D	Between BWs	Deep	6e		G		G		G		G		G			83170.12	42199.64	840.36	837.80	2.56	2.00	5.00
GMP1I	Between BWs	Intermed.	5a,6e	G		G		G		G		G		4G	G	83172.85	42201.88	840.31	837.90	2.41	2.00	5.00
GMP2D	Between BWs	Deep	6e		G		G		G		G		G			82988.70	42300.40	843.10	840.60	2.50	2.00	5.00
GMP2I	Between BWs	Intermed.	5a,6e	G		G		G		G		G		Logger	G	82988.49	42296.99	842.75	840.50	2.25	2.00	5.00
GMP3D	Between BWs	Deep	6e		G		G		G		G		G			83063.78	42615.04	842.74	840.10	2.64	2.00	5.00
GMP3I	Between BWs	Intermed.	6e	G		G		G		G		G		4G	G	83062.30	42617.98	842.62	840.10	2.52	2.00	5.00
GMP4D	Between BWs	Deep														83710.42	42588.74	837.28	834.70	2.58	2.00	5.00
GMP4I	Between BWs	Deep						G					G			83714.20	42588.29	837.53	834.70	2.83	2.00	5.00
GMP5D	Between BWs	Deep	3a,6e		G		G		G		G		G			83573.41	42838.01	839.06	837.20	1.86	2.00	5.00
GMP5I	Between BWs	Intermed.	3a,6e	G		G		G		G		G		4G	G	83572.56	42841.54	839.47	836.80	2.67	2.00	5.00

ATTACHMENT 8

Groundwater Monitoring Plan including List of Points of Operational Compliance
Verona Well Field Superfund Site

Well [2,3,7]	Approximate Well Location	General Well Depth	Notes	Long Term Water Quality Locations and Frequency[1,3,4,6,11]										Long Term WL Locations and Frequency[1,4,5]		Northing (add 15,300,000)[10]	Easting (add 2,100,000)[10]	Surveyed T.O.C. Elevation[10]	Ground Elevation[10]	Stickup	Borehole / Screen Diameter	Screen Length
				Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 1	Post Year 1							
GMP6D	Between BWs	Deep	3a,6e		G		G		G		G		G			83715.42	42910.35	839.50	837.20	2.30	2.00	5.00
GMP6I	Between BWs	Intermed.	3a,6e	G		G		G		G		G		4G	G	83714.61	42913.79	839.54	837.20	2.34	2.00	5.00
PZ-1	Between GMBW-6,7	Intermed.	5a											Logger	G	82902.12	42340.26	844.38	841.40	2.98	2.00	5.00
PZ-2	DG GMP2I	Intermed.	5a											Logger	G	--	--	--	--	--	--	--
PZ-3	Pending	Intermed.	5a											Logger	G	--	--	--	--	--	--	--
PZ-4	DG PZ3	Intermed.	5a											Logger	G	--	--	--	--	--	--	--
T10	Southern WF	Shallow						G					G			82880.00	42633.00	842.70	841.53	--	2.00	5.00
T11	E of Southern WF	Shallow														83191.00	42930.00	--	839.39	--	2.00	5.00
W1I	Between BWs	Deep														84255.30	43246.72	837.35	834.70	2.65	2.00	10.00
W1S	Between BWs	Shallow														84267.31	43246.14	bent	834.20	--	2.00	10.00
W2I	Between BWs	Intermed.												4G	G	83677.42	42992.13	839.34	838.30	1.04	2.00	10.00
W2S	Between BWs	Shallow												4G	G	83700.27	42986.72	839.41	837.60	1.81	2.00	9.50
W3S	Between BWs	Shallow						G					G			83931.09	42455.76	830.45	828.90	1.55	2.00	9.50
Northern BW Vicinity & City Production Area																						
CH104I	Northern WF	Intermed.														85555.86	43714.48	840.98	838.10	2.88	--	10.00
CH136I	Northern WF	Intermed.														85245.74	42636.01	837.46	835.70	1.76	--	10.00
CH137I	Northern WF	Intermed.														85627.02	42636.93	837.67	835.40	2.27	--	10.00
CH138I	Northern WF	Intermed.														84921.26	41454.52	832.97	831.10	1.87	--	10.00
DEQ-1A	Northern WF	Intermed.	3f,6e	3G	3G	3G	G	G	G	G	G	G	G	4G	G	84991.50	42619.40	836.54	834.40	2.14	2.00	5.00
DEQ-1B	Northern WF	Deep	3f,6e	G	G	G	G	G	G	G	G	G	G			84991.50	42619.40	836.65	834.40	2.25	2.00	5.00
DEQ-1C	Northern WF	Deep														84980.60	42616.10	836.35	834.40	1.95	2.00	5.00
DEQ-1D	Northern WF	Deep														84980.60	42616.10	836.11	834.40	1.71	2.00	5.00
DEQ-2A	Northern WF	Intermed.	3f,6e	G	G		G	G		G	G		G	4G	G	84934.40	43472.10	832.51	830.30	2.21	2.00	5.00
DEQ-2B	Northern WF	Deep	3f,6e			G			G			G				84934.40	43472.10	832.59	830.30	2.29	2.00	5.00
DEQ-2C	Northern WF	Deep														84942.40	43467.80	832.34	830.30	2.04	2.00	5.00
DEQ-2D	Northern WF	Deep														84942.40	43467.80	832.54	830.30	2.24	2.00	5.00
E9	Northern WF	Intermed.														85538.89	41458.35	830.70	830.00	0.70	2.00	Open borehole
E10	Northern WF	Intermed.														85826.67	42542.98	835.65	833.70	1.95	2.00	5.00
E11	Northern WF	Shallow														87693.32	44697.22	bent	--	--	1.00	4.00
E17	Northern WF	Intermed.														84860.82	42338.41	834.88	833.20	1.68	2.00	4.00
E19	Northern WF	Intermed.														85547.57	41465.61	831.04	829.80	1.24	2.00	5.00
E27	Northern WF	Intermed.														86739.39	43550.71	829.79	827.60	2.19	4.00	Open borehole
E32	Northern WF	Intermed.														86190.90	43735.28	844.19	842.60	1.59	4.00	Open borehole
E33D	Northern WF	Deep														89875.42	45816.51	845.23	842.50	2.73	4.00	Open borehole
E33S	Northern WF	Shallow														89878.25	45811.33	845.28	842.60	2.68	1.00	2.50
E34	Northern WF	Deep														87365.82	44447.70	838.25	835.40	2.85	4.00	Open borehole
E35D	Northern WF	Deep														86742.12	43112.12	833.06	830.70	2.36	4.00	Open borehole
E35S	Northern WF	Shallow														86742.51	43108.50	833.50	830.70	2.80	4.00	5.00
E36	Northern WF	Deep														87463.34	44482.65	837.47	835.30	2.17	6.00	Open borehole
GM3I	Northern WF	Intermed.	3f,6d,e	3G	3G	3G	G	G	G	G	G	G	G	4G	G	84665.24	42497.72	837.21	834.18	3.03	2.00	5.00
GM4D	Northern WF	Deep	3f,6d,e	G	G	G	G	G	G	G	G	G	G			84825.11	42878.67	838.60	835.70	2.90	2.00	5.00
GM4I	Northern WF	Intermed.	3f,5a,b,6d,e	3G	3G	3G	G	G	G	G	G	G	G	Logger		84832.00	42883.00	838.15	835.62	2.53	2.00	5.00
GM5I	Northern WF	Intermed.	3f,6d,e	3G	3G	3G	G	G	G	G	G	G	G	4G	G	84676.65	43137.14	836.26	833.30	2.96	2.00	5.00
GM6I	Northern WF	Intermed.	3f,6d,e	3G	3G	3G	G	G	G	G	G	G	G	4G	G	84466.09	42286.70	835.15	833.10	2.05	2.00	5.00
GMP7D	Northern WF	Deep		G	G	G	G	G	G	G	G	G	G			84326.48	42408.00	836.57	833.80	2.77	2.00	5.00
GMP7I	Northern WF	Intermed.												4G	G	84323.63	42404.55	836.62	833.80	2.82	2.00	5.00
GMP8D	Northern WF	Deep		G	G	G	G	G	G	G	G	G	G			84533.41	42829.72	838.00	835.60	2.40	2.00	5.00
GMP8I	Northern WF	Intermed.	5a											Logger		84532.25	42826.12	838.02	835.60	2.42	2.00	5.00
PZ-5	Betwn GMP8I, GM4I	Intermed.	5a											Logger		84675.38	42831.96	838.72	835.80	2.92	2.00	5.00
V18	Northern WF	Int./Deep														83927.42	41634.89	833.25	833.10	0.15	8.00	Open borehole

ATTACHMENT 8

Groundwater Monitoring Plan including List of Points of Operational Compliance

Verona Well Field Superfund Site

Well [2,3,7]	Approximate Well Location	General Well Depth	Notes	Long Term Water Quality Locations and Frequency[1,3,4,6,11] Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Long Term WL Locations and Frequency[1,4,5] Year 1	Post Year 1	Northing (add 15,300,000)[10]	Easting (add 2,100,000)[10]	Surveyed T.O.C. Elevation[10]	Ground Elevation[10]	Stickup	Borehole / Screen Diameter	Screen Length
V19	Northern WF	Int./Deep														84014.18	41519.60	833.60	832.20	1.40	8.00	Open borehole
V20	Northern WF	Int./Deep														84070.40	41792.44	833.33	832.90	0.43	8.00	Open borehole
V21	Northern WF	Int./Deep														84076.52	41997.77	834.15	832.70	1.45	8.00	Open borehole
V22	Northern WF	Int./Deep	3f,6f		G		G	G	G	G	G	G	G			83883.87	42073.43	832.56	832.20	0.36	8.00	Open borehole
V23	Northern WF	Int./Deep														83808.52	41927.44	833.36	833.30	0.06	8.00	Open borehole
V24	Northern WF	Int./Deep	6f	G	G	G	G	G	G	G	G	G	G	4G	G	84254.24	42290.43	834.97	833.80	1.17	8.00	Open borehole
V25	Northern WF	Int./Deep	6f	G	G	G	G	G	G	G	G	G	G	4G	G	84339.43	42536.97	835.36	834.20	1.16	8.00	Open borehole
V26	Northern WF	Int./Deep	6f	G	G	G	G	G	G	G	G	G	G	4G	G	84425.67	42716.23	836.71	835.60	1.11	8.00	Open borehole
V27	Northern WF	Int./Deep	6f	G	G	G	G	G	G	G	G	G	G	4G	G	84513.90	42896.50	837.34	836.20	1.14	8.00	Open borehole
V28	Northern WF	Int./Deep	6f	G	G	G	G	G	G	G	G	G	G	4G	G	84600.09	43073.89	836.12	834.60	1.52	8.00	Open borehole
V29	Northern WF	Int./Deep												4G	G	84688.68	43254.48	835.25	834.50	0.75	8.00	Open borehole
Area West of Battle Creek River and Bailey Park Vicinity																						
CH110S	NW of Bailey Park	Intermed.														85470.83	39298.92	844.17	842.30	1.87	--	10.00
CH111I	Bailey Park	Intermed.														84263.35	41067.02	829.80	827.80	2.00	--	10.00
CH111S	Bailey Park	Shallow														84261.53	41073.16	830.06	827.70	2.36	--	10.00
CH112I	Bailey Park	Intermed.														83050.24	40305.09	833.74	831.40	2.34	--	10.00
CH112S	Bailey Park	Shallow														83047.91	40302.77	833.17	831.40	1.77	--	10.00
E1	NW of Bailey Park	Intermed.														87208.38	38452.52	865.38	863.20	2.18	2.00	5.00
E2	N of Bailey Park	Intermed.														86921.76	41264.57	829.53	828.60	0.93	2.00	Open borehole
E3	N of Bailey Park	Intermed.														86131.93	40204.50	830.52	826.80	3.72	2.00	Open borehole
E6	W of Bailey Park	Shallow														81828.92	38589.84	875.38	875.20	0.18	2.00	Open borehole
E15	Bailey Park	Intermed.														83075.43	39166.91	bent	846.30	--	2.00	3.00
E20	Bailey Park	Intermed.														84121.24	41100.28	829.98	827.50	2.48	2.00	Open borehole
E37D	S of Bailey Park	Deep														82894.24	40345.68	833.17	830.00	3.17	4.00	Open borehole
E38D	S of Bailey Park	Deep														82892.00	40439.09	833.11	828.60	4.51	4.00	Open borehole
E39D	S of Bailey Park	Deep														82929.18	40393.52	832.45	829.60	2.85	4.00	Open borehole
E40D	NW of Bailey Park	Deep														85154.61	39995.48	834.84	831.10	3.74	--	Open borehole
USGS (H&N)	H&N on Capital Ave	Deep												Logger	Logger	84380.10	38979.76	846.84	--	--	--	--
V14	Bailey Park	Int./Deep														84634.62	39333.72	--	840.00	--	12.00	Open borehole
V15	Bailey Park	Int./Deep														84665.41	39961.09	--	836.00	--	12.00	Open borehole
V16	Bailey Park	Int./Deep														84613.00	40529.00	--	834.00	--	12.00	Open borehole
V17	Bailey Park	Int./Deep														84627.69	40940.05	--	831.00	--	12.00	Open borehole
Davis Oil Emmett Street Source Area																						
MW1R	Emmett/RR	Shallow														--	--	--	--	--	2.00	4.00
MW2R	Emmett/RR	Shallow														--	--	--	--	--	2.00	4.00
MW3R	Emmett/RR	Shallow														--	--	--	--	--	2.00	6.00
MW4R	Emmett/RR	Shallow														--	--	--	--	--	2.00	6.00
MW1	Emmett/RR	Shallow	4	D	D	D	D	D	D	D	D	D	D			80797.59	42719.47	845.26	845.47	-0.21	2.00	10.00
MW2	Emmett/RR	Shallow														80759.78	42856.89	846.36	846.66	-0.30	2.00	10.00
MW3	Emmett/RR	Shallow														80806.66	42857.14	846.42	846.78	-0.36	2.00	10.00
MW4	Emmett/RR	Shallow														80854.19	42863.82	846.33	846.59	-0.26	2.00	10.00
MW5	Emmett/RR	Shallow														80772.13	42865.14	846.40	846.80	-0.40	1.00	10.00
MW6	Emmett/RR	Shallow														80745.19	42847.11	845.98	846.34	-0.36	1.00	10.00
MW7	Emmett/RR	Shallow														80766.68	42844.85	846.48	846.79	-0.31	1.00	10.00
MW8	Emmett/RR	Shallow														80752.42	42868.37	846.25	846.71	-0.46	1.00	10.00
MW9	Emmett/RR	Shallow														80812.00	42751.00	844.95	845.44	-0.49	2.00	10.00
MW10	Emmett/RR	Shallow														80769.00	42879.00	846.27	846.67	-0.40	2.00	10.00
MW10D	Emmett/RR	Intermed.	4	D		D		D		D		D				80767.00	42880.00	846.21	846.67	-0.46	2.00	5.00
MW11	Emmett/RR	Shallow														80798.00	42868.00	846.56	846.85	-0.29	2.00	10.00
MW12	Emmett/RR	Shallow														80798.00	42845.00	846.82	847.07	-0.25	2.00	10.00
MW13	Emmett/RR	Shallow														80775.00	42830.00	846.63	846.98	-0.35	2.00	10.00

ATTACHMENT 8

Groundwater Monitoring Plan including List of Points of Operational Compliance

Verona Well Field Superfund Site

Well [2,3,7]	Approximate Well Location	General Well Depth	Notes	Long Term Water Quality Locations and Frequency[1,3,4,6,11]										Long Term WL Locations and Frequency[1,4,5]		Northing (add 15,300,000)[10]	Easting (add 2,100,000)[10]	Surveyed T.O.C. Elevation[10]	Ground Elevation[10]	Stickup	Borehole / Screen Diameter	Screen Length
				Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 1	Post Year 1							
MW14	Emmett/RR	Shallow	4	D	D	D	D	D	D	D	D	D	D			80849.00	42808.00	846.04	846.36	-0.32	2.00	10.00
MW15	Emmett/RR	Shallow	4	D		D		D		D		D				80759.00	42790.00	846.12	846.51	-0.39	2.00	10.00
MW16	Emmett/RR	Intermed.	4	D	D	D	D	D	D	D	D	D	D			80877.00	42840.00	846.76	847.07	-0.31	2.00	5.00
MW17	Emmett/RR	Shallow														--	--	--	--	--	--	--
MW18	Emmett/RR	Shallow														--	--	--	--	--	--	--
MW19	Emmett/RR	Shallow														--	--	--	--	--	--	--
MW20	Emmett/RR	Shallow														--	--	--	--	--	--	--
City Production Wells																						
V13	Northern WF	Int./Deep	11	4C	4C	4C	4C	4C	4C	4C	4C	4C	4C			85024.17	42267.89	--	836.00	--	12.00	Open borehole
V30	Northern WF	Int./Deep														84957.02	41473.96	830.52	829.90	0.62	8.00	Open borehole
V31	Southern WF	Int./Deep														84144.42	43293.39	--	837.00	--	16.00	Open borehole
V32	Southern WF	Int./Deep														83526.69	42932.16	--	838.00	--	16.00	Open borehole
V33	Southern WF	Int./Deep														83499.55	42441.30	--	837.00	--	16.00	Open borehole
V34	Southern WF	Int./Deep														82980.59	42759.36	--	840.00	--	16.00	Open borehole
V35	Southern WF	Int./Deep														82626.74	42005.87	--	840.00	--	16.00	Open borehole
V36	Northern WF	Int./Deep	11	4C	4C	4C	4C	4C	4C	4C	4C	4C	4C			85239.81	42539.64	836.68	835.90	0.78	16.00	Open borehole
V37	Northern WF	Int./Deep														85212.48	41820.95	832.54	831.90	0.64	16.00	Open borehole
V38	Northern WF	Int./Deep	11	4C	4C	4C	4C	4C	4C	4C	4C	4C	4C			85314.52	43037.38	838.47	836.90	1.57	16.00	Open borehole
V39	Northern WF	Int./Deep	11	4C	4C	4C	4C	4C	4C	4C	4C	4C	4C			85289.21	43562.90	837.70	836.90	0.80	16.00	Open borehole
V40	Northern WF	Int./Deep	11	4C	4C	4C	4C	4C	4C	4C	4C	4C	4C			85671.84	43754.20	842.50	840.60	1.90	16.00	Open borehole
V41	Northern WF	Int./Deep	11	4C	4C	4C	4C	4C	4C	4C	4C	4C	4C			85720.37	43224.20	841.34	839.40	1.94	16.00	Open borehole
V42	Northern WF	Int./Deep														85584.06	42188.50	832.24	832.00	0.24	16.00	Open borehole
V43	Northern WF	Int./Deep														85714.19	42714.01	837.15	837.10	0.05	6.00	Open borehole
V44	Northern WF	Int./Deep														85622.47	41697.69	834.06	831.50	2.56	16.00	Open borehole
V45	Northern WF	Int./Deep														86495.00	42663.00	832.45	--	--	15.25	Open borehole
V46	Northern WF	Int./Deep														86004.14	42452.68	834.28	832.40	1.88	16.00	Open borehole
V47	Northern WF	Int./Deep														86078.35	42868.40	837.89	835.70	2.19	15.00	Open borehole
V48	Northern WF	Int./Deep														86124.59	43283.06	841.01	838.90	2.11	15.00	Open borehole
V49	Northern WF	Int./Deep														86024.54	43712.26	843.88	841.80	2.08	15.25	Open borehole
V50	Northern WF	Int./Deep														86672.26	43851.82	840.97	838.80	2.17	15.25	Open borehole
V51	Northern WF	Int./Deep	11	4C	4C	4C	4C	4C	4C	4C	4C	4C	4C			87198.88	44270.56	834.23	832.90	1.33	16.00	Open borehole
V52	Northern WF	Int./Deep	11	4C	4C	4C	4C	4C	4C	4C	4C	4C	4C			87866.19	44486.78	834.11	832.70	1.41	16.00	Open borehole
V53	Northern WF	Int./Deep	11	4C	4C	4C	4C	4C	4C	4C	4C	4C	4C			88555.52	44790.99	834.02	833.00	1.02	16.00	Open borehole
V54	Northern WF	Int./Deep														86754.00	43093.00	832.40	--	--	15.25	Open borehole
Miscellaneous Wells Listed on Historical Tables/Maps																						
B14	TSRR	--														--	--	--	--	--	2.00	10.00
B15	TSRR	--														--	--	--	--	--	--	Boring only.
B16	TSRR	--														--	--	--	--	--	--	Boring only.
B22	TSRR	--														--	--	--	--	--	2.00	10.00
CH132I	SW of TSRR	--														79985.41	43403.93	--	857.89	--	--	10.00
DNR01	RR Landfill	--														--	--	--	--	--	--	--
DNR02	RR Landfill	--														--	--	--	--	--	--	--
DNR03	RR Landfill	--														--	--	--	--	--	--	--
DNR04	--	--														--	--	--	--	--	--	--
DNR05	--	--														--	--	--	--	--	--	--
DNR06	--	--														--	--	--	--	--	--	--
E4	NW of Bailey Park	--														85195.16	37793.79	883.02	881.10	1.92	2.00	10.00
E5	Bailey Park	--														84716.89	40469.32	831.54	829.54	2.00	2.00	3.00
E7	SW of TSRR	--														79678.22	43455.56	868.28	866.18	2.10	--	Open borehole
E18	N of BC River/Bailey	--														90417.70	40026.53	848.98	845.40	3.58	2.00	Open borehole
E23	SW of Bailey Park	--														78664.31	36911.65	848.80	845.10	3.70	4.00	Open borehole

ATTACHMENT 8

Groundwater Monitoring Plan including List of Points of Operational Compliance
Verona Well Field Superfund Site

Well [2,3,7]	Approximate Well Location	General Well Depth	Notes	Long Term Water Quality Locations and Frequency[1,3,4,6,11]										Long Term WL Locations and Frequency[1,4,5]		Northing (add 15,300,000)[10]	Easting (add 2,100,000)[10]	Surveyed T.O.C. Elevation[10]	Ground Elevation[10]	Stickup	Borehole / Screen Diameter	Screen Length
				Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 1	Post Year 1							
EDI1	--	--														--	--	--	--	--	2.00	--
EDI2	--	--														--	--	--	--	--	2.00	--
EDI3	--	--														--	--	--	--	--	2.00	--
EDI4	--	--														--	--	--	--	--	2.00	--
G1	Far SW Annex	--														--	--	833.47	831.90	1.57	1.25	3.00
G1A	Far SW Annex	--														--	--	834.18	831.20	2.98	2.00	4.00
G1B	Far SW Annex	--														--	--	834.58	831.60	2.98	2.00	4.00
G1C	Far SW Annex	--														--	--	833.64	832.10	1.54	4.00	Open borehole
G2	Far SW Annex	--														--	--	836.43	833.40	3.03	2.00	4.00
G2A	Far SW Annex	--														--	--	836.24	833.20	3.04	2.00	4.00
G3	Far SW Annex	--														--	--	834.94	831.90	3.04	2.00	4.00
G3A	Far SW Annex	--														--	--	834.74	831.70	3.04	2.00	4.00
G4	Far SW Annex	--														--	--	835.06	832.00	3.06	2.00	4.00
G4A	Far SW Annex	--														--	--	835.12	832.10	3.02	2.00	4.00
G5	Far SW Annex	--														--	--	827.95	825.90	2.05	2.00	4.00
G5A	Far SW Annex	--														--	--	828.76	825.60	3.16	4.00	Open borehole
G6	Far SW Annex	--														--	--	829.69	827.90	1.79	4.00	Open borehole
G7(S)	Far SW Annex	--														--	--	828.32	826.50	1.82	2.00	4.00
G7A(I)	Far SW Annex	--														--	--	829.18	826.50	2.68	4.00	Open borehole
G8	Far SW Annex	--														--	--	835.30	831.90	3.40	2.00	4.00
G8A	Far SW Annex	--														--	--	834.11	831.90	2.21	4.00	Open borehole
G9(S)	SW of Annex	--														--	--	838.45	836.70	1.75	2.00	4.00
G9A(D)	SW of Annex	--														--	--	838.68	836.60	2.08	4.00	Open borehole
G10(S)	SW of Annex	--	5c													--	--	841.18	840.70	--	2.00	--
G10A(I)	SW of Annex	--	5c													--	--	842.58	840.70	--	4.00	--
G10B(D)	SW of Annex	--	5c													--	--	842.54	840.60	--	4.00	--
G11(S)	SW of Annex	--														--	--	--	--	--	2.00	--
G11A(I)	SW of Annex	--														--	--	839.51	837.70	--	4.00	--
G11B(D)	SW of Annex	--														--	--	839.75	837.70	--	4.00	--
GT1	GWTRR	--														80100.24	42329.27	840.22	840.20	0.02	--	--
GT2	GWTRR	--														79309.13	42016.30	838.72	837.70	1.02	--	--
GT3	GWTRR	--														88089.30	45488.86	848.27	846.90	1.37	--	--
GT4	GWTRR	--														82371.07	43154.69	846.47	843.80	2.67	--	--
M	N'hd NW of Annex	--														--	--	--	--	--	--	--
OW-1	--	--														--	--	838.82	835.90	2.92	2.00	8.00
OW-2	--	--														--	--	837.51	834.70	2.81	2.00	3.00
OW-3	RR Landfill	--														--	--	835.90	835.20	0.70	2.00	8.00
OW-4	RR Landfill	--														--	--	837.39	835.40	1.99	2.00	8.00
OW-5	RR Landfill	--														--	--	836.48	835.50	0.98	2.00	3.00
P	--	--														--	--	--	--	--	--	--
P113I	N'hd N of dam	--														80343.55	38362.01	--	830.46	--	--	5.00
P113S	N'hd N of dam	--														81673.73	39650.63	--	830.46	--	--	5.00
P114I	N'hd W of dam	--														78964.23	38712.53	--	865.51	--	--	5.00
P114S	N'hd W of dam	--														79476.84	39820.28	--	865.51	--	--	5.00
P115I	S of dam	--														77227.80	38183.23	--	822.52	--	--	5.00
P115S	S of dam	--														--	--	--	822.52	--	--	5.00
P116I	N'hd SW of dam	--														78964.23	38712.53	--	864.94	--	--	5.00
P117I	Far SW of dam	--														77227.80	38183.23	--	826.18	--	--	5.00
P119S	NE of Bailey Park	--														--	--	--	837.55	--	--	5.00
P124I	Far NE of Paint Shop	--														88741.47	46825.22	--	875.74	--	--	5.00
P125I	Far NE of Paint Shop	--														90286.82	45935.30	--	840.62	--	--	5.00

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Groundwater Monitoring Plan including List of Points of Operational Compliance

Verona Well Field Superfund Site

Well [2,3,7]	Approximate Well Location	General Well Depth	Notes	Long Term Water Quality Locations and Frequency[1,3,4,6,11]										Long Term WL Locations and Frequency[1,4,5]		Northing (add 15,300,000)[10]	Easting (add 2,100,000)[10]	Surveyed T.O.C. Elevation[10]	Ground Elevation[10]	Stickup	Borehole / Screen Diameter	Screen Length
				Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 1	Post Year 1							
PC1A	PS SVE PZ	--														82728.06	43344.48	844.38	844.77	-0.39	--	--
PC1B	PS SVE PZ	--														82728.06	43344.48	844.36	844.77	-0.41	--	--
PC2A	PS SVE PZ	--														82719.97	43339.32	844.13	844.75	-0.62	--	--
PC2B	PS SVE PZ	--														82719.97	43339.32	844.12	844.75	-0.63	--	--
PC3A	PS SVE PZ	--														82708.84	43332.22	844.18	844.58	-0.40	--	--
PC3B	PS SVE PZ	--														82708.84	43332.22	844.22	844.58	-0.36	--	--
PZ1A	Annex SVE PZ	--														80504.58	42156.09	843.96	841.50	2.46	--	--
PZ1B	Annex SVE PZ	--														80504.58	42156.09	843.51	841.50	2.01	--	--
PZ2A	Annex SVE PZ	--														80509.38	42170.38	843.96	841.50	2.46	--	--
PZ2B	Annex SVE PZ	--														80509.38	42170.38	843.52	841.50	2.02	--	--
PZ3A	Annex SVE PZ	--														80512.28	42180.47	843.56	841.20	2.36	--	--
PZ3B	Annex SVE PZ	--														80512.28	42180.47	843.18	841.20	1.98	--	--
PZ4A	Annex SVE PZ	--														80720.21	42238.40	845.69	843.30	2.39	--	--
PZ4B	Annex SVE PZ	--														80720.21	42238.40	846.22	843.30	2.92	--	--
PZ5A	Annex SVE PZ	--														80704.01	42187.78	845.55	843.30	2.25	--	--
PZ5B	Annex SVE PZ	--														80704.01	42187.78	845.13	843.30	1.83	--	--
PZ6A	Annex SVE PZ	--														80691.30	42137.59	844.73	842.30	2.43	--	--
PZ6B	Annex SVE PZ	--														80691.30	42137.59	844.19	842.30	1.89	--	--
PZ7A	Annex SVE PZ	--														80667.89	42065.39	844.58	842.20	2.38	--	--
PZ7B	Annex SVE PZ	--														80667.89	42065.39	844.13	842.20	1.93	--	--
R	--	--														--	--	--	--	--	--	--
S1	Far NE of Paint Shop	--														--	--	--	--	--	--	--
SG1	Staff gauge SW of dam	--														--	--	--	--	--	--	--
SG3	Staff gauge N of dam	--														--	--	--	--	--	--	--
SG4	Staff gauge NE of WF	--														--	--	--	--	--	--	--
SG5	Staff gauge NE of WF	--														--	--	--	--	--	--	--
T12	Far SW Annex	--														78575.29	40517.22	--	831.87	--	2.00	5.00
T13	Far SW Annex	--														77831.90	40825.84	--	829.62	--	2.00	5.00
T14	Far SW Annex	--														--	--	--	835.53	--	2.00	5.00
V1	WF/SW of V23	--														83330.15	41968.38	--	836.00	--	--	--
V2	WF/SW of V23	--														83307.65	41754.34	--	834.00	--	--	--
V3	WF/SW of V23	--														83512.29	41641.02	--	830.00	--	--	--
V4	WF/SW of V23	--														83559.05	41721.00	--	830.00	--	--	--
V5	WF/SW of V23	--														83650.63	41581.48	--	832.00	--	--	--
V6	WF/SW of V23	--														83836.92	41536.32	--	831.00	--	--	--
V7	WF/SW of V23	--														83704.61	41737.51	--	833.00	--	--	--
V8	WF/SW of V23	--														83860.15	41734.71	--	833.00	--	--	--

ATTACHMENT 8

Groundwater Monitoring Plan including the List of Points of Operational Compliance
Verona Well Field Superfund Site

NOTES:

1 On an annual basis, the VWFMP parties will review the adequacy of the long term monitoring program and determine modifications (if any) necessary to meet the monitoring objectives specified in the VWFMP, with the understanding that the VWFMP parties' goal is to strive for no net gain in overall level of effort when such changes are being finalized. The parties agree to attempt "trade offs" where applicable to achieve the no net gain objective, but all parties recognize that in some instances a reasonable increase in monitoring may occur. In addition, the VWFMP document will describe the process for implementing increased monitoring during periods of increased City production or increased blocking well operating scenarios; the level of effort for monitoring during such periods will be similar to that listed herein for Year 1 (subject to approval from all VWFMP parties).

G = Monitoring at this location to be performed by VWF Group.

S = Monitoring at this location to be performed by State/MDEQ.

C = Monitoring at this location to be performed by City of Battle Creek.

D = Monitoring at this location to be performed by Davis Oil.

2

V27	Orange background signifies Remedial recovery well or blocking well; V22 and GMBW8 will be inactive during operation of enhanced system.
PSRW-1A	Green background signifies new or proposed recovery/blocking well.
V22	Blue background signifies Remedial recovery/blocking well that will be inactive during operation of enhanced system.
V45	Bold, italicized Well ID signifies active City production well.

2a Any new recovery wells at the Annex or Paint Shop would have the same monitoring frequency as original Annex recovery wells GMA1D and 2D.

2b Any new blocking wells would have the same monitoring frequency as the respective (southern or northern) original blocking wells (V24-V28 northern, and GMBW1-7 southern).

3 **T6** Bold text/normal background signifies Point of Operational Compliance (POC) per Final Minutes for 8/13/01 VWFMP meeting.

3a There are no POCs in the Paint Shop source area, SBW line POCs DEQ8A, DEQ8B, GMP5I, GMP5D, GMP6I, GMP6D will serve as Paint Shop POCs.

3b The list of POCs for TSRR may change subject to additional investigation planned by MDEQ based upon results of supplemental investigation in March 2002, and VWFMP party agreements. MDEQ proposes to install new POCs DEQ9A and DEQ9B at the location of temporary well TMW1 from the March 2002 investigation, and a new monitoring well, DEQ10, adjacent to Davis Oil well MW16.

3c Based on the extent of the capture zone, the POCs for TSRR may be adjusted further north (i.e., if T6, W10I are determined to be under the influence of the TSRR extraction wells, then CH139S and CH139I become the new POCs to be sampled 4x/yr and T6/W10I would be sampled once every 5 yrs (continued 4x/yr WL).

3d Based on the extent of the capture zone, the POCs for the Annex may be adjusted further north (i.e., if MW2A,B are determined to be under the influence of the Annex recovery wells, then CH150I,D become the new POCs to be sampled 4x/yr and MW2A,B would be sampled once every 5 yrs (continued 1x/yr WL).

3e Within 6 months of completion of the Year 1 WQ data from the Annex POCs, an evaluation of all data collected will be completed and the VWFMP parties will determine the final long term sampling frequency for those wells.

3f Within 6 months of completion of the first 3 Years of WQ data from the NBW line POCs, an evaluation of all data collected will be completed and the VWFMP parties will determine the final long term sampling frequency for those wells, as well as sampling frequency for GMBW8, V22 and GM6 which are to be re-evaluated.

4 Davis Oil source area monitoring listed herein reflects only the monitoring to be performed by MDEQ at Davis Oil wells, with all samples analyzed for VOCs which are COCs. Davis Oil's monitoring program (for free product and petroleum related contaminants) will be added to this table once that program is approved by MDEQ RRD. Davis Oil's monitoring program will not be an obligation subject to enforcement pursuant to the Consent Decree between the State and VWF Group.

5 Per Final Minutes of 2/20/02 VWFMP meeting, and agreements from the 6/25/02 conference call, the ultimate long term hydraulic monitoring program will be determined as follows: Within 6 months of completion of the 1-Year hydraulic monitoring (loggers and manual), an evaluation of all data collected, including City production rates, blocking well rates, etc. will be completed and the VWFMP parties will determine one of the following three options for long-term hydraulic monitoring:

1) Continued use of the piezometer cluster concept with data loggers and manual spot checks throughout the duration of system operation.
2) Manual water levels at specific locations on an annual frequency (e.g., listed under "Post Year 1"), or an amended version thereof so long as the annual level of effort previously agreed upon is not exceeded. In this option no data loggers would be used.
3) Periodic use of the piezometer cluster concept during key periods of long term operation (such as the time when City production approaches a rate close to the high-end of a blocking well operating scenario), for a specific duration not to exceed 1-year in each event, and manual water level collection on an annual frequency at all other times (as listed under "Post Year 1").

5a The 1-Year Hydraulic Study commenced on October 1, 2003, per the approved scope of work (dated 8/29/03, and email addenda dated 9/13/03). The study shall cover the period 6 months prior to and 6 months following startup of the enhanced remedy. The study involves the following:

1) Cluster 1 (PZ1 and existing wells GMP2I and GMP1I) - PZ1 is located between GMBW6 and 7, and GMP2I and 1I are downgradient of PZ1. All three wells are equipped with data loggers programmed to record WLs once per hour from October 2003 through September 2004.
2) Cluster 3 (existing well GMP8I, PZ5, and existing well GM4I) - PZ5 is located between GMP8I and GM4I, this cluster is located downgradient of V26 and V27. are equipped with data loggers programmed to record WLs once per hour from October 2003 through September 2004.
3) Manual water levels collected quarterly (Oct. 2003, Dec. 2003, Mar. 2004, Jul. 2004, and Oct. 2004) at the following "spot check" locations: BW9, CH105I, CH108I, CH109D, CH144I, DEQ3A, DEQ7A, DEQ8A, GMBW1, GMBW2, GMBW3, GMBW4, GMBW5, GMBW6, GMBW7, GMBW8, GMP1I, GMP3I, GMP5I, GMP6I, W2I, W2S, DEQ1A, DEQ2A, GM3I, GM5I, GM6I, GMP7I, V24, V25, V26, V27, V28, V29
4) Future Cluster 2 (DEQ8A or B, plus two new PZs, PZ3 and PZ4) - will be installed only if Option 1 or 3 above is selected by the VWFMP parties as the final long term hydraulic monitoring program. The locations for PZ3 and PZ4 would be determined based upon results of an aquifer test at BW9 (performed after that well is connected to the SBW pump house as part of the Enhanced System construction in Spring 2004); the scope of work for the BW9 aquifer test would be developed by the VWFMP parties. However, if Option 2 above is selected by the VWFMP parties as the final long term hydraulic monitoring program, PZ Cluster #2 would not be installed.

ATTACHMENT 8

Groundwater Monitoring Plan including the List of Points of Operational Compliance
Verona Well Field Superfund Site

NOTES:

5b USGS long term data logger located in this well was replaced with a new logger in October 2003, as part of PZ Cluster #3.

5c Hydraulic monitoring during 1st year of operation of the upgraded Annex recovery system includes manual WLs at frequency and locations listed in the approved scopes of work (dated 8/26/03, and 11/13/03). Within 6 months of completion of the 1st year of operation and hydraulic monitoring, an evaluation of all data collected will be completed and VWFMP parties will determine the long-term hydraulic monitoring program for the Annex. At EPA's request, cluster G10 will be added as WL monitoring location for 1st year of Annex Upgrades operation (2nd-4th qtr events).

6 Per Final Minutes of 6/20/01, 8/13/01, 2/20/02, and 6/25/02 VWFMP meetings, the ultimate long term water quality monitoring program will be as listed here, with the following clarifications:

6a Due to placement of new SBW, BW9, well CH108I was added to the long term WQ monitoring program at a frequency of once every other year (similar to GMP5I and DEQ8A).

6b All samples collected on behalf of the VWF Group (G) will be analyzed for the VOCs which are COCs, per the 2003 ESD, and specific Annex and Paint Shop source area samples will be analyzed for additional COCs or potential COCs as listed below:

- Samples from any Annex wells sampled during long term monitoring will be analyzed for Arsenic which is a COC for the Annex per the 2003 ESD.
- Samples from Annex wells B8S, B25, MW2B, MW1, MW2A, MW3, ARW1S, ARW2S, GMA1D and GMA2D will be analyzed for dieldrin and 1,1,2,2-PCA which are potential COCs for the Annex per the 2003 ESD. After collection of three consecutive sets of samples for these potential COCs, the VWFMP parties will determine whether any further monitoring is necessary for these parameters.
- Samples from Paint Shop wells CH145I, CH146I, W13 and W14 will be analyzed for aluminum, iron, and sodium which are potential COCs for the Paint Shop per the 2003 ESD. After collection of three consecutive sets of samples for these potential COCs, the VWFMP parties will determine whether any further monitoring is necessary for these parameters.

6c All sampling and analyses will be in accordance with each party's QAPP/QAPP Addenda.

6d NBW line Points of Operational Compliance sampling frequency will be re-evaluated and finalized after the initial 3 years of sampling (See Note 3f); and Annex Points of Operational Compliance sampling frequency will be re-evaluated after the initial year of sampling (See Note 3e).

6e Number and location of Points of Operational Compliance may change over time subject to VWFMP party agreements (See Note 1).

6f With the exception of wells GMBW8 and V22 (for which shutdown has already been approved), the closure demonstration process (i.e., sampling to be performed prior to shutdown of 1 or more recovery/blocking wells) will be described in the VWFMP document. The frequency of closure demonstration sampling shall be 4x/year for a minimum of 1 year up to a maximum of three years (duration subject to VWFMP party agreement) commencing at the time the VWF Group requests approval to shutdown the subject 1 or more recovery/blocking wells. Requests for approval shall be made in writing to USEPA/MDEQ/City. Approval to shutdown the subject well(s) will require a minimum of 4 consecutive sample results less than Revised ROD Criteria from the selected closure demonstration sampling locations. Closure demonstration monitoring will include assessment of potential health risk from degradation products.

7 Well abandonment to be performed by responsible party (e.g., MDEQ, USEPA, City, USGS, VWF Group, other) as designated in the Well Abandonment Plan, as approved by MDEQ and USEPA.

8 Well served as a background sampling location for metals in groundwater, conducted by MDEQ and Progressive in 2002.

9 Well served as a baseline sampling location for specific parameters, as determined by VWFMP parties, as part of the background/baseline monitoring in 2002.

10 Survey Data Source:
2001 Survey Summary (Progressive) of surveys from 1993, 1996, 1999, and 2000; plus surveys in 2002, 2003.
Italicized survey data were provided to Progressive without backup documentation (not verified).
Survey benchmarks (per MilePost Surveying letter dated 1/8/01):
- Elevations based upon 1993 datum
- Northing/Easting are based upon following:
  1) Emmett Street Dam - Arrow on fire hydrant at the northwest corner of Wagner and Stayman
  2) Well Field - "X" on concrete at manhole (used in 1996 survey) with coordinates N83644, E42073
  3) Annex - boat spike in south side of transformer pole in Annex compound
  4) Bailey Park Area - boat spike in right light pole, diamond "D", Convis Field
  5) TSRR Area - NW bolt at north post on "Marathon" sign at corner of Emmett and Raymond
  6) Well Field (North of Brigden) - boat spike in power pole near V48

TOC - top-of-casing.
"--" - No data

11 City Production Well sampling program includes sampling of 4 wells on a quarterly basis, as follows:
All samples collected by the City will be analyzed for VOCs which are COCs.

11a Either well V13 or V36, depending upon which well was last sampled and amount of use of the wells.

11b Either well V38, V40, or V41, depending upon which well was last sampled and amount of use of the wells. Also, the current monitoring program with MDEQ-SWQD includes sampling of only V40 or V41 on a quarterly basis. The City petitioned MDEQ to allow the inclusion of V38 to this sampling rotation, and MDEQ responded that V38 should be added to the same sampling rotation as V39 (rather than this rotation).

11c Either well V51, V52, or V53, depending upon which well was last sampled and amount of use of the wells.

11d Well V39 is only sampled on a quarterly basis if it has been in use, otherwise it is not sampled. Well V38 will be sampled in the same manner as V39 based upon MDEQ's response to the City's petition mentioned in Note 11b.

ATTACHMENT 8

Groundwater Monitoring Plan including the List of Points of Operational Compliance

Verona Well Field Superfund Site

Sample ID	Sample Location	Sample Type	Sampling Frequency/Year	Analytes
Miscellaneous Compliance Monitoring Locations [1]				
City Influent Tap [2]	Fe/Mn Plant Influent	Sample Tap	4C	VOCs which are COCs
VWF RA Effluent [3]	NPDES Discharge 1	Grab Sample	12G	See Permit
NBW Line Header [3]	NPDES Influent 1	Grab Sample	12G	See Permit

NOTES:

[1] These monitoring locations are in addition to the wells identified as Points of Operational Compliance on previous pages of this table.

[2] City iron removal plant influent tap sampling to be conducted by City during routine monitoring events on a quarterly basis for 2 years, at which time the frequency and responsibility for future sampling and analysis will be re-evaluated.

[3] All NPDES monitoring and reporting shall be performed in accordance with specific permit requirements, and as permit requirements change this table will be amended.

G = Monitoring at this location to be performed by VWF Group.

C = Monitoring at this location to be performed by City.

ATTACHMENT 9

Summary of Lead Agency Responsibilities for Verona Well Field Remedial Action, Enhanced System, and Source Area Enhancements

Attachment 9

Summary of Lead Agency Responsibility for VWF RA, Enhanced System and Source Area Enhancements

Task/Issue	EPA		MDEQ		CITY	
	Approve	Comment	Approve	Comment	Approve	Comment
Review/Approval of Annex Upgrades including: o Design/Build Details o Construction Completion Certification o O&M and Monitoring o Shutdown/Closure Certification	X			X		X
Review/Approval of New Southern Blocking Well(s) for Capture of Paint Shop Plume o Design/Build Details o Construction Completion Certification o O&M and Monitoring o Shutdown/Closure Certification	X			X	X	
Review/Approval of Source Area Enhancements o Scope of Work o Design/Build Details o Construction Completion Certification o O&M and Monitoring		X	X			X
Review/Approval of (30 mgd) Enhanced System o Design/Build Details o Phasing of Future Operational Upgrades o Construction Completion Certification o O&M and Monitoring		X[1]	X		X	
Review/Approval of Northern BW Line Shutdown	X		X		X	
Review/Approval of Timing for Shutdown of VWF RA Air Stripper (i.e., permitting southern BW line to bypass	X		X[2]	X		X

[1] EPA's role may change to "Approve" if new EPA/Group decree is modified to require 30 mgd Enhancements, or if EPA determines Enhancements interfere with ROD.
[2] MDEQ "Approval" only applies to NPDES Permit issues.

Attachment 9

Summary of Lead Agency Responsibility for VWF RA, Enhanced System and Source Area Enhancements

Task/Issue	EPA		MDEQ		CITY	
	Approve	Comment	Approve	Comment	Approve	Comment
treatment)						
Review/Approval of Southern BW Line Shutdown	X		X		X	
Review/Approval of Progress Reports and Routine Monitoring Reports	X		X[3]	X		X
Well Abandonment/ Site Restoration	X		X		X[4]	X[5]
Land Use and Resource Use Restrictions		X	X		X[6]	
Annex and Paint Shop Soil Cleanup Certification	X		X			X
Annex and Paint Shop Source Area Groundwater Cleanup Certification	X		X			X
Source Area Enhancements Completion Certification		X	X			X
VWF Superfund Site Cleanup Completion Certification	X		X			X
NPL Delisting	X		X			X

Definitions:

Approve – Provide direct approval – No action without approval from all approval agencies for a given task. In the event agreement can't be reached between approval agencies, dispute resolution process will be followed.

Comment – Provide input/comment to approval agency(s)

[3] Only regarding Source Area Enhancements and Enhanced System
[4] For wells on city property
[5] For wells not on city property
[6] For land use/resource use restrictions within the City

ATTACHMENT 10

Well Abandonment Plan

PROGRESSIVE
ENGINEERING & CONSTRUCTION, INC.

Memorandum

To: Matt Baltusis - MDEQ
Richard Boice - USEPA
Cindy Fairbanks - MDEQ
Bill Davidson - Horizon

CC: Craig Hupp - Bodman
Mar Sclawy - Fabrizio & Brook
Dustin Ordway - MJSC

From: Bridget Morello

Date: October 7, 2004

Re: Interim Well Abandonment Plan - Verona Well Field Superfund Site; Battle Creek, Michigan

---

Progressive Engineering & Construction, Inc. (Progressive), on behalf of the Verona Well Field (VWF) Group, has reviewed MDEQ comments (email dated August 25, 2004) on the Draft Well Abandonment Plan and Initial Well Abandonment Scope of Work (both dated September 24, 2003) for wells at the VWF Site. The attached Interim Well Abandonment Plan combines and streamlines the information presented in those prior documents, and incorporates MDEQ's comments, with the exception that MDEQ's proposed abandonment Method #3 was excluded. The justification for eliminating Method #3 was provided under separate cover.

The attached Interim Well Abandonment Plan is intended to serve as the site-wide plan, regardless of well location and responsibility. The one aspect of the plan which must still be discussed and finalized by the VWFMP Parties is responsibility for each well. Resolution of this issue is critical to timing of sign-off and entry of the State and Federal Consent Decrees. We propose that the parties participate in a conference call within the next week, in order to resolve that issue.

In the meantime, please contact me if you have any questions regarding the attached plan.

Attachment

3912 W. HUMPHREY STREET, TAMPA, FLORIDA 33614 TEL. 813-930-0669 FAX. 813-930-9809

Pursuant to ongoing discussions among the USEPA, MDEQ, VWF Group, and City of Battle Creek (City), collectively, VWFMP Parties, this document outlines the rationale and procedures for well abandonment at the VWF Superfund Site (VWF site), located in Battle Creek, Michigan. As developed and approved by the VWFMP Parties, this *Interim Well Abandonment Plan* identifies the wells proposed for abandonment, timing of abandonment, abandonment responsibilities, and acceptable methods for well abandonment.

RATIONALE/SELECTION OF WELLS FOR ABANDONMENT

The VWFMP Parties have discussed well abandonment issues on many occasions since 1998, and have agreed on lists of wells reserved for long term monitoring purposes, wells suitable for abandonment at this stage of remedial activities site-wide, and wells slated for future abandonment subject to evaluation of long term monitoring data and progress of groundwater clean up. The City of Battle Creek's Wellhead Protection Program (dated 8/29/00) served as the impetus for the VWFMP Parties' development of this plan.

Several factors served as the basis for selection of wells to be abandoned, including, but not limited to, the following:

1) Subject well is not included in the long term hydraulic or water quality monitoring plan developed by the VWFMP Parties;
2) Subject well location renders it ineffective for future performance or other monitoring, or other suitable wells are located in the same vicinity for such monitoring; and
3) Subject well condition and/or location are such that access to well cannot be restricted or secured to ensure protection of the City's well field.

Table 1 lists all wells[1] that will be abandoned at this site, whether in the short-term ("Initial Well Abandonment Event") or long-term ("Future Well Abandonment Event"). Table 1 also lists the party responsible for abandoning each well, e.g., USEPA, MDEQ, VWF Group, Grand Trunk, USGS, City, Davis Oil. Figure 1 illustrates the known or approximate locations of each well listed on Table 1, and is color coded with respect to the assumed responsibility for abandonment.

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[1] a. The term "wells" includes monitoring wells, recovery wells, piezometers, and staff gauges, completed in various aquifers/formations, and constructed of various well materials.

b. Additional considerations that affected the list of wells and timing of well abandonment shown on Table 1 stemmed from specific requests during a VWFMP conference call on 6/9/03 and subsequent emails, as follows:

- MDEQ requested that several wells, such as those used in the groundwater metals background study and other wells in the well field that may be suitable future hydraulic monitoring locations, be retained for the time being; and
- EPA requested that wells located within the City's fenced well field be retained because the wells are in secure areas not likely to affect the City's wellhead protection efforts, and could potentially serve as future monitoring locations during long term O&M or closure activities.
- On behalf of the City, Bill Davidson (email to Morello dated 8/27/03, with copy of email from David Rich [City] to Davidson dated 6/10/03) stated that the City would like all the wells originally selected by the VWFMP Parties as suitable for abandonment to actually be abandoned; however, the City acknowledges that wells located within the fenced well field have a lower abandonment priority than wells located in areas outside the City's control. The City later (email from Davidson to Morello dated 2/11/04) decided it would retain responsibility for abandoning any "V" production wells, including the northern blocking wells and any wells within 500 feet of a production well.

As shown on Table 1 and Figure 1, there are 400 wells in the vicinity of the site subject to abandonment (whether in the short- or long-term). Initially, about 120 of the 400 wells are to be abandoned as part of an Initial Well Abandonment Event, and the remaining wells would be subject to abandonment at a future date(s). The results of routine monitoring data and periodic well inspections will be used to determine when additional well abandonment events are appropriate during long term operation of the remedy. The process for such determinations will be outlined in the VWFMP document. It is assumed that the respective parties can schedule their portion of the Initial Well Abandonment Event upon approval of this plan by the VWFMP Parties.

WELL ABANDONMENT PROCESS

The well abandonment process described in this plan is in accordance with industry standards, MDEQ documentation of regulations and guidelines regarding well abandonment in Michigan (Part 127 of Act 368 P.A. 1978), and the ASTM D5299 Standard *Guide for Decommissioning of Groundwater Wells, Vadose Zone Monitoring Devices, Boreholes and other Devices for Environmental Activities*. All well abandonment shall be completed by a Michigan-registered water well drilling contractor (Drilling Contractor).

Safety Considerations

The well abandonment activities are to be completed in modified Level D protective clothing including appropriate work attire, safety shoes, hearing protection, hard hat, safety glasses, and chemically protective gloves (latex/neoprene) when in contact with soils and/or groundwater. Additional protection will include reflective-type vests or belts to be worn if working on Canadian National/Grand Trunk Western Railroad (CN/GTWRR) property. All work shall be performed in accordance with the VWF Group's Health and Safety Plan (dated 10/24/03), and any other applicable safety plans. The Drilling Contractor shall review the applicable safety plans and agree in writing to perform the work in accordance with the guidelines therein as well as any applicable local, state or federal safety requirements.

Pre-and Post-Abandonment Activities and Documentation

The following reconnaissance, documentation, and reporting shall apply to each well abandoned at this site.

1. Preliminary Investigation
   - 1.1. Determine if logs (e.g., boring, well construction, geophysical) exist for each well for abandonment. Note on the abandonment list if these items exist or are needed.
   - 1.2. Locate the wells for abandonment on the historical base maps and correlate their location to former and existing landmarks.

2. Reconnaissance
   - 2.1. Use historical/current base maps to locate the well (this may be difficult and may have to use landmarks to locate the well or where the well may be).
   - 2.2. If the well cannot be located (either destroyed or unable to locate), note that the well was "unable to locate" in the well abandonment and construction table.
   - 2.3. If the well is located on private property, notify the landowner.

2.4. Discuss access issues to the well with the landowner, if possible. Considerations may include:
   2.4.1. Minimizing damage to lawns, driveways, etc. with heavy equipment.
   2.4.2. Post-well abandonment restoration (grass seed, sod, etc.)
2.5. Once located, perform the following:
   2.5.1. Note any overhead obstructions (tree limbs, utility lines, etc.) at the well.
   2.5.2. Photograph the well from a minimum of two vantage points.
   2.5.3. Measure and/or record the following:
      2.5.3.1. Is the well aboveground (stick up) or flush mount?
      2.5.3.2. Are bumper guards present?
      2.5.3.3. Type of casing material.
      2.5.3.4. Visual condition of the well.
      2.5.3.5. Casing inside diameter.
      2.5.3.6. Depth to water.
      2.5.3.7. Total depth of well from the top-of-casing.
2.6. Are there survey coordinates of each well to be abandoned? If no, survey the well (horizontal coordinates) and try to tie the survey into the VWF site survey, if possible.
2.7. Determine if access by a drill rig will cause significant surface damage to the property. If it is likely, make the proper arrangements to minimize the damage and to provide site restoration.
2.8. Prepare a reconnaissance report (to be included in the final well abandonment report, see 6.1) of all the information gathered and addressed during this phase.

3. <u>Notification and Access</u>
3.1. Notify all the appropriate parties of the upcoming well abandonment event. They include:
   3.1.1. MISS DIG
   3.1.2. Land owner
   3.1.3. Government agencies (if applicable)
3.2. Obtain the necessary permits, access agreements, and permission from all parties.

4. <u>Well Abandonment</u>
4.1. The consensus among the VWFMP Parties is that the following well abandonment methods[2] will be used for wells at this site, and each method is described in detail in the following subsection of this plan:
   4.1.1. Abandonment Method #1 – Wells Completed in Overburden or Sand & Gravel Formations
   4.1.2. Abandonment Method #2 – Wells Completed in Bedrock or Sandstone Formations

[2] The actual abandonment method for each well will be dependent upon field verification of well completion details, well location, etc., such that the most effective and practical method is used for each well.

5. Record Keeping
   5.1. Record the following during the decommissioning process at each well abandoned in field notes and/or on the applicable well abandonment form: Form EQP 2044 – Abandoned Well Plugging Record (copy attached):
      5.1.1. Date and time
      5.1.2. Well identification
      5.1.3. Name of property owner
      5.1.4. Address of owner/property
      5.1.5. Well location
      5.1.6. Type of well installation method
      5.1.7. Note any obstructions in the well
   5.2. If casing is removed, record the method used to remove the casing and the total length of casing removed.
   5.3. Record the estimated depth to casing (from land surface) left in the borehole.
   5.4. Pictures of the well after site restoration (same two vantage points as indicated in the reconnaissance section)
   5.5. Any additional information necessary to complete Form EQP 2044 – Abandoned Well Plugging Record.

6. Reporting
   6.1. The final well abandonment report should contain the following information:
      6.1.1. Reconnaissance report.
      6.1.2. A list of wells abandoned (including survey location), and wells that were slated to be abandoned, but could not be located or were destroyed.
      6.1.3. Completed well abandonment forms (Form EQP 2044 – Abandoned Well Plugging Record).
      6.1.4. Current base map indicating which wells were abandoned, unable to locate, destroyed, etc.
      6.1.5. Pictures: before and after abandonment.
      6.1.6. Field notes.
      6.1.7. Description of the well abandonment method used for each well.
      6.1.8. Proof that the abandonment of each well was recorded into the State of Michigan's groundwater database using WELLOGIC[3].

Periodic Well Inspection Plan

The VWFMP Parties agreed (during the 6/9/03 conference call) that there should be a routine schedule for inspection of any wells that are retained (whether the wells are part of the long term monitoring program or not) to verify well integrity over time, identify any significant changes in surveyed top of casing (i.e., whether any settling of well has occurred over time), etc. The Periodic Well Inspection Plan consists of the following tasks, and would be performed by the party deemed responsible for the subject wells (as listed in Table 1):

- Wells that are part of the long term monitoring program (water quality and/or hydraulic) are routinely inspected during each monitoring event. Field personnel note any problems observed at these wells (e.g., bent casing, missing well or well cap,

[3] WELLOGIC can be found at the following web site: http://www.deq.state.mi.us/wellogic/main.html

protective casing condition, surface seal condition, well ID label, slumping or subsidence), and also note any readings that appear to differ significantly from prior data (e.g., change in pH or other field parameters, change in total depth, change in depth to water when other nearby wells remain similar to prior readings).

- Wells that are not included in the long term monitoring plan will be inspected once every 5 years. The inspection will involve visual observation of the location and condition of each well.

- Depending upon the observations of field personnel, the VWFMP Parties will determine whether well conditions dictate corrective actions. Corrective actions could include, but are not limited to: well redevelopment, repair of bent casings, repair of well cap/lock and protective casing, measurement of total well depth and depth to water, resurvey top of casing (in the event the well appears to have settled/shifted, or a repair has been made that alters the original top of casing elevation), abandonment and installation of a replacement well, or abandonment without installation of a replacement well.

DETAILED DESCRIPTION OF APPROVED WELL ABANDONMENT METHODS

The well abandonment methods pre-approved by the VWFMP Parties for use at this site are described in detail below. For budgetary and bidding purposes, the Parties can review available well construction details and pre-select one of these abandonment methods for each well. However, the actual abandonment method for each well will be dependent upon field verification of well completion details, well location, etc., such that the most effective and practical method is used for each well.

The Drilling Contractor(s) selected to abandon wells at this site shall verify well depths and construction details to the extent possible to ensure the most practical abandonment method is utilized for each well. In the event well construction details differ significantly from available logs/details, the Drilling Contractor(s) shall notify the contracting party to discuss and determine the appropriate abandonment method. The Drilling Contractor(s) shall furnish his own source of electricity, fuel, and water as required to perform the work.

General Requirements

The following equipment decontamination, residuals disposal, and site restoration details apply to all well abandonment methods:

1. Decontamination
   1.1. Prior to use, decontaminate all equipment planned for downhole use per the following procedure:
      1.1.1. Perform gross decontamination of downhole equipment with a soft bristled brush, using a low-sudsing detergent solution, if necessary;
      1.1.2. Rinse with potable water and a low-sudsing detergent;
      1.1.3. Place the cleaned equipment on steel rack for handling and/or storage until next use, and allow to air dry for 5-10 minutes.

2. Residuals Disposal
   2.1. Decontamination water and water produced during well abandonment activities can be discharged directly to the ground surface near the well; however, the Drilling Contractor shall take particular care when disposing of such fluids at wells located in residential areas.
   2.2. In the event a resident requests that the water not be disposed on the ground surface near a specific well, the Drilling Contractor shall containerize the fluids and transport to the closest acceptable location within the Verona Well Field site and discharge to the ground at that location.
   2.3. The Drilling Contractor shall utilize best efforts during disposal of fluids to convey water away from any adjacent structures, prevent erosion or flooding of the well site, and prevent water from flowing into adjacent wells or manholes (if any).

3. Site Restoration
   3.1. Drilling Contractor shall properly protect all surface and subsurface structures and surrounding areas from damage, which may result from the methods employed in performing the work.
   3.2. Drilling Contractor shall be responsible for repairing any damages as a result of its work, subject to approval by the contracting party. Damaged property shall be repaired or replaced by Drilling Contractor to a condition, which is equal to that which existed prior to damage.
   3.3. Drilling Contractor shall restore all well abandonment locations to acceptable conditions prior to demobilization from the site, subject to approval by the contracting party.

Abandonment Method #1 *- Wells Completed in Overburden or Sand & Gravel Formations*
Wells with depths that terminate in overburden and/or sand and gravel formations can be plugged with bentonite, and the Drilling Contractor should adhere to the following procedure:

- Only use dry, poured bentonite chips to seal abandoned wells if the depth of the well or borehole is less than 50 ft and the height of standing water is less than 25 ft at time of seal placement. If the well does not meet these depth or standing water criteria, or if the well casing or annulus is less than 2-inch diameter, use Method 2 instead of Method 1 to ensure proper seal.
- Use sodium bentonite chips.
- To limit the potential for bridging, use bentonite chips with a minimum particle size of ¼ inch.
- Calculate the volume of the annular space to be filled prior to plugging to determine the required volume of material. Record actual volume of material used for well closure documentation.
- Use a pour rate of 5 minutes or slower per standard 50-pound sack.
- Run a sounding or tamping bar in the borehole or annular space after pouring, to measure the fill rate and to break up any bentonite bridges or cake formations.
- Above the water table, install bentonite in lifts with a maximum thickness of five (5) feet. Tamp each lift, adding water to hydrate the bentonite. Pour water through a tremie pipe to reduce wetting of the annular space that could cause bridging of formations.

- Add water to promote expansion of the bentonite above the static water level.
- Fill the well with bentonite to approximately 3 to 4 ft bls, allow to cure for 24-hours and then check for any subsidence. If the bentonite seal has subsided, add bentonite as above until seal is to 3 to 4 ft bls.
- Remove the surface casing to a depth between 3 to 4 ft bls. The stickup portion of casing may be removed in one operation if a casing cutter is used.
- Remove the concrete pad (if any) and vault.
- Install a metal reinforcing rod (¾-inch diameter, 10-feet long) beneath the soil surface before final restoration. The metal allows the abandoned boring to be located in the future using a metal detector or magnetometer.
- Backfill the hole with clean fill from a local source, and compact to 90%. Provide documentation of clean fill source.
- Restore the site to a condition that reasonably approaches the original condition of the property prior to the start of work.
- Dispose of construction debris at a licensed non-hazardous industrial waste facility.
- If necessary, use verification of field data to modify the abandonment method, subject to approval of the contracting party.

Abandonment Method #2 *- Wells Completed in Bedrock or Sandstone Formations*
Wells with depths that terminate in bedrock formations should be plugged with neat cement, and the Drilling Contractor shall adhere to the following procedure:

- The neat cement mixture shall consist of a ratio of one bag (94-pounds) of Type I Portland cement to not more than 6 gallons of clean water; and add 3% to 5% of bentonite gel to the cement mixture.
- Neat cement slurries shall be prepared by adding cement to the calculated required volume of clean water. The material should be mixed until it is adequately free of lumps, then immediately pumped into the well without delay. The grout can be mixed manually or with a mechanized mixer such as a vertical paddle grout mixer. Colloidal mixers shall not be used.
- Neat cement slurry shall be pumped into the well using a tremie pipe of at least 1-inch inner diameter (equipped with a metal tip section) placed to the bottom of the well. However, a tremie pipe of less than 1-inch diameter can be utilized if the casing and/or screen diameter of the well is 1-inch or less. The bottom end of the tremie pipe should be submerged under the neat cement slurry level in the well at all times during the slurry placement. The metal tip of the tremie pipe should be cut diagonally so that the slurry flow is not inhibited by contact between the bottom of the well and the bottom of the tremie pipe. Note: Use caution to ensure that the downhole pressure does not exceed the rupture strength of the tremie pipe.
- Equipment used for pumping should be of diaphragm, piston, gear, or helical type.
- Calculate 115% of the volume of the well; provide calculations in field notes.
- Pump the calculated volume of grout into the well using a tremie pipe.
- Observe to determine if grout returns to the surface. If the grout is not lost into the formation, does not settle and returns to the surface, the plugging of the well is considered successful. However, if the grout settles or does not return to the surface (indicating a grout loss zone), pour an amount of pea stone into the well equivalent to 2.5 feet of borehole volume. Resume pumping grout to land surface.

If no return is observed, repeat placement of 2.5 ft of pea stone followed by grout until return is observed.

- Allow to cure for 24-hours and then check for any subsidence. If the cement seal (or pea stone/cement seal) has subsided, add neat cement until seal is to 3 to 4 ft bls.
- Record actual amount of grout (and pea stone, if used) placed into the borehole.
- Install a metal pipe or ¾ inch reinforcing rod alongside the well casing before final restoration. The metal rod allows the abandoned boring to be located in the future by metal detector or magnetometer.
- Remove the surface casing to a depth between 3 to 4 ft bls.
- Remove the concrete pad (if any) and vault.
- Backfill the hole with clean fill from a local source, and compact to 90%. Provide documentation of clean fill source.
- Restore the site to a condition that reasonably approaches the original condition of the property prior to the start of work.
- Dispose of construction debris at a licensed non-hazardous industrial waste facility.
- If necessary, use verification of field data to modify the abandonment, subject to approval of the contracting party.

Attachments

Well Abandonment Schedule and Responsibility
Verona Well Field Superfund Site

Well	Approximate Well Location	Site/Well Location Map Notes	General Well Depth	**Initial Well Abandonment Event[1]**	**Future Well Abandonment Event[2]**	**Party Responsible for Well Abandonment[3]**	**Proposed Abandonment Method[5]**
Annex Source Area and Immediate Up & Down Gradient Areas							
APZ-1	Annex	a	Shallow		X	VWF Group	1
APZ-2	Annex	a	Shallow		X	VWF Group	1
APZ-3	Annex	a	Shallow		X	VWF Group	1
APZ-4	Annex	a	Shallow		X	VWF Group	1
APZ-5	Annex	a	Shallow		X	VWF Group	1
APZ-6	Annex	a	Shallow		X	VWF Group	1
APZ-7	Annex	a	Shallow		X	VWF Group	1
APZ-8	Annex	a	Shallow		X	VWF Group	1
ARW1S	Annex		Shallow		X	VWF Group	2
ARW2S	Annex		Shallow		X	VWF Group	2
B1	Annex		Shallow		X	VWF Group	1
B8S	Annex		Shallow		X	VWF Group	1
B8I	Annex		Intermed.		X	VWF Group	2
B9	Annex		Shallow		X	VWF Group	1
B23	Annex		Shallow		X	VWF Group	1
B24	Annex		Shallow		X	VWF Group	1
B25	Annex		Shallow		X	VWF Group	1
CH107I	Annex		Intermed.		X	VWF Group	2
CH107D	Annex		Deep		X	VWF Group	2
GMA1D	Annex		Intermed.		X	VWF Group	2
GMA2D	Annex		Intermed.		X	VWF Group	2
GMP9S	Annex		Shallow		X	VWF Group	1
MW-1	W/NW of Annex		Shallow		X	VWF Group	1
MW-2A	N of Annex		Shallow		X	VWF Group	1
MW-2B	N of Annex		Intermed.		X	VWF Group	2
MW-3	Annex		Shallow		X	VWF Group	1
T5	N of Annex	f	Intermed.	*Destroyed*			1
T16	UG Annex		Intermed.		X[a]	VWF Group	1
VE01	Annex		Shallow		X[b]	VWF Group	1
VE02	Annex		Shallow		X[b]	VWF Group	1
VE03	Annex		Shallow		X[b]	VWF Group	1
VE04	Annex		Shallow		X[b]	VWF Group	1
VE05	Annex		Shallow		X[b]	VWF Group	1
VE06	Annex		Shallow		X[b]	VWF Group	1
VE07	Annex		Shallow		X[b]	VWF Group	1
VE08	Annex		Shallow		X[b]	VWF Group	1
VE09	Annex		Shallow		X[b]	VWF Group	1
VE10	Annex		Shallow		X[b]	VWF Group	1
VE11	Annex		Shallow		X[b]	VWF Group	1
VE12	Annex		Shallow		X[b]	VWF Group	1
VE13	Annex		Shallow		X[b]	VWF Group	1
VE14	Annex		Shallow		X[b]	VWF Group	1
VE15	Annex		Shallow		X[b]	VWF Group	1
VE16	Annex		Shallow		X[b]	VWF Group	1
VE17	Annex		Shallow		X[b]	VWF Group	1
VE18	Annex		Shallow		X[b]	VWF Group	1
W9S	E of Annex		Shallow		X	MDEQ	1
W11D	UG Annex		Deep		X[a]	VWF Group	2

Well	Approximate Well Location	Site/Well Location Map Notes	General Well Depth	**Initial Well Abandonment Event[1]**	**Future Well Abandonment Event[2]**	**Party Responsible for Well Abandonment[3]**	**Proposed Abandonment Method[5]**
Area Between Annex and Southern Blocking Wells							
CH150D	DG (NW) Annex		Deep		X	VWF Group	2
CH150I	DG (NW) Annex		Intermed.		X	VWF Group	2
T1	DG (NW) Annex		Shallow		X	VWF Group	1
W12D	DG (NW) Annex		Deep		X[a]	VWF Group	2
W4D	Southern WF		Deep		X	VWF Group	2
W4I	Southern WF		Intermed.		X	VWF Group	2
W4S	Southern WF		Shallow		X	VWF Group	1
W8D	DG (NW) Annex		Deep		X	VWF Group	2
W8I	DG (NW) Annex		Intermed.		X	VWF Group	2
W8S	DG (NW) Annex		Shallow		X	VWF Group	1
Area West/Northwest of Annex							
CH130I	N'hd NW of Annex		Intermed.	X		VWF Group	2
CH130S	N'hd NW of Annex		Shallow		X[a]	VWF Group	1
CH131D	N'hd NW of Annex	c	Deep	X		VWF Group	2
CH131I	N'hd NW of Annex		Intermed.	X		VWF Group	2
CH131S	N'hd NW of Annex		Shallow	X		VWF Group	1
E21	N'hd NW of Annex		Intermed.	X		USGS	2
E22D	W of Annex	b	Deep	X		USGS	2
E22S	W of Annex		Deep	X		USGS	2
T2	N'hd NW of Annex		Shallow	X		EPA	1
T3	W of Annex		Shallow	X		EPA	1
T4	W-SW of Annex		Shallow	X		EPA	1
W5S	N'hd NW of Annex		Shallow		X[a]	VWF Group	1
Area Far South-Southwest of Annex							
CH129D	UG Annex		Deep		X[a]	VWF Group	2
CH129I	UG Annex		Intermed.		X[a]	VWF Group	2
E24	Far UG Annex	b	Deep	X		USGS	2
E25	Far UG Annex	b	Deep	X		USGS	2
E26	Far UG Annex	b	Deep	X		USGS	2
E28D	Far UG Annex		Deep	X		USGS	2
E28S	Far UG Annex		Shallow	X		USGS	1
E30	Far UG Annex	b	Deep	X		USGS	2
T15	Far UG Annex	b	Shallow	X		EPA	1
TSRR Source Area and Immediate Up & Down Gradient Areas							
B17I	TSRR	d	Intermed.	X		MDEQ	2
B17S	TSRR	d	Shallow	X		MDEQ	1
B18I	TSRR		Intermed.		X	MDEQ	2
B18I(D)	TSRR	f	Deep	*Already Abandoned*			
B18S	TSRR		Shallow		X	MDEQ	1
B19	TSRR		Shallow		X	MDEQ	1
B20	TSRR		Shallow		X	MDEQ	1
B21	TSRR		Shallow		X	MDEQ	1
CH101D	TSRR		Deep		X	MDEQ	2
CH101I	TSRR		Shallow		X	MDEQ	1
CH127S	W of TSRR		Intermed.		X	MDEQ	2
CH151S	NE of TSRR		Shallow		X	MDEQ	1
DEQ9A	NW of TSRR	e	Shallow		X	MDEQ	1
DEQ9B	NW of TSRR	e	Intermed.		X	MDEQ	2
DEQ10	NW of TSRR	e	Shallow		X	MDEQ	1
EW 1	TSRR	f	Shallow	*Already Abandoned*			

Well	Approximate Well Location	Site/Well Location Map Notes	General Well Depth	**Initial Well Abandonment Event[1]**	**Future Well Abandonment Event[2]**	**Party Responsible for Well Abandonment[3]**	**Proposed Abandonment Method[5]**
EW 2	TSRR		Shallow		X	MDEQ	1
EW 3	TSRR		Shallow		X	MDEQ	1
EW 4	TSRR		Shallow		X	MDEQ	1
EW 5	TSRR		Shallow		X	MDEQ	1
EW 6	TSRR		Shallow		X	MDEQ	1
EW 7	TSRR		Shallow		X	MDEQ	1
EW 8	TSRR		Shallow		X	MDEQ	1
EW 9	TSRR		Shallow		X	MDEQ	1
T6	NW of TSRR		Shallow		X	MDEQ	1
T9	UG TSRR		Intermed.	X		MDEQ	2
W10D	NW of TSRR		Deep		X	MDEQ	2
W10I	NW of TSRR		Intermed.		X	MDEQ	2
W16I	W of TSRR		Intermed.		X	MDEQ	2
W16S	W of TSRR		Shallow		X	MDEQ	1
Area Between TSRR and Southern Blocking Wells							
CH139I	DG (NW) TSRR		Intermed.		X	MDEQ	2
CH139S	DG (NW) TSRR		Shallow		X	MDEQ	1
E8	DG (NW) TSRR		Shallow	X		MDEQ	1
W6D	DG (NW) TSRR		Deep		X	MDEQ	2
W6I	DG (NW) TSRR		Intermed.		X	MDEQ	2
W6S	DG (NW) TSRR		Shallow		X	MDEQ	1
Area East-Northeast of TSRR							
CH133I	E of TSRR		Intermed.	X		EPA	2
E29	E of TSRR		Deep	X		USGS	2
T8	NE TSRR		Shallow		X[a]	EPA	1
W7S	DG (NE) TSRR		Shallow		X	MDEQ	1
Paint Shop Source Area and Immediate Up & Down Gradient Areas							
CH106I	Paint Shop		Intermed.		X	Grand Trunk	2
CH140I	Paint Shop		Intermed.		X	Grand Trunk	2
CH141I	Paint Shop		Intermed.		X	Grand Trunk	2
CH142I	Paint Shop		Intermed.		X	Grand Trunk	2
CH143I	Paint Shop		Intermed.	X		Grand Trunk	2
CH145I	Paint Shop		Intermed.		X	Grand Trunk	2
CH146I	Paint Shop		Intermed.		X	Grand Trunk	2
GM7	Paint Shop		Intermed.		X	Grand Trunk	2
PSRW1	Paint Shop	f	Shallow	*Already Abandoned*			
PSRW1A	Paint Shop		Shallow		X	Grand Trunk	2
VS1	Paint Shop	g	Shallow		X[b]	Grand Trunk	1
VS2	Paint Shop	g	Shallow		X[b]	Grand Trunk	1
VS3	Paint Shop	g	Shallow		X[b]	Grand Trunk	1
VS4	Paint Shop	g	Shallow		X[b]	Grand Trunk	1
W13	Paint Shop		Intermed.		X	Grand Trunk	2
W14	Paint Shop		Intermed.		X	Grand Trunk	2
Area Far Upgradient and Area Far East-Northeast of Paint Shop							
CH102I	UG (SE) Paint Shop		Intermed.		X	Grand Trunk	2
CH103I	NE of Paint Shop		Intermed.	X		EPA	2
CH103S	NE of Paint Shop		Shallow	X		EPA	1
E12	E of Paint Shop		Intermed.	X		USGS	2
E13	NE of Paint Shop		Intermed.	X		USGS	2
E14	NE of Paint Shop		Intermed.	X		USGS	2
T7	UG (SE) Paint Shop		Shallow	X		Grand Trunk	1

Well	Approximate Well Location	Site/Well Location Map Notes	General Well Depth	**Initial Well Abandonment Event[1]**	**Future Well Abandonment Event[2]**	**Party Responsible for Well Abandonment[3]**	**Proposed Abandonment Method[5]**
Southern BW Line Immediate Vicinity & Area Between BW Lines							
BW9	Southern WF		Int./Deep		X	VWF Group	2
CH105D	Southern WF		Deep		X	VWF Group	2
CH105I	Southern WF		Intermed.		X	VWF Group	2
CH108I	Between BWs		Intermed.		X	VWF Group	2
CH109D (V32)	Between BWs		Deep		X	VWF Group	2
CH144I	E of Southern WF		Intermed.		X	VWF Group	2
CH144S	E of Southern WF		Shallow		X	VWF Group	1
DEQ-3A	Between BWs		Intermed.		X	VWF Group	2
DEQ-3B	Between BWs		Deep		X	VWF Group	2
DEQ-3C	Between BWs		Deep		X	VWF Group	2
DEQ-3D	Between BWs		Deep		X	VWF Group	2
DEQ-4A	Between BWs		Intermed.		X	VWF Group	2
DEQ-4B	Between BWs		Intermed.		X	VWF Group	2
DEQ-4C	Between BWs		Deep		X	VWF Group	2
DEQ-5A	Between BWs		Intermed.		X	VWF Group	2
DEQ-5B	Between BWs		Deep		X	VWF Group	2
DEQ-5C	Between BWs		Deep		X	VWF Group	2
DEQ-5D	Between BWs		Deep		X	VWF Group	2
DEQ-6	Between BWs		Deep		X	VWF Group	2
DEQ-7A	Between BWs		Intermed.		X	VWF Group	2
DEQ-7B	Between BWs		Deep		X	VWF Group	2
DEQ-7C	Between BWs		Deep		X	VWF Group	2
DEQ-7D	Between BWs		Deep		X	VWF Group	2
DEQ-8A	Between BWs		Shallow		X	VWF Group	1
DEQ-8B	Between BWs		Intermed.		X	VWF Group	2
DEQ-8C	Between BWs		Intermed.		X	VWF Group	2
DEQ-8D	Between BWs		Deep		X	VWF Group	2
DEQ-8E	Between BWs		Deep		X	VWF Group	2
E16	Between BWs		Intermed.		X	VWF Group	2
E31	Between BWs		Shallow	X		VWF Group	1
GM1	Between BWs		Deep		X	VWF Group	2
GM2	Between BWs		Deep		X	VWF Group	2
GM8	Between BWs		Shallow		X	VWF Group	1
GMBW1	Southern WF		Int./Deep		X	VWF Group	2
GMBW2	Southern WF		Int./Deep		X	VWF Group	2
GMBW3	Southern WF		Int./Deep		X	VWF Group	2
GMBW4	Southern WF		Int./Deep		X	VWF Group	2
GMBW5	Southern WF		Int./Deep		X	VWF Group	2
GMBW6	Southern WF		Int./Deep		X	VWF Group	2
GMBW7	Southern WF		Int./Deep		X	VWF Group	2
GMBW8	Southern WF		Int./Deep		X	VWF Group	2
GMP1D	Between BWs		Deep		X	VWF Group	2
GMP1I	Between BWs		Intermed.		X	VWF Group	2
GMP2D	Between BWs		Deep		X	VWF Group	2
GMP2I	Between BWs		Intermed.		X	VWF Group	2
GMP3D	Between BWs		Deep		X	VWF Group	2
GMP3I	Between BWs		Intermed.		X	VWF Group	2
GMP4D	Between BWs		Deep		X	VWF Group	2
GMP4I	Between BWs		Deep		X	VWF Group	2
GMP5D	Between BWs		Deep		X	VWF Group	2
GMP5I	Between BWs		Intermed.		X	VWF Group	2

Well	Approximate Well Location	Site/Well Location Map Notes	General Well Depth	**Initial Well Abandonment Event[1]**	**Future Well Abandonment Event[2]**	**Party Responsible for Well Abandonment[3]**	**Proposed Abandonment Method[5]**
GMP6D	Between BWs		Deep		X	VWF Group	2
GMP6I	Between BWs		Intermed.		X	VWF Group	2
PZ-1	Between GMBW-6,7		Intermed.		X	VWF Group	2
PZ-2	DG GMP2I	e	Intermed.		X	VWF Group	2
PZ-3	Pending	e	Intermed.		X	VWF Group	2
PZ-4	DG PZ3	e	Intermed.		X	VWF Group	2
T10	Southern WF		Shallow		X	VWF Group	1
T11	E of Southern WF		Shallow		X	VWF Group	1
W1I	Between BWs		Deep		X	VWF Group	2
W1S	Between BWs		Shallow		X[c]	VWF Group	1
W2I	Between BWs		Intermed.		X	VWF Group	2
W2S	Between BWs		Shallow		X	VWF Group	1
W3S	Between BWs		Shallow		X	VWF Group	1
Northern BW Vicinity & City Production Area							
CH104I	Northern WF		Intermed.		X	City[4]	2
CH136I	Northern WF		Intermed.		X	City[4]	2
CH137I	Northern WF		Intermed.		X	City[4]	2
CH138I	Northern WF		Intermed.		X[a]	City[4]	2
DEQ-1A	Northern WF		Intermed.		X	City[4]	2
DEQ-1B	Northern WF		Deep		X	City[4]	2
DEQ-1C	Northern WF		Deep		X	City[4]	2
DEQ-1D	Northern WF		Deep		X	City[4]	2
DEQ-2A	Northern WF		Intermed.		X	City[4]	2
DEQ-2B	Northern WF		Deep		X	City[4]	2
DEQ-2C	Northern WF		Deep		X	City[4]	2
DEQ-2D	Northern WF		Deep		X	City[4]	2
E9	Northern WF		Intermed.		X[c]	City[4]	2
E10	Northern WF		Intermed.		X[a]	City[4]	2
E11	Northern WF	b	Shallow		X[c]	City[4]	1
E17	Northern WF		Intermed.		X[a]	City[4]	2
E19	Northern WF		Intermed.		X[c]	City[4]	2
E27	Northern WF		Intermed.		X[c]	City[4]	2
E32	Northern WF		Intermed.		X[c]	City[4]	2
E33D	Northern WF	b	Deep		X[c]	City[4]	2
E33S	Northern WF	b	Shallow		X[c]	City[4]	1
E34	Northern WF		Deep		X[c]	City[4]	2
E35D	Northern WF		Deep		X[c]	City[4]	2
E35S	Northern WF		Shallow		X[c]	City[4]	1
E36	Northern WF		Deep		X[c]	City[4]	2
GM3I	Northern WF		Intermed.		X	City[4]	2
GM4D	Northern WF		Deep		X	City[4]	2
GM4I	Northern WF		Intermed.		X	City[4]	2
GM5I	Northern WF		Intermed.		X	City[4]	2
GM6I	Northern WF		Intermed.		X	City[4]	2
GMP7D	Northern WF		Deep		X	City[4]	2
GMP7I	Northern WF		Intermed.		X	City[4]	2
GMP8D	Northern WF		Deep		X	City[4]	2
GMP8I	Northern WF		Intermed.		X	City[4]	2

Well	Approximate Well Location	Site/Well Location Map Notes	General Well Depth	**Initial Well Abandonment Event[1]**	**Future Well Abandonment Event[2]**	**Party Responsible for Well Abandonment[3]**	**Proposed Abandonment Method[5]**
PZ-5	Betwn GMP8I, GM4I		Intermed.		X	City[4]	2
V18	Northern WF		Int./Deep		X	City[4]	2
V19	Northern WF		Int./Deep		X	City[4]	2
V20	Northern WF		Int./Deep		X	City[4]	2
V21	Northern WF		Int./Deep		X	City[4]	2
V22	Northern WF		Int./Deep		X	City[4]	2
V23	Northern WF		Int./Deep		X	City[4]	2
V24	Northern WF		Int./Deep		X	City[4]	2
V25	Northern WF		Int./Deep		X	City[4]	2
V26	Northern WF		Int./Deep		X	City[4]	2
V27	Northern WF		Int./Deep		X	City[4]	2
V28	Northern WF		Int./Deep		X	City[4]	2
V29	Northern WF		Int./Deep		X	City[4]	2
Area West of Battle Creek River and Bailey Park Vicinity							
CH110S	NW of Bailey Park		Intermed.	X		EPA	2
CH111I	Bailey Park		Intermed.		X[d]	City[4]	2
CH111S	Bailey Park		Shallow		X[d]	City[4]	1
CH112I	Bailey Park		Intermed.	X		EPA	2
CH112S	Bailey Park		Shallow	X		EPA	1
E1	NW of Bailey Park		Intermed.	X		USGS	2
E2	N of Bailey Park		Intermed.	X		USGS	2
E3	N of Bailey Park		Intermed.	X		USGS	2
E6	W of Bailey Park		Shallow	X		USGS	1
E15	Bailey Park		Intermed.	X		USGS	2
E20	Bailey Park		Intermed.	X		USGS	2
E37D	S of Bailey Park		Deep	X		USGS	2
E38D	S of Bailey Park		Deep	X		USGS	2
E39D	S of Bailey Park		Deep	X		USGS	2
E40D	NW of Bailey Park		Deep		X[d]	City[4]	2
USGS (H&N)	H&N on Capital Ave		Deep		X	USGS	2
V14	Bailey Park		Int./Deep		X	City	2
V15	Bailey Park		Int./Deep		X	City	2
V16	Bailey Park	f	Int./Deep	*Already Abandoned*			
V17	Bailey Park		Int./Deep		X	City	2
Davis Oil Emmett Street Source Area							
MW1R	Emmett/RR	f	Shallow	*Already Abandoned*			
MW2R	Emmett/RR	f	Shallow	*Already Abandoned*			
MW3R	Emmett/RR	f	Shallow	*Already Abandoned*			
MW4R	Emmett/RR	f	Shallow	*Already Abandoned*			
MW1	Emmett/RR		Shallow		X	Davis Oil[6]	
MW2	Emmett/RR		Shallow		X	Davis Oil[6]	
MW3	Emmett/RR		Shallow		X	Davis Oil[6]	
MW4	Emmett/RR		Shallow		X	Davis Oil[6]	
MW5	Emmett/RR		Shallow		X	Davis Oil[6]	
MW6	Emmett/RR		Shallow		X	Davis Oil[6]	
MW7	Emmett/RR		Shallow		X	Davis Oil[6]	
MW8	Emmett/RR		Shallow		X	Davis Oil[6]	
MW9	Emmett/RR		Shallow		X	Davis Oil[6]	
MW10	Emmett/RR		Shallow		X	Davis Oil[6]	

Well	Approximate Well Location	Site/Well Location Map Notes	General Well Depth	**Initial Well Abandonment Event[1]**	**Future Well Abandonment Event[2]**	**Party Responsible for Well Abandonment[3]**	**Proposed Abandonment Method[5]**
MW10D	Emmett/RR		Intermed.		X	Davis Oil[6]	
MW11	Emmett/RR		Shallow		X	Davis Oil[6]	
MW12	Emmett/RR		Shallow		X	Davis Oil[6]	
MW13	Emmett/RR		Shallow		X	Davis Oil[6]	
MW14	Emmett/RR		Shallow		X	Davis Oil[6]	
MW15	Emmett/RR		Shallow		X	Davis Oil[6]	
MW16	Emmett/RR		Intermed.		X	Davis Oil[6]	
MW17	Emmett/RR		Shallow		X	Davis Oil[6]	
MW18	Emmett/RR		Shallow		X	Davis Oil[6]	
MW19	Emmett/RR		Shallow		X	Davis Oil[6]	
MW20	Emmett/RR		Shallow		X	Davis Oil[6]	
City Production Wells							
V13	Northern WF		Int./Deep		X	City	2
V30	Northern WF		Int./Deep		X	City	2
V31	Southern WF	f	Int./Deep	*Already Abandoned*			
V32	Southern WF	f	Int./Deep	*Already Abandoned*			
V33	Southern WF	f	Int./Deep	*Already Abandoned*			
V34	Southern WF	f	Int./Deep	*Already Abandoned*			
V35	Southern WF	f	Int./Deep	*Already Abandoned*			
V36	Northern WF		Int./Deep		X	City	2
V37	Northern WF		Int./Deep		X	City	2
V38	Northern WF		Int./Deep		X	City	2
V39	Northern WF		Int./Deep		X	City	2
V40	Northern WF		Int./Deep		X	City	2
V41	Northern WF		Int./Deep		X	City	2
V42	Northern WF		Int./Deep		X	City	2
V43	Northern WF		Int./Deep		X	City	2
V44	Northern WF		Int./Deep		X	City	2
V45	Northern WF		Int./Deep		X	City	2
V46	Northern WF		Int./Deep		X	City	2
V47	Northern WF		Int./Deep		X	City	2
V48	Northern WF		Int./Deep		X	City	2
V49	Northern WF		Int./Deep		X	City	2
V50	Northern WF		Int./Deep		X	City	2
V51	Northern WF		Int./Deep		X	City	2
V52	Northern WF		Int./Deep		X	City	2
V53	Northern WF		Int./Deep		X	City	2
V54	Northern WF		Int./Deep		X	City	2
Miscellaneous Wells Listed on Historical Tables/Maps							
B14	TSRR	f	--	*Already Abandoned*			
B15	TSRR	d	--	X		MDEQ	1
B16	TSRR	d	--	X		MDEQ	1
B22	TSRR	f	--	*Already Abandoned*			
CH132I	SW of TSRR	b	--		X[a]	EPA	2
DNR01	RR Landfill	b	--	X		MDEQ	1
DNR02	RR Landfill	b	--	X		MDEQ	1
DNR03	RR Landfill	b	--	X		MDEQ	1
DNR04	--	c	--	X		MDEQ	1
DNR05	--	c	--	X		MDEQ	1
DNR06	--	c	--	X		MDEQ	1

Well	Approximate Well Location	Site/Well Location Map Notes	General Well Depth	**Initial Well Abandonment Event[1]**	**Future Well Abandonment Event[2]**	**Party Responsible for Well Abandonment[3]**	**Proposed Abandonment Method[5]**
E4	NW of Bailey Park	b	--	X		USGS	2
E5	Bailey Park	b	--	X		USGS	2
E7	SW of TSRR	b	--	X		USGS	2
E18	N of BC River/Bailey	b	--	X		USGS	2
E23	SW of Bailey Park	b	--	X		USGS	2
EDI1	--	c	--	X		Grand Trunk	1
EDI2	--	c	--	X		Grand Trunk	1
EDI3	--	c	--	X		Grand Trunk	1
EDI4	--	c	--	X		Grand Trunk	1
G1	Far SW Annex	b	--	X		Grand Trunk	1
G1A	Far SW Annex	b	--	X		Grand Trunk	1
G1B	Far SW Annex	b	--	X		Grand Trunk	1
G1C	Far SW Annex	b	--	X		Grand Trunk	1
G2	Far SW Annex	b	--	X		Grand Trunk	1
G2A	Far SW Annex	b	--	X		Grand Trunk	1
G3	Far SW Annex	b	--	X		Grand Trunk	1
G3A	Far SW Annex	b	--	X		Grand Trunk	1
G4	Far SW Annex	b	--	X		Grand Trunk	1
G4A	Far SW Annex	b	--	X		Grand Trunk	1
G5	Far SW Annex	b	--	X		Grand Trunk	1
G5A	Far SW Annex	b	--	X		Grand Trunk	1
G6	Far SW Annex	b	--	X		Grand Trunk	1
G7(S)	Far SW Annex	b	--	X		Grand Trunk	1
G7A(I)	Far SW Annex	b	--	X		Grand Trunk	2
G8	Far SW Annex	b	--	X		Grand Trunk	1
G8A	Far SW Annex	b	--	X		Grand Trunk	1
G9(S)	SW of Annex	b	--	X		Grand Trunk	1
G9A(D)	SW of Annex	b	--	X		Grand Trunk	2
G10(S)	SW of Annex	b	--		X[c]	Grand Trunk	1
G10A(I)	SW of Annex	b	--		X[c]	Grand Trunk	2
G10B(D)	SW of Annex	b	--		X[c]	Grand Trunk	2
G11(S)	SW of Annex	b	--	X		Grand Trunk	1
G11A(I)	SW of Annex	b	--	X		Grand Trunk	2
G11B(D)	SW of Annex	b	--	X		Grand Trunk	2
GT1	GWTRR	b	--	X		Grand Trunk	2
GT2	GWTRR	b	--	X		Grand Trunk	2
GT3	GWTRR	b	--	X		Grand Trunk	2
GT4	GWTRR	b	--	X		Grand Trunk	2
M	N'hd NW of Annex	b	--	X		EPA	1
OW-1	--	c	--	X		MDEQ	1
OW-2	--	c	--	X		MDEQ	1
OW-3	RR Landfill	c	--	X		MDEQ	1
OW-4	RR Landfill	c	--	X		MDEQ	1
OW-5	RR Landfill	c	--	X		MDEQ	1
P	--	c	--	X		EPA	1
P113I	N'hd N of dam	b	--	X		EPA	1
P113S	N'hd N of dam	b	--	X		EPA	1
P114I	N'hd W of dam	b	--	X		EPA	1
P114S	N'hd W of dam	b	--	X		EPA	1
P115I	S of dam	b	--	X		EPA	1
P115S	S of dam	b	--	X		EPA	1

Well	Approximate Well Location	Site/Well Location Map Notes	General Well Depth	**Initial Well Abandonment Event[1]**	**Future Well Abandonment Event[2]**	**Party Responsible for Well Abandonment[3]**	**Proposed Abandonment Method[5]**
P116I	N'hd SW of dam	b	--	X		EPA	1
P117I	Far SW of dam	b	--	X		EPA	1
P119S	NE of Bailey Park	b	--	X		EPA	1
P124I	Far NE of Paint Shop	b	--	X		EPA	1
P125I	Far NE of Paint Shop	b	--	X		EPA	1
PC1A	PS SVE PZ	g	--		X[b]	Grand Trunk	1
PC1B	PS SVE PZ	g	--		X[b]	Grand Trunk	1
PC2A	PS SVE PZ	g	--		X[b]	Grand Trunk	1
PC2B	PS SVE PZ	g	--		X[b]	Grand Trunk	1
PC3A	PS SVE PZ	g	--		X[b]	Grand Trunk	1
PC3B	PS SVE PZ	g	--		X[b]	Grand Trunk	1
PZ1A	Annex SVE PZ	a	--		X[b]	VWF Group	1
PZ1B	Annex SVE PZ	a	--		X[b]	VWF Group	1
PZ2A	Annex SVE PZ	a	--		X[b]	VWF Group	1
PZ2B	Annex SVE PZ	a	--		X[b]	VWF Group	1
PZ3A	Annex SVE PZ	a	--		X[b]	VWF Group	1
PZ3B	Annex SVE PZ	a	--		X[b]	VWF Group	1
PZ4A	Annex SVE PZ	a	--		X[b]	VWF Group	1
PZ4B	Annex SVE PZ	a	--		X[b]	VWF Group	1
PZ5A	Annex SVE PZ	a	--		X[b]	VWF Group	1
PZ5B	Annex SVE PZ	a	--		X[b]	VWF Group	1
PZ6A	Annex SVE PZ	a	--		X[b]	VWF Group	1
PZ6B	Annex SVE PZ	a	--		X[b]	VWF Group	1
PZ7A	Annex SVE PZ	a	--		X[b]	VWF Group	1
PZ7B	Annex SVE PZ	a	--		X[b]	VWF Group	1
R	--	b	--	X		EPA	1
S1	Far NE of Paint Shop	b	--	X		USGS	1
SG1	Staff gauge SW of dam	b	--	X		USGS	1
SG3	Staff gauge N of dam	b	--	X		USGS	1
SG4	Staff gauge NE of WF	b	--	X		USGS	1
SG5	Staff gauge NE of WF	b	--	X		USGS	1
T12	Far SW Annex	b	--	X		EPA	1
T13	Far SW Annex	b	--	X		EPA	1
T14	Far SW Annex	b	--	X		EPA	1
V1	WF/SW of V23	f	--	*Already Abandoned*			
V2	WF/SW of V23	f	--	*Already Abandoned*			
V3	WF/SW of V23	f	--	*Already Abandoned*			
V4	WF/SW of V23	f	--	*Already Abandoned*			
V5	WF/SW of V23	f	--	*Already Abandoned*			
V6	WF/SW of V23	f	--	*Already Abandoned*			
V7	WF/SW of V23	f	--	*Already Abandoned*			
V8	WF/SW of V23	f	--	*Already Abandoned*			

Well Abandonment Schedule and Responsibility
Verona Well Field Superfund Site

Well	Approximate Well Location	Site/Well Location Map Notes	General Well Depth	**Initial Well Abandonment Event[1]**	**Future Well Abandonment Event[2]**	**Party Responsible for Well Abandonment[3]**	**Proposed Abandonment Method[5]**

Notes:

[1] Well can be abandoned following EPA and MDEQ approval of the Well Abandonment Plan.

[2] Well abandonment timing to be determined by VWFMP parties based upon review of monitoring data and remedy performance as described in the VWFMP.

[3] Responsibility for abandonment was determined jointly by VWFMP parties, as follows:

- VWF Group shall be responsible for abandoning wells located within, and in the areas immediately up- and downgradient of, the Annex source area. The Group shall also abandon wells located in the area between the Annex source area and well field, and in the southern well field between the blocking well lines. Per email (dated 2/11/04), City will retain responsibility for wells within 500 ft of production wells including that area immediately downgradient of the northern blocking well lines.
- Grand Trunk shall be responsible for abandoning wells located within, and in the areas immediately up- and downgradient of, the Paint Shop source area, wells installed on Grand Trunk's behalf to the west/southwest of the Annex source area, and former private potable wells on Grand Trunk property.
- MDEQ shall be responsible for abandoning wells located within, and in the areas immediately up- and downgradient of, the TSRR source area, area, and any wells installed by or on behalf of the State related to the RR Landfill or other purposes not related to delineation of the plume for which the VWF Group is responsible.
- City shall be responsible for abandoning any "V" production wells, including the northern blocking wells and any wells within 500 ft of production wells,
- USGS shall be responsible for abandoning any "E" series wells located within the City's wellhead protection area, not already assigned to other parties.
- EPA shall be responsible for abandoning any wells located within the City's wellhead protection area not already assigned to other parties.

[4] City shall retain responsibility for protection and abandonment of this well due to its location within 500 ft of a production well (Davidson email dated 2/11/04)

[5] Well shall be abandoned using Method # shown (#1 or #2) as described in the Well Abandonment Plan.

[6] The responsibility assigned to Davis Oil for abandonment of wells will not be an obligation subject to enforcement pursuant to the Consent Decree between the State and VWF Group. No party to that Decree shall be responsible for abandoning wells assigned to Davis Oil.

X^a = Well originally selected by VWFMP parties for abandonment during initial event, but retained at request of MDEQ (6/9/03 VWFMP call), could serve as potential background or monitoring well.

X^b = Well abandonment to occur after completion of soil remediation per the EPA and MDEQ approved Soil Cleanup Verification Sampling Plan.

X^c = Well originally selected by VWFMP parties for abandonment during initial event, but retained at request of EPA (6/9/03 and 12/16/03 VWFMP calls), could serve as potential monitoring well.

X^d = Well originally selected by VWFMP parties for abandonment during initial event, but retained at request of City (email 2/11/04).

All well locations are shown on the attached map, with the following exceptions/qualifications:

a - Well located within Annex source area, but not shown on map for easier legibility.
b - Well location on map was approximated from historical maps, survey data either not available or not verified.
c - Well location unknown.
d - Well located within TSRR source area, but not shown on map for easier legibility.
e - Well not yet installed, proposed location not shown on map.
f - Well already abandoned, location not shown on map.
g - Well located within Paint Shop source area, but not shown on map for easier legibility.

Note: Copies of the referenced attached map (which is a D-size drawing) are available from Progressive.

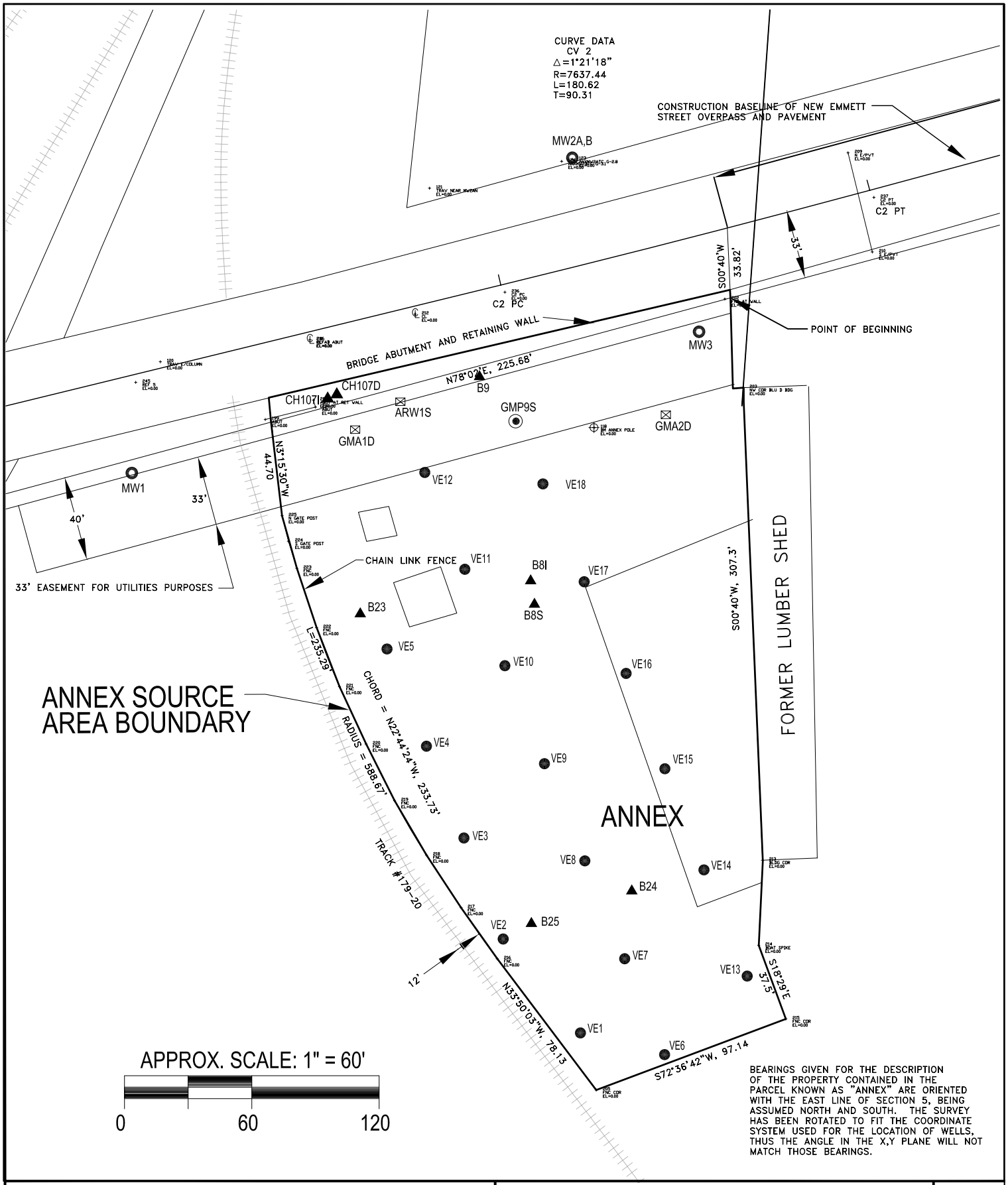
Total number of wells to be abandoned by each party (total for both initial and future events):

VWF Group	142	
City	74	(24 of these are active production wells, not likely to ever be abandoned)
MDEQ	49	
EPA	29	
USGS	33	
Grand Trunk	56	
Davis Oil	21	
Total	404	

ATTACHMENT 11

FIGURE 1

Description and Map of Annex Source Area



BEARINGS GIVEN FOR THE DESCRIPTION OF THE PROPERTY CONTAINED IN THE PARCEL KNOWN AS "ANNEX" ARE ORIENTED WITH THE EAST LINE OF SECTION 5, BEING ASSUMED NORTH AND SOUTH. THE SURVEY HAS BEEN ROTATED TO FIT THE COORDINATE SYSTEM USED FOR THE LOCATION OF WELLS, THUS THE ANGLE IN THE X,Y PLANE WILL NOT MATCH THOSE BEARINGS.

PROGRESSIVE
ENGINEERING & CONSTRUCTION, INC.
3912 West Humphrey Street
Tampa, Florida 33614
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ANNEX SOURCE AREA

VERONA WELL FIELD SITE
BATTLE CREEK, MICHIGAN

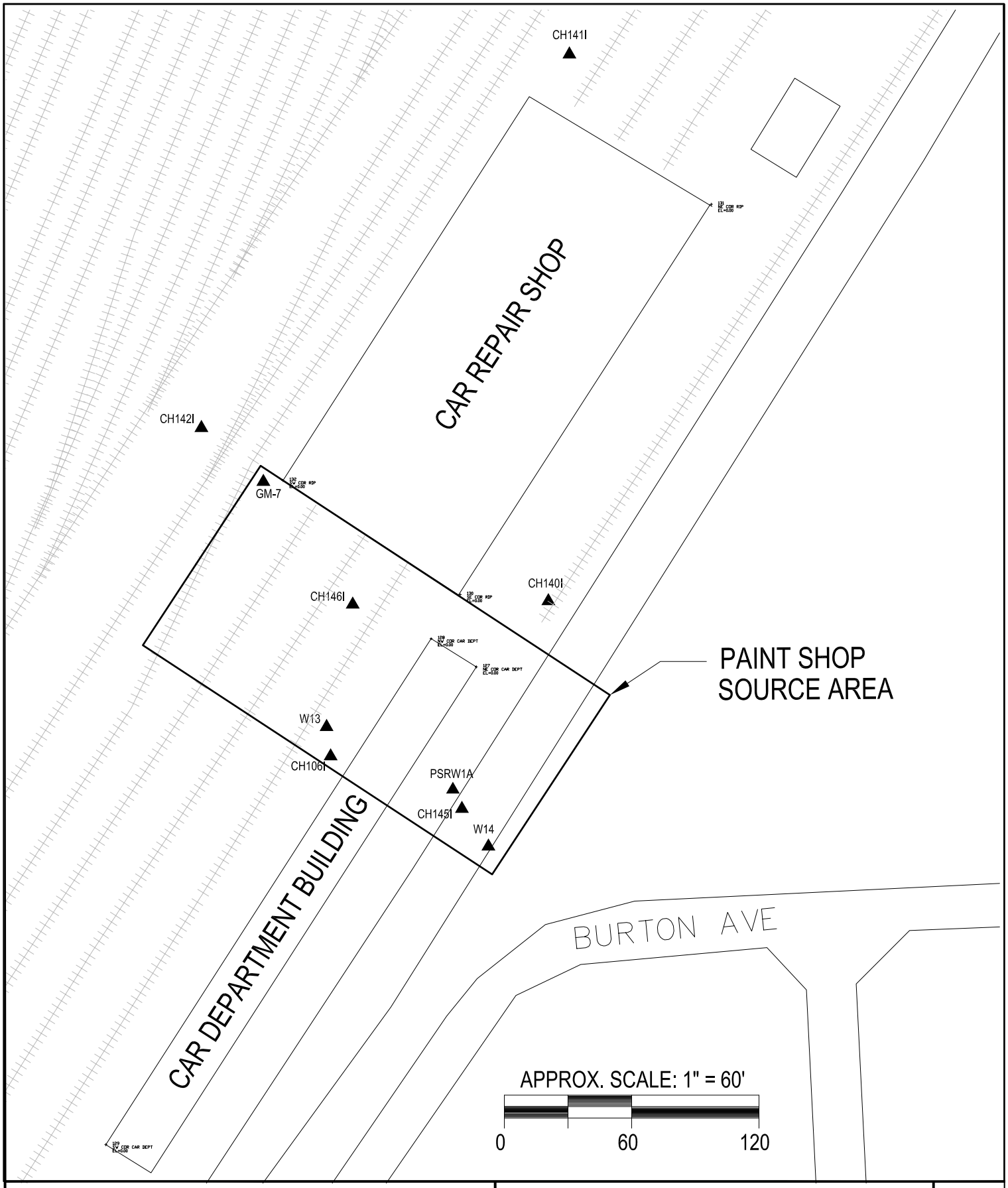
FIGURE
1

9/30/04
annex8x11.dwg

ATTACHMENT 12

FIGURE 2

Description and Map of Paint Shop Source Area



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PAINT SHOP SOURCE AREA

VERONA WELL FIELD SITE
BATTLE CREEK, MICHIGAN

FIGURE
2

9/30/04
ps8x11.dwg

ATTACHMENT 13

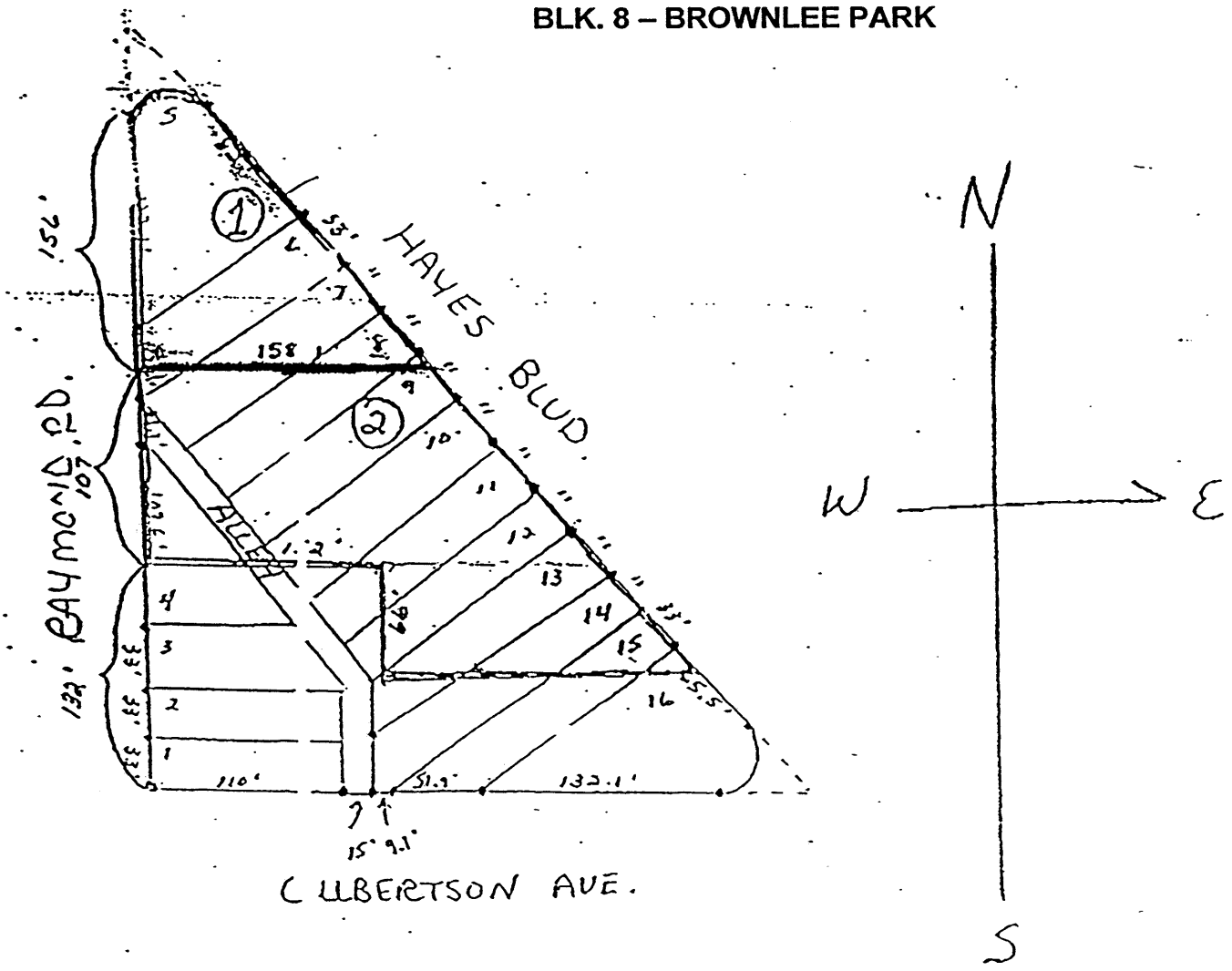
FIGURE 3

Description and Map of Raymond Road Source Area

FIGURE 3

RAYMOND ROAD SOURCE AREA

BLK. 8 – BROWNLEE PARK



DESCRIPTIONS FOR PROPERTY OWNED BY THOMAS SOLVENT CO.

PROPERTY DESC. #1
Lot 5 also part of Lots 6 to 9 incl. desc as com at NW'ly cor Blk. 8 th S 156 ft alg Raymond Rd. to pt 33.9 ft S of NW cor. Lot 6 E 158.1 ft to SW'ly line Hayes Blvd. at pt 11 ft SE'ly of NE'ly cor Lot 9 th alg Hayes Blvd. to POB
BROWNLEE PARK BLK. 8

PROPERTY DESC. #2
Part Blk. 8 desc as com 132 ft N of N line Culbertson Ave. th E 132 ft S 66 ft E to W'ly line Hayes Blvd. th NW'ly alg sd W'ly line to pt 11 ft SE'ly of NE'ly cor Lot 9 sd. blk. th W 153.1 ft to E'ly line Raymond Rd. th S to POB
BROWNLEE PARK BLK. 8

ALLEY ABANDONED PER INSTRUMENT LIBER 686 page 492