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EPA Superfund
Record of Decision:

HOOKER (S AREA)
EPA ID: NYD980651087
OU 01
NIAGARA FALLS, NY
09/21/1990

A. TO ATTAIN THE GOALS OF THE JUDGMENT AND THE RRT STIPULATION, OCC SHALL DESIGN, INSTALL, OPERATE, MAINTAIN AND MONITOR THE RRT REMEDIAL SYSTEMS TO REMEDIATE CHEMICALS WITHIN THE LANDFILL SITE AND CHEMICALS WHICH HAVE MIGRATED BEYOND THE LANDFILL SITE AND BEYOND AREAS ADDRESSED BY OTHER REMEDIAL SYSTEMS DESCRIBED IN THE JUDGMENT, AS DESCRIBED IN THIS REMEDIAL PLAN.

B. THE RRT REMEDIAL SYSTEMS DESCRIBED IN THIS REMEDIAL PLAN CONSIST OF THE FOLLOWING:

* SITE CONTAINMENT SYSTEM

* OVERBURDEN RRT SYSTEM

* BEDROCK RRT SYSTEM

C. THE DESIGN OBJECTIVES OF THE SITE CONTAINMENT SYSTEM ARE: (1) TO CONTAIN APL AND NAPL; (2) TO MAXIMIZE THE COLLECTION OF NAPL WITHIN THE SITE BARRIER WALL (AS DEFINED BELOW) AT THE LANDFILL SITE; AND (3) TO MINIMIZE THE MIGRATION OF CHEMICALS TOWARD THE CITY'S DRINKING WATER TREATMENT PLANT (HEREINAFTER "CWTP"). SUBJECT TO SECTION 1.0.F. BELOW, THE SITE CONTAINMENT SYSTEM WILL BE OPERATED TO ATTAIN THESE DESIGN OBJECTIVES.

D. THE DESIGN AND REMEDIAL OBJECTIVES OF THE OVERBURDEN ART SYSTEM ARE: (1) TO CONTAIN APL AND NAPL WITHIN THE EXISTING S-AREA OVERBURDEN NAPL PLUME; AND (2) TO COLLECT NAPL OUTSIDE THE SITE BARRIER WALL TO THE MAXIMUM EXTENT PRACTICABLE. SUBJECT TO SECTION 1.0.F. BELOW, THE OVERBURDEN RRT SYSTEM WILL BE OPERATED TO ATTAIN THESE OBJECTIVES.

E. THE DESIGN AND REMEDIAL OBJECTIVES OF THE BEDROCK RRT SYSTEM ARE: (1) TO CONTAIN APL AND NAPL WITHIN THE EXISTING S-AREA BEDROCK NAPL PLUME; (2) TO PREVENT FURTHER NAPL MIGRATION IN THE BEDROCK UNDER THE NIAGARA RIVER; AND (3) TO COLLECT NAPL WITHIN THIS PLUME TO THE MAXIMUM EXTENT PRACTICABLE. THE BEDROCK RRT SYSTEM WILL BE OPERATED TO ATTAIN THESE OBJECTIVES.

F. THE BEDROCK RRT SYSTEM WILL BE OPERATED TO ATTAIN ITS OBJECTIVES EVEN IF DOING SO PREVENTS MAINTAINING THE SPECIFIED UPWARD HYDRAULIC GRADIENTS INTO THE SITE CONTAINMENT AND OVERBURDEN RRT SYSTEMS.

G. THE DESIGN AND OPERATING OBJECTIVES OF THE CITY DRINKING WATER TREATMENT PLANT REMEDIAL PROGRAM AS SET FORTH IN APPENDIX III OF THIS RRT STIPULATION ARE TO PREVENT CHEMICALS WHICH HAVE MIGRATED FROM THE LANDFILL SITE FROM ENTERING THE CWTP WATER SUPPLY STRUCTURES AND SERVICE LINES IN ORDER TO PROTECT THE USERS OF THE CITY OF NIAGARA FALLS' DRINKING WATER FROM ENDANGERMENT AND TO MINIMIZE STRUCTURAL IMPACTS ON CWTP PIPELINES, UTILITIES, BUILDINGS, OR OTHER CWTP STRUCTURES DUE TO REMEDIAL ACTIVITIES.

OVERBURDEN REMEDIAL SYSTEMS

2.1 SITE CONTAINMENT SYSTEM

2.1.1 OBJECTIVES

THE DESIGN OBJECTIVES OF THE SITE CONTAINMENT SYSTEM ARE: (1) TO CONTAIN APL AND NAPL; (2) TO MAXIMIZE THE COLLECTION OF NAPL WITHIN THE SITE BARRIER WALL (AS DEFINED BELOW) AT THE LANDFILL SITE; AND (3) TO MINIMIZE THE MIGRATION OF CHEMICALS TOWARD THE CWTP. SUBJECT TO SECTION 1.0.F., THE SITE CONTAINMENT SYSTEM WILL BE OPERATED TO ATTAIN THESE DESIGN OBJECTIVES.

2.1.2 REMEDIAL SYSTEM

A1. INSTALLATION:

A. THE OVERBURDEN AREA THE LANDFILL SITE WILL BE ADDRESSED BY A REMEDIAL SYSTEM (SITE CONTAINMENT SYSTEM),

CONSISTING OF BARRIER WALLS (SITE BARRIER WALL), A DRAIN TILE SYSTEM (TILE COLLECTION SYSTEM), SEVEN OVERBURDEN (SITE CONTAINMENT) PURGE WELLS INSTALLED IN CONFINING LAYER DISCONTINUITIES AND A CAP. THE SITE BARRIER WALL SHALL CONSIST OF A SLURRY WALL ON THE WEST, NORTH, AND EAST. THESE COMPONENTS, EXCEPT THE CAP, ARE SHOWN ON FIGURE 1. THE SITE BARRIER WALL REFERS TO THOSE PORTIONS OF THE OVERBURDEN BARRIER WALLS (AS DEFINED IN SECTION 2.2.2.B1) LOCATED NORTH OF THE INDUSTRIAL INTAKE PIPE TRENCH (IIPT).

A2. SITE BARRIER WALL:

(A) THE SITE BARRIER WALL SHALL BE INSTALLED AT LEAST ONE FOOT BELOW THE TOP OF THE CONFINING LAYER; PROVIDED, HOWEVER, THAT IN THE EVENT ANY ROUTES OF CHEMICAL MIGRATION ARE IDENTIFIED WHICH ARE EXPECTED TO PASS UNDER THE SITE BARRIER WALL IN THE OVERBURDEN AFTER HYDRAULIC STABILIZATION (AS DESCRIBED IN SEC. 4.4.1.A3), THE DEPTH OF THE SITE BARRIER WALL SHALL BE LOWERED SO AS TO INTERCEPT ANY SUCH ROUTES IN THE OVERBURDEN. IF THE SITE BARRIER WALL TRAVERSES A CONFINING LAYER DISCONTINUITY, IT SHALL BE INSTALLED TO A DEPTH AND IN A MANNER WHICH WILL ASSURE THE INTEGRITY AND INTENDED FUNCTION OF THE SITE BARRIER WALL.

(B) THE SITE BARRIER WALL SHALL CONSIST OF MATERIAL OR MATERIALS AT LEAST TWO FEET WIDE HAVING A MAXIMUM PERMEABILITY OF 1 X (10-6) CM/SEC, OR ITS PERFORMANCE EQUIVALENT. PRIOR TO SUBMISSION OF PLANS AND SPECIFICATIONS CONCERNING THE SITE BARRIER WALL, OCC SHALL CONDUCT AN ACCELERATED TEST OF ANY MATERIAL IT INTENDS TO USE TO DEMONSTRATE TO WHAT EXTENT, IF ANY, THE PERMEABILITY OF THE MATERIAL WILL BE AFFECTED BY CHEMICALS IN THE ADJACENT OVERBURDEN. THE RESULTS OF SUCH TESTING AND ALL UNDERLYING DATA RELATED THERETO SHALL ACCOMPANY OCC'S SUBMISSION OF PLANS AND SPECIFICATIONS CONCERNING THE SITE BARRIER WALL.

A3. TILE COLLECTION SYSTEM:

(A) THE TILE COLLECTION SYSTEM SHALL BE LOCATED AND INSTALLED IN A MANNER WHICH WILL MAXIMIZE THE CONTAINMENT OF APL AND NAPL LOCATED WITHIN THE SITE BARRIER WALL. THE TILE COLLECTION SYSTEM DRAIN WHICH IS ADJACENT TO THE INDUSTRIAL INTAKE PIPE TRENCH (IIPT) SHALL BE HYDRAULICALLY CONNECTED TO THE BEDDING OF THE IIPT IN SUCH A MANNER AS TO ALLOW COLLECTION OF APL AND NAPL FROM THE IIPT BEDDING.

(B) THE TILE COLLECTION SYSTEM SHALL BE INSTALLED AT LEAST TO THE TOP OF THE CONFINING LAYER; PROVIDED, HOWEVER, THAT IT SHALL BE INSTALLED TO A DEPTH WHICH WILL MAXIMIZE THE COLLECTION OF NAPL LOCATED WITHIN THE SITE BARRIER WALL. IF THE TILE COLLECTION SYSTEM TRAVERSES A CONFINING LAYER DISCONTINUITY, IT SHALL BE INSTALLED TO ONE FOOT ABOVE THE TOP OF BEDROCK. THE DRAIN TILE SHALL BE SLOPED TOWARD WET WELL A AT A MINIMUM GRADE OF 0.5 PERCENT.

(C) OCC SHALL PROMPTLY SUBMIT TO THE GOVERNMENTAL PARTIES PLANS, SPECIFICATIONS AND PROTOCOLS FOR THE ACCELERATED COMPATIBILITY TESTING OF ALL PERMANENT MATERIALS, E.G., PIPE, FILTER FABRIC) ASSOCIATED WITH TILE COLLECTION SYSTEM INSTALLATION THAT OCC INTENDS TO USE TO DEMONSTRATE TO WHAT EXTENT, IF ANY, THE MATERIAL WILL BE AFFECTED BY CHEMICALS IN THE ADJACENT OVERBURDEN. IMPLEMENTATION OF THE TESTING PROGRAM SHALL COMMENCE IMMEDIATELY FOLLOWING THE GOVERNMENTAL PARTIES APPROVAL OF THE PLANS, SPECIFICATIONS AND PROTOCOLS. THE RESULTS OF SUCH TESTING AND ALL UNDERLYING DATA RELATED THERETO SHALL ACCOMPANY OCC'S SUBMISSION OF PLANS, AND SPECIFICATIONS CONCERNING THE TILE COLLECTION SYSTEM.

A4. SITE CONTAINMENT PURGE WELLS:

THE SITE CONTAINMENT PURGE WELLS SHALL BE LOCATED APPROXIMATELY AS SHOWN ON FIGURE 1. THE WELLS SHALL BE INSTALLED IN SUCH A MANNER AND TO SUCH DEPTHS AS TO MEET THE OBJECTIVES SET FORTH IN SECTION 1.0.

A5. CAP:

THE LANDFILL SITE SHALL BE CAPPED IN ACCORDANCE WITH THE PROVISIONS OF THE WASTE MANAGEMENT PLAN AND SECTION 3.0 HEREIN.

A6. UNDERGROUND UTILITIES:

UNDERGROUND UTILITY AND SERVICE LINES LOCATED WITHIN THE PERIMETER OF THE SITE BARRIER WALL SHALL BE ABANDONED IN PLACE. WHENEVER A UTILITY OR SERVICE LINE PREVIOUSLY ABANDONED OR TO BE ABANDONED PURSUANT TO

THIS SUBPARAGRAPH CROSSES THE SITE BARRIER WALL, OCC SHALL REMOVE THAT PORTION OF SUCH LINE CROSSING THE WALL, SEAL THE ENDS OF EACH LINE REMAINING IN PLACE BY PLUGGING WITH APPROPRIATE GROUTING MATERIAL, OR ITS PERFORMANCE EQUIVALENT, AND BACKFILL THE TRENCH FROM WHICH SUCH PORTION WAS REMOVED. IF APPROPRIATE, UTILITY AND SERVICE LINES ABANDONED PURSUANT TO THIS SUBPARAGRAPH SHALL BE REPLACED BY INSTALLATIONS ABOVE GROUND OR OUTSIDE THE SITE BARRIER WALL. THE 003 STORM SEWER OUTFALL SHALL BE RELOCATED TO THE ALIGNMENT SHOWN ON FIGURE 1.

A7. LAGOONS:

OCC SHALL TERMINATE THE OPERATION AND USE OF THE EXISTING LAGOONS, AND THE AREA ENCOMPASSED BY THE EXISTING LAGOONS SHALL BE CAPPED AND CLOSED IN ACCORDANCE WITH SECTION 3.0 AND THE WASTE MANAGEMENT PLAN.

B. OPERATION:

B1. THE TILE COLLECTION SYSTEM AND SEVEN SITE CONTAINMENT PURGE WELLS WILL BE OPERATED TO ACHIEVE AN INWARD GRADIENT ACROSS THE SITE BARRIER WALL, EXCEPT IN THOSE AREAS WHERE THE INSTALLATION OR OPERATION OF THE CWTP OR RRT SYSTEMS MAKE THE ACHIEVEMENT OF SUCH INWARD GRADIENTS IMPRACTICABLE. IN THOSE AREAS WHERE AN INWARD GRADIENT IS NOT ACHIEVED, ANY MIGRATION OF S-AREA APL AND NAPL WILL BE ADDRESSED BY OTHER INSTALLED REMEDIAL SYSTEM(S).

B2. THE TILE COLLECTION SYSTEM WILL BE OPERATED TO MAXIMIZE AN UPWARD GRADIENT ACROSS THE CONFINING LAYER WITHIN THE AREA ENCOMPASSED BY THE SITE BARRIER WALL SUCH THAT THE WET WELL WATER LEVEL IS MAINTAINED AT THE LOWEST DRAIN TILE INVERT ELEVATION AT THE WET WELL.

B3. THE STATIC WATER TABLE ELEVATION OF EACH SITE CONTAINMENT PURGE/RECOVERY WELL MEASURED AFTER HYDRAULIC STABILIZATION AS DEFINED IN SUBSECTION 4.4.1.A3, WILL BE USED TO DETERMINE THE NEED FOR SITE CONTAINMENT PURGE/RECOVERY WELL OPERATION. IF THE STATIC WATER TABLE ELEVATION AT A SITE CONTAINMENT PURGE/RECOVERY WELL IS GREATER THAN ONE FOOT ABOVE THE TOP OF THE CLAY/TILL LAYER, OR BEDROCK WHERE NO CLAY/TILL LAYER EXISTS, AND A NINE FOOT UPWARD HEAD DIFFERENTIAL DOES NOT EXIST AT THAT WELL, THEN THAT SITE CONTAINMENT PURGE/RECOVERY WELL WILL BE OPERATED TO MAINTAIN THE PUMPING WATER LEVEL IN THE WELL AT ONE FOOT OR LESS ABOVE THE CLAY/TILL LAYER OR TOP OF BEDROCK WHERE NO CLAY/TILL LAYER EXISTS.

C. NAPL RECOVERY-TESTING AND OPERATION:

C1. IDENTIFICATION OF WELLS FOR TESTING: THIRTY DAYS AFTER THE INSTALLATION OF THE 7 SITE CONTAINMENT SYSTEM PURGE/RECOVERY WELLS, EACH WELL THAT ENCOUNTERS NAPL DURING INSTALLATION WILL BE TESTED TO EVALUATE NAPL RECOVERY POTENTIAL.

C2. RECOVERY TESTING PROCEDURE: WHEN TESTING: PURGE/RECOVERY WELLS, THE OBJECTIVE WILL BE TO EVALUATE THE CAPABILITY OF THE WELL TO PRODUCE NAPL AND TO DEFINE OPERATIONAL REQUIREMENTS NEEDED TO MAXIMIZE NAPL RECOVERY. INITIALLY, EACH PURGE/RECOVERY WELL THAT ENCOUNTERS NAPL UPON INSTALLATION WILL BE PUMPED FOR APL AND NAPL AT THE MAXIMUM RATE ACHIEVABLE (TO A MAXIMUM OF 5 GAL/MIN) FOR A DURATION OF FIVE DAYS. THE TEST WILL BE CONDUCTED TO QUANTIFY THE RATIO OF NAPL TO APL PRODUCED AS A FUNCTION OF TIME. THE RADIUS OF WELL INFLUENCE ON NAPL WILL ALSO BE EVALUATED FOR THE OVERBURDEN WELLS THAT ARE TESTED. NO ADDITIONAL NEW WELLS WILL BE INSTALLED SOLELY FOR THE PURPOSE OF EVALUATING THE RADIUS OF WELL INFLUENCE. TEST RESULTS WILL BE EVALUATED DURING EACH WELL TEST, AND UPON APPROVAL BY THE GOVERNMENTAL PARTIES, THE PUMP RATES AND DURATION WILL BE VARIED TO ENHANCE THE EFFECTIVENESS OF THE TEST.

C3. OPERATION OF NAPL RECOVERY WELLS: BASED ON THE RESULTS OF THE NAPL RECOVERY TESTING, ANY WELL SHOWN TO BE CAPABLE OF PRODUCING REASONABLE AMOUNTS OF NAPL WILL BE OPERATED IN SUCH A MANNER AS TO RECOVER NAPL TO THE MAXIMUM EXTENT PRACTICABLE. IN EVALUATING WHETHER THE AMOUNT OF NAPL WHICH CAN BE RECOVERED BY A WELL IS REASONABLE, THE FOLLOWING FACTORS WILL BE CONSIDERED:

* RATIO OF NAPL TO APL COLLECTED
* DEPTH OF NAPL IN A WELL
* VOLUME OF WATER PUMPED TO RECOVER NAPL

* RADIUS OF WELL INFLUENCE
* PRODUCTION DECLINE
* USE OF NON-CONTINUOUS PUMPING, PERIODIC PUMPING OF NAPL.

ANY WELL WHICH IS SHOWN NOT TO BE CAPABLE OF PRODUCING REASONABLE AMOUNTS OF NAPL AND WHICH IS NOT BEING PUMPED PURSUANT TO SUBSECTION 2.1.2.B. OR 2.2.2.C. WILL BE MONITORED AS DESCRIBED IN SECTION 2.3.1.

BASED ON THE RESULTS OF THE NAPL RECOVERY TESTING, OCC WILL, WITHIN 30 DAYS OF TEST COMPLETION, IDENTIFY, SUBJECT TO THE GOVERNMENTAL PARTIES APPROVAL, WHICH WELLS WILL BE OPERATED AS NAPL RECOVERY WELLS AND HOW AND WHEN THOSE WELLS WILL BE OPERATED TO MAXIMIZE NAPL RECOVERY.

2.2 OVERBURDEN RRT SYSTEM

THE OVERBURDEN AREA OUTSIDE THE SITE CONTAINMENT SYSTEM WILL BE ADDRESSED BY THE RRT SYSTEM (OVERBURDEN RRT SYSTEM) DESCRIBED BELOW.

2.2.1 OBJECTIVES

THE DESIGN AND REMEDIAL OBJECTIVES OF THE OVERBURDEN RRT SYSTEM ARE: (1) TO CONTAIN APL AND NAPL WITHIN THE EXISTING S-AREA OVERBURDEN NAPL PLUME; AND (2) TO COLLECT NAPL OUTSIDE THE SITE BARRIER WALL TO THE MAXIMUM EXTENT PRACTICABLE. SUBJECT TO SECTION 1. 0.F., THE OVERBURDEN RRT SYSTEM WILL BE OPERATED TO ATTAIN THESE OBJECTIVES.

2.2.2 REMEDIAL SYSTEM

A. INTRODUCTION:

THIS SECTION ADDRESSES THE INSTALLATION, OPERATION AND TESTING OF THE COMPONENTS OF THE OVERBURDEN RRT SYSTEM.

B. INSTALLATION:

B1. THE OVERBURDEN RRT SYSTEM SHALL CONSIST OF BARRIER WALLS SOUTH OF THE SITE BARRIER WALL AND THE ROBERT MOSES PARKWAY (RRT BARRIER WALL), DRAIN TILES, GROUT PLUGS INSTALLED ACROSS THE INDUSTRIAL INTAKE PIPE TRENCH (IIPT) AND ROBERT MOSES PARKWAY (RMP), OVERBURDEN RRT PURGE/RECOVERY WELLS, AND A CAP. THESE COMPONENTS, EXCEPT THE CAP, ARE SHOWN ON FIGURE 1. THE SITE BARRIER WALL AND RRT BARRIER WALL ARE REFERRED TO COLLECTIVELY IN THIS PLAN AS THE OVERBURDEN BARRIER WALLS.

B2. RRT BARRIER WALL:

(A) THE RRT BARRIER WALL REFERS TO THAT PORTION OF THE OVERBURDEN BARRIER WALL LOCATED SOUTH OF THE SITE BARRIER WALL. THE APPROXIMATE LOCATION OF THE RRT BARRIER WALL IS SHOWN ON FIGURE 1.

(B) ALL DESIGN AND INSTALLATION REQUIREMENTS SPECIFIED FOR THE SITE BARRIER WALL UNDER SUBSECTION 2.1.2 SHALL APPLY TO THE DESIGN, INSTALLATION AND PERFORMANCE OF THE SLURRY WALL PORTION OF THE RRT BARRIER WALL.

B3. DRAIN TILES:

DRAIN TILES SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH THE CRITERIA SPECIFIED FOR THE TILE COLLECTION SYSTEM DRAIN TILES UNDER SUBSECTION 2.1.2. THE LOCATION OF THE DRAIN TILES SHALL BE APPROXIMATELY AS SHOWN ON FIGURE 1.

B4. GROUT PLUGS:

(A) GROUT PLUGS SHALL BE INSTALLED ACROSS THE IIPT AND RMP AT THE LOCATION WHERE THESE FACILITIES ARE. INTERSECTED BY THE CENTERLINE OF THE RRT BARRIER WALL, AS SHOWN ON FIGURE 1.

(B) THE DEPTH TO WHICH THE GROUT PLUGS ARE INSTALLED SHALL BE IN ACCORDANCE WITH THE CRITERIA SPECIFIED FOR SITE BARRIER WALL INSTALLATION UNDER SUBSECTION 2.1.2.

(C) THE GROUT PLUGS SHALL BE INSTALLED BY A PRESCRIPTIVE GROUTING PROGRAM DESIGNED AND IMPLEMENTED TO ALLOW FOR MAINTENANCE OF THE HYDRAULIC GRADIENTS SPECIFIED UNDER SUBSECTION 2.2.2.C. ONCE THE GOVERNMENTAL PARTIES-APPROVED PRESCRIPTIVE GROUTING PROGRAM HAS BEEN IMPLEMENTED THE INSTALLATION OF GROUT PLUGS SHALL BE DEEMED COMPLETE.

(D) OCC SHALL PROMPTLY SUBMIT TO THE GOVERNMENTAL PARTIES PLANS, SPECIFICATIONS AND PROTOCOLS FOR THE ACCELERATED TESTING OF GROUT MATERIAL ASSOCIATED WITH GROUT PLUG INSTALLATION THAT OCC INTENDS TO USE. THE OBJECTIVE OF THE ACCELERATED TESTING IS TO DEMONSTRATE TO WHAT EXTENT, IF ANY, THE PERMEABILITY OF THE GROUT MATERIAL WILL BE AFFECTED BY CHEMICALS IN THE ADJACENT OVERBURDEN. IMPLEMENTATION OF THE TESTING PROGRAM SHALL COMMENCE IMMEDIATELY FOLLOWING THE GOVERNMENTAL PARTIES APPROVAL OF THE PLANS, SPECIFICATIONS AND PROTOCOLS. IN LIEU OF SUCH TESTING, OCC MAY PROMPTLY SUBMIT TECHNICAL DOCUMENTATION THAT ADEQUATELY DEMONSTRATES, SUBJECT TO THE GOVERNMENTAL PARTIES APPROVAL, THE APPROPRIATENESS OF GROUT MATERIAL FOR USE IN THE PRESCRIPTIVE GROUTING PROGRAM DEFINED IN THIS SECTION 2.2.2.B4. THE RESULTS OF SUCH TESTING AND ALL UNDERLYING DATA RELATED THERETO SHALL ACCOMPANY OCC'S SUBMISSION OF PLANS AND SPECIFICATIONS CONCERNING THE GROUT PLUGS.

B5. OVERBURDEN RRT PURGE/RECOVERY WELL SYSTEMS:

(A) TWO OVERBURDEN PURGE/RECOVERY WELL SYSTEMS WILL BE INSTALLED AS SHOWN ON FIGURE 1. THESE SYSTEMS WILL CONSIST OF:

(I) A WELL SYSTEM CONSISTING OF SIX WELLS LOCATED IMMEDIATELY SOUTH OF THE IIPT AND NORTH OF THE RMP; AND

(II) A WELL SYSTEM CONSISTING OF TEN WELLS, INCLUDING NINE WELLS LOCATED SOUTH OF THE RMP AND ONE WELL LOCATED NORTH OF THE RMP AND EAST OF THE IIPT.

(B) THE OVERBURDEN RRT PURGE/RECOVERY WELLS SHALL BE INSTALLED IN SUCH A MANNER AND TO SUCH DEPTHS AS TO MEET THE OBJECTIVES SET FORTH IN SECTION 1.1.

B6. CAP

THE OVERBURDEN RRT SYSTEM AREA SHALL BE CAPPED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 3.0 HEREIN.

C. OPERATION:

C1. THE OVERBURDEN RRT PURGE/RECOVERY WELL SYSTEM WILL BE OPERATED TO ACHIEVE:

(A) AN INWARD GRADIENT, ACROSS THE RRT BARRIER WALL AND GROUT PLUGS ON THE WEST, SOUTH AND EAST; AND

(B) AN UPWARD GRADIENT WITHIN THESE WALLS AND GROUT PLUGS, AS DESCRIBED IN SECTION C2. BELOW.

C2. EACH RRT PURGE/RECOVERY WELL WILL BE OPERATED TO MAINTAIN AN INWARD GRADIENT AND/OR TO INCREASE THE UPWARD GRADIENT CITED IN SUBSECTION C1. ABOVE, IF, AFTER HYDRAULIC STABILIZATION (AS DEFINED IN SUBSECTION 4.4.1.A3.), BUT NO LATER THAN 12 MONTHS AFTER START OF OPERATION OF BOTH THE TILE COLLECTION SYSTEM AND THE PROTOTYPE BEDROCK SYSTEM, ANY OF THE FOLLOWING CONDITIONS EXIST:

(A) AN INWARD GRADIENT DOES NOT EXIST ACROSS THE RRT BARRIER WALL OR THE GROUT PLUGS SHOWN ON FIGURE 1;

(B) STATIC WATER LEVELS IN ANY OF THE SIX WELLS ADJACENT TO THE IIPT ARE HIGHER THAN ONE FOOT ABOVE THE CLAY/TILL LAYER, OR THE BEDROCK WHERE NO CLAY/TILL LAYER EXISTS, AND THERE IS LESS THAN A NINE FOOT UPWARD HEAD DIFFERENTIAL FROM THE BEDROCK;

(C) STATIC WATER LEVELS IN ANY OF THE TEN REMAINING WELLS WHICH ARE INSTALLED IN THE DEFINED AREAS WITH LESS THAN THREE FEET OF CONFINING LAYER ARE HIGHER THAN ONE FOOT ABOVE THE CLAY/TILL LAYER AND THERE IS LESS

THAN A NINE FOOT UPWARD HEAD DIFFERENTIAL FROM THE BEDROCK; OR

(D) STATIC WATER LEVELS IN ANY OF THE TEN REMAINING WELLS WHICH ARE INSTALLED IN THE DEFINED AREAS OF GREATER THAN THREE FEET OF CONFINING LAYER ARE HIGHER THAN ONE FOOT ABOVE THE CLAY/TILL LAYER AND INDICATE NO NET UPWARD GRADIENT FROM THE BEDROCK.

D. NAPL RECOVERY TESTING IN THE OVERBURDEN RRT PURGE/RECOVERY WELLS:

D1. IDENTIFICATION OF TEST WELLS: THIRTY DAYS AFTER THE 16 RRT PURGE/RECOVERY WELLS ARE INSTALLED, EACH WELL THAT ENCOUNTERS NAPL DURING INSTALLATION WILL BE TESTED BY PUMPING TO EVALUATE NAPL RECOVERY POTENTIAL.

D2. RECOVERY TESTING PROCEDURE: WHEN TESTING PURGE/RECOVERY WELLS, THE OBJECTIVE WILL BE TO EVALUATE THE CAPABILITY OF THE WELL TO PRODUCE NAPL AND TO DEFINE OPERATIONAL REQUIREMENTS NEEDED TO MAXIMIZE NAPL RECOVERY. THE TESTING FOR NAPL RECOVERY BY OVERBURDEN RRT PURGE/RECOVERY WELLS WILL BE AS DESCRIBED IN SECTION 2.I.2.C2, INFRA.

D3. OPERATION OF NAPL PURGE/RECOVERY WELLS: BASED ON THE RESULTS OF THE NAPL RECOVERY TESTING, ANY WELL SHOWN TO BE CAPABLE OF PRODUCING REASONABLE AMOUNTS OF NAPL WILL BE OPERATED AS DESCRIBED IN SECTION 2.I.2.C3, INFRA.

2.3 OVERBURDEN MONITORING PROGRAM

2.3.1 NAPL MONITORING

1A. MONITORING OBJECTIVE:

THE OBJECTIVE OF THE OVERBURDEN NAPL MONITORING PROGRAM (ONP) IS:

* TO EVALUATE THE NAPL RECOVERY BY THE SITE CONTAINMENT AND OVERBURDEN RRT SYSTEMS AND TO FACILITATE THE SELECTION AND/OR ADDITION OF OVERBURDEN WELLS TO BE PUMPED FOR NAPL RECOVERY PURSUANT TO SECTION 2.3.I.C.

* TO ASSESS WHETHER THE S-AREA OVERBURDEN NAPL PLUME IS CONTAINED WITHIN THE OVERBURDEN BARRIER WALLS.

B. PROGRAM IMPLEMENTATION:

B1. EACH PURGE/RECOVERY WELL WITHIN THE OVERBURDEN BARRIER WALLS WILL BE EVALUATED FOR NAPL RECOVERY AS FOLLOWS:

* MONITORING WILL BE INITIATED AT THE SAME TIME AS OVERBURDEN HYDRAULIC MONITORING (SEE SUBSECTION 2.3.2.91. BELOW).

* QUARTERLY FREQUENCY.

* EACH WELL PUMPED SOLELY FOR THE PURPOSE OF NAPL RECOVERY WILL BE MONITORED FOR THE FOLLOWING:

* NAPL AND AFL PRODUCTION RATES (MEASURED);

* NAPL/APL RATIO (CALCULATED);

* NAPL PRODUCTION DECLINE (CALCULATED);

* VOLUME OF WATER PUMPED TO RECOVER NAPL (MEASURED); AND

* RADIUS OF WELL INFLUENCE CALCULATED AND/OR MEASURED.

* WELLS NOT BEING PUMPED WILL BE MONITORED FOR DEPTH OF NAPL.

B2. THE CUMULATIVE VOLUME OF NAPL RECOVERED BY THE OVERBURDEN RRT PURGE/RECOVERY WELL SYSTEM WILL BE MONITORED AND CALCULATED MONTHLY.

B3. PIEZOMETERS OUTSIDE THE OVERBURDEN BARRIER WALLS WILL BE MONITORED FOR NAPL PRESENCE AS FOLLOWS:

* MONITORING WILL BEGIN ONE YEAR AFTER COMPLETION OF THE OVERBURDEN BARRIER WALLS.

* ANNUAL FREQUENCY.

EACH OF THE NINE OVERBURDEN PIEZOMETERS OUTSIDE THE OVERBURDEN BARRIER WALLS WILL BE VISUALLY INSPECTED FOR NAPL USING HAND BAILING TO THE BOTTOM OF THE PIEZOMETER (OR A PERFORMANCE EQUIVALENT).

C. RESPONSE ACTIONS:

C1. DURING THE ONP, AN OVERBURDEN NAPL RECOVERY TEST, AS PER SUBSECTION 2.I.2.C2., WILL BE CONDUCTED ON ANY OVERBURDEN PURGE/RECOVERY WELL WHERE:

* ONP MONITORING INDICATES NAPL IN ANY PREVIOUSLY NON-NAPL BEARING, NON-PUMPING WELL:

* THE LEVEL OF NAPL IN A NAPL-BEARING WELL WHICH IS NOT BEING PUMPED INCREASES TO PUMPABLE LEVELS BETWEEN ONP MONITORING OBSERVATIONS.

IF ANY WELL IS SHOWN BY THE PUMP TEST TO BE CAPABLE OF RECOVERING REASONABLE AMOUNTS OF NAPL (AS DEFINED IN SECTION 2.1.2.C3.), IT WILL BE OPERATED AS DESCRIBED IN SECTION 2.I.2.C3.

C2. ANY OVERBURDEN PURGE/RECOVERY WELL WHICH IS BEING OPERATED SOLELY FOR THE PURPOSE OF NAPL RECOVERY WILL BE SHUT OFF IF IT IS NO LONGER RECOVERING REASONABLE AMOUNTS OF NAPL BASED UPON THE CONSIDERATIONS STATED IN SUBSECTION 2.I.2.C3. HOWEVER, THAT WELL WILL CONTINUE TO BE SUBJECT TO MONTHLY ONP MONITORING, AND, IF THE NAPL LEVEL INCREASES TO PUMPABLE LEVELS BETWEEN MONITORING OBSERVATIONS, THE WELL WILL BE PUMPED OUT.

IF THE WELL IS DETERMINED TO BE CAPABLE OF PRODUCING A REASONABLE AMOUNT OF NAPL, OPERATION OF THE WELL WILL BE REINITIATED AS DESCRIBED IN SUBSECTION 2.I.2.C3.

C3. ONE YEAR AFTER INITIATION OF ONP MONITORING, THE SELECTION OF OVERBURDEN WELLS WHICH ARE BEING PUMPED FOR NAPL RECOVERY WILL BE ASSESSED. OCC SHALL SUBMIT THIS ASSESSMENT TO THE GOVERNMENTAL PARTIES WITHIN 30 DAYS.

C4. AS A RESULT OF THE ASSESSMENT, ADDITIONAL OVERBURDEN WELLS FOR NAPL RECOVERY WILL BE INSTALLED IF DATA INDICATE THAT SUCH WELLS WOULD COLLECT REASONABLE AMOUNTS OF NAPL (AS DESCRIBED IN SUBSECTION 2.I.2.C3).

C5. IF ONP MONITORING INDICATES NAPL PRESENCE IN ANY PIEZOMETER IMMEDIATELY OUTSIDE THE OVERBURDEN BARRIER WALLS, OCC WILL PROCEED PURSUANT TO SECTION 5.1.1 TO DETERMINE WHAT OPERATIONAL MODIFICATIONS (AS DEFINED IN SECTION 5.1.1) TO THE OVERBURDEN RRT SYSTEM AND/OR THE SITE CONTAINMENT SYSTEM ARE REQUIRED TO CONTAIN NAPL.

C6. IF FURTHER ONP MONITORING INDICATES THAT THE ACTION TAKEN PURSUANT TO SUBSECTION C5. ABOVE IS NOT EFFECTIVE IN CONTAINING NAPL WITHIN THE EXISTING OVERBURDEN NAPL PLUME, OCC WILL PROCEED PURSUANT TO SECTION 5.1.2.

2.3.2 OVERBURDEN HYDRAULIC MONITORING

A. MONITORING OBJECTIVE:

THE OBJECTIVE OF THE OVERBURDEN HYDRAULIC MONITORING PROGRAM (OHP) IS TO EVALUATE THE EFFECTIVENESS OF THE SITE CONTAINMENT SYSTEM AND THE OVERBURDEN RRT SYSTEM IN MAINTAINING INWARD GRADIENTS ACROSS THE OVERBURDEN BARRIER WALLS AND UPWARD GRADIENTS INTO THE SITE CONTAINMENT SYSTEM AND OVERBURDEN RRT SYSTEM FROM THE

BEDROCK.

B. PROGRAM IMPLEMENTATION

B1. OHP MONITORING FREQUENCY WILL BE AS FOLLOWS:

* WATER LEVEL MONITORING WILL BEGIN NO MORE THAN 90 DAYS AFTER THE START OF OPERATIONS OF THE SITE CONTAINMENT AND OVERBURDEN RRT SYSTEMS;

* MONTHLY FREQUENCY, EXCEPT THAT ONE OVERBURDEN WELL, ONE BEDROCK WELL, AND WATER LEVEL IN THE NIAGARA RIVER WILL BE MONITORED CONTINUOUSLY. THE WELLS TO BE CONTINUOUSLY MONITORED MAY BE CHANGED FROM TIME TO TIME.

B2. WATER LEVELS TO CALCULATE INWARD GRADIENTS WILL BE MONITORED USING THE FOLLOWING WELLS AND PIEZOMETERS:

* FOUR PIEZOMETERS INSIDE AND SIX PIEZOMETERS OUTSIDE THE EASTERN, NORTHERN AND WESTERN PORTION OF THE OVERBURDEN BARRIER WALLS, AS SHOWN ON FIGURE 4.

* A PIEZOMETER PLACED ON EACH SIDE OF THE THREE GROUT PLUGS NEAR THE MIDDLE OF EACH OF THE PLUGS.

* NIAGARA RIVER (STILLING WELL)

* ANY OF THE PURGE/RECOVERY WELLS INSTALLED IMMEDIATELY NORTH OF THE NIAGARA RIVER WHICH ARE NOT OPERATED FOR NAPL RECOVERY OR WATER LEVEL REDUCTION.

B3. WATER LEVELS TO CALCULATE UPWARD GRADIENT WILL BE MONITORED USING THE FOLLOWING WELLS, SHOWN CONCEPTUALLY ON FIGURE 4:

* 12 MAINTENANCE PIEZOMETERS;

* 23 PURGE/RECOVERY WELLS IN THE OVERBURDEN, AND

* 21 SHALLOW BEDROCK WELLS SELECTED FROM THOSE WELLS THAT PRESENTLY EXIST.

WHERE EXISTING WELLS BECOME UNUSABLE, NEW WELLS WILL BE INSTALLED.

B4. AN ASSESSMENT OF OHP MONITORING PROCEDURES AND WELL LOCATIONS WILL BE INITIATED ONE YEAR AFTER THE START OF OPERATION OF THE SITE CONTAINMENT AND OVERBURDEN RRT SYSTEMS AND SUBMITTED TO THE GOVERNMENTAL PARTIES WITHIN 60 DAYS AFTER INITIATION OF THE ASSESSMENT.

C. RESPONSE ACTIONS:

CI. IF OHP MONITORING INDICATES THAT AN INWARD HYDRAULIC GRADIENT IS NOT BEING ACHIEVED ACROSS THE OVERBURDEN BARRIER WALLS IN AN AREA NOT INFLUENCED BY ANY OTHER INSTALLED OVERBURDEN REMEDIAL SYSTEM(S), OCC WILL PROCEED PURSUANT TO SECTION 5.1.1 TO DETERMINE WHAT OPERATIONAL MODIFICATIONS (AS DEFINED IN SECTION 5.1.1) ARE REQUIRED EITHER TO ACHIEVE THE SPECIFIED GRADIENTS OR OTHERWISE CONTAIN NAPL AND AFL IN THE AFFECTED AREA. SUCH MEASURES MAY INCLUDE INCREASED PUMPING AND, IF NECESSARY, INSTALLATION OF ADDITIONAL WELLS AND/OR DRAIN TILES TO DRAW DOWN THE OVERBURDEN WATER TABLE AS REQUIRED TO MAINTAIN SPECIFIED INWARD GRADIENTS ACROSS THE OVERBURDEN BARRIER WALLS.

C2. IF FURTHER OHP MONITORING INDICATES THAT THE ACTION(S) TAKEN PURSUANT TO C1., ABOVE, ARE NOT EFFECTIVE IN MAINTAINING INWARD GRADIENTS ACROSS THE OVERBURDEN BARRIER WALLS, OCC WILL PROCEED PURSUANT TO SECTION 5.1.2.

C3. IF OHP MONITORING INDICATES THAT UPWARD GRADIENTS SPECIFIED IN SUBSECTION 2.2.2.C BETWEEN THE BEDROCK AND OVERBURDEN ARE NOT BEING ACHIEVED, OCC WILL PROCEED PURSUANT TO SECTION 5.1.1 TO DETERMINE WHAT

OPERATIONAL MODIFICATIONS (AS DEFINED IN SECTION 5.1.1), ARE REQUIRED TO ACHIEVE THE SPECIFIED GRADIENTS. FOR THE SITE CONTAINMENT SYSTEM, SUCH OPERATIONAL MODIFICATIONS MAY INCLUDE INCREASING THE PUMPING RATES OR OTHER OPERATIONAL CHANGES TO EXISTING WELLS, BUT SHALL NOT INCLUDE INSTALLATION OF NEW WELLS. FOR THE OVERBURDEN RRT SYSTEM, SUCH OPERATIONAL MODIFICATIONS MAY INCLUDE, AMONG OTHERS, INCREASED PUMPING RATES OR OTHER OPERATIONAL MODIFICATIONS (AS DEFINED IN SECTION 5.1.1) TO DRAWDOWN THE OVERBURDEN WATER TABLE WITHIN THE RRT BARRIER WALLS.

3.0 CAPPING

3.1 THE AREAS AT AND AROUND THE LANDFILL SITE WILL BE CAPPED AS FOLLOWS:

(A) THE AREA WITHIN THE SITE BARRIER WALL WEST OF THE EXISTING 003 OUTFALL ALIGNMENT WILL BE CAPPED WITH CLAY OR ASPHALT AND MAY BE USED IN THE FUTURE AS A STORAGE OR PARKING AREA.

(B) THE AREA WITHIN THE SITE BARRIER WALLS EAST OF 53RD STREET SHALL BE ASPHALTED AND MAY BE USED IN THE FUTURE AS A STORAGE OR PARKING AREA.

(C) THE AREA SOUTH OF THE NORTHERN (WESTBOUND) LANES OF THE RMP MAY BE CAPPED TO REDUCE INFILTRATION.

(D) THE AREA WITHIN THE SITE BARRIER WALL NORTH OF ADAMS AVENUE SHALL BE CAPPED WITH ASPHALT OR CONCRETE AND MAY BE USED IN THE FUTURE AS AN AREA FOR STORAGE OF APL AND NAPL GENERATED BY REMEDIAL ACTIVITIES REQUIRED BY THE JUDGMENT OR THE STIPULATION.

(E) ALL OTHER AREAS WITHIN THE OVERBURDEN BARRIER WALLS WILL BE CAPPED AS DESCRIBED IN SECTION 3.2.

3.2 EXCEPT AS PROVIDED IN SECTION 3.1, ALL OTHER AREAS WITHIN THE OVERBURDEN BARRIER WALL WILL BE CAPPED AS FOLLOWS:

(A) THE CAP SHALL CONSIST OF CLAY AND HAVE A MAXIMUM PERMEABILITY OF 1 X (10-7) CM/SEC. THE CLAY CAP SHALL CONSIST OF A MINIMUM OF THREE FEET OF CLAY, AN 18-INCH LAYER OF SILTY SOIL OR LOAM, AND A SIX-INCH LAYER OF TOPSOIL SEEDED WITH NATIVE VEGETATIVE GROWTH. ALL AREAS CAPPED WITH CLAY SHALL BE CROWNED BY THE CONSTRUCTION OF ONE OR MORE APEXES, EACH OF WHICH SLOPES AT A MINIMUM OF 5 PERCENT GRADE TOWARD A SURFACE DRAINAGE SYSTEM HAVING A MINIMUM OF 0.5 PERCENT GRADE.

(B) THE FOLLOWING ACTIONS SHALL BE TAKEN CONCERNING THE CAP TO VERIFY COMPLIANCE WITH DESIGN SPECIFICATIONS:

(I) BEFORE INSTALLATION, THE CLAY TO BE USED FOR THE CAP SHALL BE TESTED; PERMEABILITIES AT VARIOUS SOIL COMPACTION DENSITIES SHALL BE DETERMINED; AND THE DENSITY REQUIRED TO ATTAIN A MAXIMUM PERMEABILITY OF 1 X (10-7) CM/SEC. SHALL BE IDENTIFIED;

(II) DURING INSTALLATION, THE CLAY USED FOR THE CAP SHALL BE EVALUATED BEFORE IT IS PLACED TO INSURE THE MATERIAL MEETS SPECIFICATIONS; AND THE COMPACTED DENSITY IN EACH SIX-INCH LAYER SHALL BE TESTED TO INSURE IT MEETS REQUIREMENTS TO ATTAIN THE SPECIFIED PERMEABILITY; AND

(III) AFTER INSTALLATION, SIX UNDISTURBED SAMPLES (SHELBY TUBES) SHALL BE COLLECTED AT REPRESENTATIVE LOCATIONS AND DENSITY TESTED; THE THICKNESS OF THE CLAY CAP AND TOPSOIL ALSO SHALL BE VERIFIED AT THESE SIX LOCATIONS; AND THE HOLES CREATED IN ACCORDANCE WITH THIS SUBPARAGRAPH SHALL BE APPROPRIATELY PLUGGED AND THE CAP RESTORED.

4.0 BEDROCK RRT SYSTEM

NAPL AND APL IN THE BEDROCK AT AND AROUND THE LANDFILL SITE WILL BE ADDRESSED BY THE RRT SYSTEM (BEDROCK RRT SYSTEM) DESCRIBED BELOW.

4.1 OBJECTIVES

THE DESIGN AND REMEDIAL OBJECTIVES OF THE BEDROCK RRT SYSTEM ARE: (1) TO CONTAIN APL AND NAPL WITHIN THE

EXISTING S-AREA BEDROCK NAPL PLUME; (2) TO PREVENT FURTHER NAPL MIGRATION IN THE BEDROCK UNDER THE NIAGARA RIVER; AND (3) TO COLLECT NAPL WITHIN THIS PLUME TO THE MAXIMUM EXTENT PRACTICABLE. THE BEDROCK RRT SYSTEM WILL BE OPERATED TO ATTAIN THESE OBJECTIVES. THE BEDROCK RRT SYSTEM WILL BE OPERATED TO ATTAIN ITS OBJECTIVES EVEN IF DOING SO PREVENTS MAINTAINING THE SPECIFIED UPWARD HYDRAULIC GRADIENTS INTO THE SITE CONTAINMENT AND OVERBURDEN RRT SYSTEMS.

4.2 PHASED APPROACH

THE DESIGN, INSTALLATION, OPERATION AND MONITORING OF THE BEDROCK RRT SYSTEM WILL PROCEED IN A THREE-PHASED APPROACH:

PHASE I -	INITIAL TESTING OF SHALLOW BEDROCK ZONE.
PHASE II -	DESIGN, INSTALLATION, OPERATION AND MONITORING OF PROTOTYPE BEDROCK SYSTEM IN THE SHALLOW, INTERMEDIATE AND DEEP BEDROCK ZONES.
PHASE III -	DESIGN, INSTALLATION, OPERATION AND MONITORING OF BEDROCK RRT SYSTEM IN THE SHALLOW, INTERMEDIATE AND DEEP BEDROCK ZONES.

THREE ZONES WITHIN THE BEDROCK ARE DEFINED FOR THE RRT SYSTEM:

SHALLOW ZONE:	TOP 30 FEET OF BEDROCK
INTERMEDIATE ZONE	FROM THE BOTTOM OF THE SHALLOW ZONE TO 30 FEET ABOVE THE TOP OF THE GASPORT FORMATION
DEEP ZONE:	FROM 30 FEET ABOVE THE GASPORT FORMATION DOWN TO THE TOP OF THE ROCHESTER FORMATION

4.3 PHASE I - INITIAL TESTING OF SHALLOW BEDROCK (TOP 30 FEET)

4.3.1 NAPL RECOVERY TESTING

A. A NETWORK OF ELEVEN RECOVERY WELLS WHICH ARE DESIGNED TO MAXIMIZE NAPL COLLECTION WILL BE INSTALLED INTO THE TOP 30 FEET OF THE BEDROCK (SHALLOW BEDROCK) AS SHOWN ON FIGURE 2 AND SUBSEQUENTLY TESTED. TESTING WILL BE DESIGNED TO EVALUATE THE CAPABILITY OF WELLS TO RECOVER NAPL AND TO DEFINE OPERATIONAL REQUIREMENTS. INITIALLY, EACH WELL WILL BE PUMPED FOR APL AND NAPL AT THE MAXIMUM RATE ACHIEVABLE (TO A MAXIMUM OF 5 GAL/MIN) FOR A DURATION OF FIVE DAYS. THE TEST WILL BE DESIGNED TO QUANTIFY THE RATIO OF NAPL TO APL COLLECTED AS A FUNCTION OF TIME.

B. TEST RESULTS WILL BE EVALUATED DURING EACH WELL TEST AND THE PUMP RATES AND DURATION MAY BE VARIED TO ENHANCE THE EFFECTIVENESS OF THE TEST AND TO DETERMINE THE MOST EFFECTIVE OPERATION TO MAXIMIZE THE COLLECTION OF NAPL. MODIFICATIONS TO THE INITIAL TEST PROCEDURE MAY BE MADE, SUBJECT TO APPROVAL BY THE GOVERNMENTAL PARTIES. AFTER COMPLETION OF THE RECOVERY TESTING, ALL DATA GENERATED BY THE TESTING WILL BE EVALUATED AND USED TO DESIGN THE NAPL RECOVERY COMPONENT OF THE PROTOTYPE BEDROCK SYSTEM.

4.3.2 HYDRAULIC TESTING - APL/NAPL CONTAINMENT

A. A SECOND NETWORK OF EIGHT SHALLOW BEDROCK PURGE WELLS, WHICH ARE INTENDED TO EFFECTIVELY CHARACTERIZE THE HYDRAULIC PROPERTIES OF THE BEDROCK, WILL BE INSTALLED AT THE LOCATIONS SHOWN ON FIGURE 3. EACH WELL WILL BE SIZED FOR A PUMPING RATE. UP TO 150 GALLONS PER MINUTE. WATER LEVEL MEASUREMENTS WILL BE TAKEN: I) FROM EACH PUMPED WELL; II) FROM A MAXIMUM OF TEN OBSERVATION WELLS FOR EACH TEST, TWO OF WHICH WILL BE INSTRUMENTED WITH CONTINUOUS RECORDERS; AND III) FROM THE NIAGARA RIVER VIA A CONTINUOUS RECORDER. EXISTING WELLS MAY BE USED IF THEIR LOCATION AND CONSTRUCTION ARE APPROPRIATE FOR THE TEST; NO NEW WELLS WILL BE INSTALLED SOLELY FOR THE PURPOSE OF THIS TEST. HOWEVER, NEW WELLS REQUIRED FOR OTHER PROGRAMS UNDER THIS RRT REMEDIAL PLAN SHALL BE INSTALLED AHEAD OF SCHEDULE IF NEEDED FOR THIS TEST. WATER LEVELS WILL BE MEASURED EVERY FOUR HOURS FOR A PERIOD OF ONE DAY PRIOR TO EACH TEST START. DUE TO THE EFFECTS OF THE

NIAGARA RIVER FLUCTUATIONS, THE MAXIMUM TIME PERMITTED BETWEEN WATER LEVEL MEASUREMENTS IN ANY WELL DURING THE TEST PERIOD WILL BE TWO HOURS.

B. INITIALLY, EACH OF THE FIRST TWO WELLS WILL BE PUMPED FOR APL AT THE MAXIMUM RATE ACHIEVABLE (TO A MAXIMUM OF 75 GAL/MIN) FOR A DURATION OF 24 HOURS. AFTER THESE TWO WELLS ARE TESTED, THE RESULTS WILL BE EVALUATED AND THE TEST PROTOCOLS REVIEWED. IF HIGHER PUMP RATES ARE REQUIRED FOR THE REMAINING TESTS, THE PUMP RATES WILL BE ADJUSTED UP TO 150 GAL/MIN. AFTER THE COMPLETION OF THE HYDRAULIC TESTING, ALL DATA GENERATED BY THE TESTING WILL BE EVALUATED AND USED TO DESIGN THE HYDRAULIC CONTAINMENT COMPONENT OF THE PROTOTYPE BEDROCK SYSTEM.

4.4 PHASE II - PROTOTYPE BEDROCK SYSTEM

BASED ON THE DATA OBTAINED DURING THE PHASE I TESTING, A PROTOTYPE BEDROCK SYSTEM, WHICH CONSISTS OF NAPL RECOVERY WELLS AND APL/NAPL CONTAINMENT PURGE WELLS- WILL BE DESIGNED AND INSTALLED AS DESCRIBED BELOW.

4.4.1 PROTOTYPE BEDROCK SYSTEM (SHALLOW BEDROCK)

A. REMEDIAL SYSTEM:

A1. SYSTEM DESIGN AND INSTALLATION: THE PROTOTYPE BEDROCK SYSTEM WILL BE DESIGNED AND INSTALLED IN THE SHALLOW BEDROCK BASED ON THE DATA OBTAINED FROM THE PHASE I TESTING. THE PROTOTYPE BEDROCK SYSTEM SHALL BE DESIGNED AND INSTALLED, AS THE SECOND PHASE OF A THREE-PHASE PROGRAM, TO ATTAIN THE DESIGN AND REMEDIAL OBJECTIVES OF THE BEDROCK RRT SYSTEM DESCRIBED IN SECTION 4.1 AND TO COLLECT DATA FOR THE FINAL DESIGN OF THE BEDROCK RRT SYSTEM. THE PROTOTYPE DESIGN WILL INCLUDE THE NUMBER OF WELLS, WELL LOCATIONS AND THE WELL, PUMP, AND OPERATION SPECIFICATIONS.

A2. SYSTEM EVALUATION: THE PROTOTYPE BEDROCK SYSTEM WILL BE OPERATED AND MONITORING DATA WILL BE COLLECTED UNTIL IMPLEMENTATION OF THE BEDROCK RRT SYSTEM PURSUANT TO SECTION 4.5.1. THE MONITORING DATA WILL BE USED TO EVALUATE THE EFFECTIVENESS OF THE PROTOTYPE BEDROCK SYSTEM IN RECOVERING NAPL AND CONTAINING APL AND NAPL. BASED UPON EVALUATION OF GENERATED DATA AND SUBJECT TO THE GOVERNMENTAL PARTIES APPROVAL, THE SYSTEM WILL BE ADJUSTED DURING THE FIRST 12 MONTHS OF OPERATION OF THE PROTOTYPE BEDROCK SYSTEM BY VARYING PUMPING RATES AND, IF NECESSARY, BY THE ADDITION OR DELETION OF NAPL RECOVERY WELLS AND APL/NAPL CONTAINMENT PURGE WELLS. EVALUATION FOR THE ABOVE ADJUSTMENT WILL BE MADE BY OCC 6 MONTHS AND 12 MONTHS FOLLOWING STARTUP OF THE PROTOTYPE BEDROCK SYSTEM. OCC WILL CONDUCT ONE ADDITIONAL EVALUATION DURING THIS 12-MONTH PERIOD IF SO REQUESTED BY THE GOVERNMENTAL PARTIES.

AFTER THE INITIAL 12-MONTH PERIOD, PUMPING RATES IN THE PROTOTYPE BEDROCK SYSTEM'S WELLS MAY BE ADJUSTED AT THREE MONTH INTERVALS TO EVALUATE THE EFFECT ON INWARD HYDRAULIC GRADIENTS AND NAPL RECOVERY RATE. DATA COLLECTED DURING OPERATION OF THE PROTOTYPE BEDROCK SYSTEM WILL BE USED TO: (I) EVALUATE BEDROCK CONDITIONS; AND (II) DESIGN THE BEDROCK RRT SYSTEM AND MONITORING PROGRAMS PER SECTION 4.5.

A3. HYDRAULIC STABILIZATION: HYDRAULIC STABILIZATION IN THE BEDROCK IS DEFINED TO HAVE OCCURRED WHEN THE HEAD MEASUREMENT OF THE INSIDE BEDROCK PIEZOMETER OF A PIEZOMETER PAIR NO LONGER DECLINES MORE THAN 0.2 FEET PER QUARTER, TAKING APPROPRIATE ACCOUNT OF BAROMETRIC PRESSURE, WATER LEVEL FLUCTUATIONS IN THE NIAGARA RIVER, AND SEASONAL EFFECTS. WHEN A MODIFICATION OF THE PROTOTYPE BEDROCK SYSTEM IS IMPLEMENTED, ONLY THE AREA AFFECTED BY THAT MODIFICATION WILL BE EVALUATED TO DETERMINE IF HYDRAULIC STABILIZATION IS RE-ESTABLISHED. HYDRAULIC MONITORING WILL CONTINUE FOR THOSE AREAS NOT AFFECTED BY THE MODIFICATION. IF THE HEAD MEASUREMENT OF THE INSIDE PIEZOMETER DOES NOT ACHIEVE A DECLINE RATE OF 0.2 FEET OR LESS PER QUARTER, THEN HYDRAULIC STABILIZATION IS ASSUMED TO HAVE OCCURRED ONE YEAR AFTER IMPLEMENTATION OR MODIFICATION OF THE PROTOTYPE BEDROCK SYSTEM.

B. MONITORING PROGRAM:

BI. SHALLOW BEDROCK NAPL MONITORING:

(A) MONITORING OBJECTIVE: THE OBJECTIVE OF THE SHALLOW BEDROCK NAPL MONITORING PROGRAM (SBNP) IS TO EVALUATE THE EFFECTIVENESS OF THE PROTOTYPE BEDROCK SYSTEM IN ATTAINING THE OBJECTIVE SET FORTH IN

SUBSECTION 4.4.1.A1.

(B) PROGRAM IMPLEMENTATION:

1. THE FOLLOWING SBNP MONITORING TO ASSESS NAPL RECOVERY BY THE PROTOTYPE BEDROCK SYSTEM WILL BE CONDUCTED IN PURGE/RECOVERY WELLS WITHIN THE EXISTING BEDROCK NAPL PLUME ALONG THE RIVER:

* A MONITORING PROGRAM FOR NAPL RECOVERY BY THE PROTOTYPE BEDROCK SYSTEM WILL BE DEVELOPED AFTER COMPLETION OF THE INITIAL TESTING PROGRAM (DESCRIBED IN SECTION 4.3) AND FROM DATA RESULTING FROM THE NAPL TRACER MONITORING PROGRAM (SEE SECTION 4.4.1.93 BELOW).

* ELEMENTS OF SBNP MONITORING FOR THE PROTOTYPE BEDROCK SYSTEM WILL INCLUDE QUARTERLY EVALUATION OF CUMULATIVE TOTAL NAPL/APL RECOVERY DATA FOR THE PROTOTYPE BEDROCK SYSTEM AND ANNUAL ASSESSMENT OF THE FOLLOWING:

* NAPL/APL RATIOS ON INDIVIDUAL PURGE/RECOVERY WELLS;

* NAPL/APL RATIOS ON FIVE MONITORING WELLS LOCATED SOUTH OF THE ROBERT MOSES PARKWAY;

* EVALUATION OF NAPL COLLECTION DECLINE CURVES AND THE RADIUS OF WELL INFLUENCE, ON AN INDIVIDUAL WELL BASIS.

2. THE FOLLOWING SBNP FOR THE PROTOTYPE BEDROCK SYSTEM WILL BE CONDUCTED IN PURGE/RECOVERY WELLS WITHIN THE EXISTING BEDROCK NAPL PLUME NOT ALONG THE RIVER TO MONITOR NAPL RECOVERY:

* MONITORING WILL BEGIN UPON INSTALLATION OF THE PROTOTYPE BEDROCK SYSTEM AND WILL CONTINUE UNTIL IMPLEMENTATION OF A SBNP FOR THE BEDROCK RRT SYSTEM.

* QUARTERLY MONITORING OF NAPL/APL RATIOS IN NAPL WELLS CURRENTLY BEING PUMPED.

* ANNUAL MONITORING OF NAPL/APL RATIOS IN NAPL RECOVERY WELLS WHICH HAVE BEEN SHUT OFF.

* QUARTERLY EVALUATION OF CUMULATIVE NAPL/APL RECOVERY DATA FOR PROTOTYPE BEDROCK SYSTEM.

* ANNUAL EVALUATION OF NAPL COLLECTION DECLINE CURVES AND RADIUS OF WELL INFLUENCE, ON AN INDIVIDUAL WELL BASIS.

* QUARTERLY MEASUREMENT OF NAPL LEVELS IN ALL INNER PIEZOMETERS OF THE PIEZOMETER PAIRS.

3. THE FOLLOWING MONITORING FOR THE PRESENCE OF NAPL BEYOND THE EXISTING BEDROCK NAPL PLUME WILL BE CONDUCTED:

* MONITORING WILL BEGIN WHEN PIEZOMETER PAIRS AND PROTOTYPE BEDROCK SYSTEM ARE INSTALLED.

* QUARTERLY FREQUENCY.

* METHOD: HAND BAILING BOTTOM OF WELL/PIEZOMETER OR PERFORMANCE EQUIVALENT.

* MONITOR EACH OUTSIDE PIEZOMETER OF THE PIEZOMETER PAIRS.

* MONITOR EACH SHALLOW BEDROCK WELL WITHIN 200 FEET OF THE OUTSIDE BOUNDARY OF THE BEDROCK NAPL PLUME.

(C) RESPONSE ACTIONS:

IF, AT ANY TIME DURING THE OPERATION OF THE MONITORING IN ANY SHALLOW PROTOTYPE BEDROCK SYSTEM, SBNP BEDROCK WELL OR PIEZOMETER INDICATES THE PRESENCE OF NAPL OUTSIDE THE PREVIOUSLY-DEFINED BEDROCK NAPL PLUME, OCC

WILL:

* WITHIN 30 DAYS THEREAFTER, MODIFY THE OPERATION OF THE PROTOTYPE BEDROCK SYSTEM AND/OR INSTALL ADDITIONAL WELLS, IF NECESSARY, SUBJECT TO THE GOVERNMENTAL PARTIES APPROVAL, TO CONTAIN NAPL, UNLESS THE SOURCE OF THE NAPL IS DEMONSTRATED NOT TO BE FROM THE S-AREA NAPL PLUME. HOWEVER, FOLLOWING OCC'S SUBMISSION OF THE FINAL DESIGN FOR THE BEDROCK RRT SYSTEM PER SECTION 4.5.1., AND UNTIL IMPLEMENTATION OF THE BEDROCK RRT SYSTEM, THE RESPONSE ACTIONS TRIGGERED BY THE SBNP UNDER THIS SUBSECTION 4.4.1.91 SHALL BE LIMITED TO OPERATIONAL MODIFICATIONS (AS DEFINED IN SUBSECTION 5.1.1).

* FOLLOWING IMPLEMENTATION OF THE ABOVE ACTION(S), ADJUST THE MONITORING PROGRAM, AS APPROPRIATE, TO ASSESS THE EFFECTIVENESS OF THE MODIFIED REMEDIAL SYSTEM.

* UTILIZE DATA COLLECTED FROM THE ADJUSTED MONITORING PROGRAM IN DESIGNING OF PHASE III - BEDROCK RRT SYSTEM PER SECTION 4.5.1.

B2. SHALLOW BEDROCK HYDRAULIC MONITORING PROGRAM:

(A) MONITORING OBJECTIVE: THE OBJECTIVE OF THE SHALLOW BEDROCK HYDRAULIC MONITORING PROGRAM (SBHP) IS TO EVALUATE THE EFFECTIVENESS OF THE PROTOTYPE BEDROCK SYSTEM IN MAINTAINING AN INWARD GRADIENT ACROSS THE AREA BOUNDARY OF THE S-AREA SHALLOW BEDROCK NAPL PLUME.

(B) PROGRAM IMPLEMENTATION:

1. SBHP MONITORING WILL UTILIZE THE FOLLOWING WELLS:

* 12 SHALLOW BEDROCK PIEZOMETER PAIRS TO BE INSTALLED AROUND THE AREAL BOUNDARY OF THE SHALLOW BEDROCK NAPL PLUME:

* EACH PAIR SPACED NO MORE THAN 400 FEET APART;

* INNER WELL OF EACH PAIR WITHIN AND NO MORE THAN 100 FEET FROM THE AREAL BOUNDARY OF THE SHALLOW BEDROCK NAPL PLUME.

* SELECTED S-AREA AND NIAGARA PLANT SHALLOW BEDROCK WELLS AVAILABLE FOR SBHP MONITORING WILL BE UTILIZED FOR SBHP MONITORING, AS APPROPRIATE.

2. FOLLOWING THE PROTOTYPE BEDROCK SYSTEM INSTALLATION AND UNTIL HYDRAULIC STABILIZATION (AS DEFINED IN SECTION 4.4.1.A3.), THE FOLLOWING MONITORING OF THE PROTOTYPE BEDROCK SYSTEM WILL BE CONDUCTED:

* WATER LEVELS WILL BE MEASURED WEEKLY IN ALL BEDROCK PIEZOMETER PAIRS AND SELECTED EXISTING SHALLOW BEDROCK WELLS.

* CONTINUOUS WATER LEVEL MEASUREMENTS WILL BE TAKEN ON TWO WELL PAIRS (LOCATIONS TO BE CHANGED FROM TIME TO TIME).

* HYDRAULIC DATA AND PUMPING RATES FROM BEDROCK PURGE WELLS WILL BE EVALUATED QUARTERLY, AND PUMPING RATES WILL BE MODIFIED, AS APPROPRIATE, AT THAT TIME.

3. AFTER HYDRAULIC STABILIZATION FOLLOWING INSTALLATION OF THE PROTOTYPE BEDROCK SYSTEM, OR AFTER HYDRAULIC STABILIZATION FOLLOWING ANY MODIFICATION TO THE SYSTEM OR ITS OPERATION, THE FOLLOWING SBHP MONITORING WILL BE CONDUCTED, AND WILL CONTINUE UNTIL IMPLEMENTATION OF THE SBHP FOR THE BEDROCK RRT SYSTEM:

* WATER LEVELS IN ALL PAIRED PIEZOMETERS WILL BE MEASURED AT LEAST WEEKLY FOR 12 MONTHS AFTER THE INITIAL HYDRAULIC STABILIZATION AND THEN THE MONITORING FREQUENCY WILL BE ASSESSED.

* ONLY PIEZOMETER PAIRS WILL BE MONITORED, UNLESS RESPONSE ACTION CRITERIA FROM ANY MONITORING PROGRAM (TRACER, CHEMICAL, OR HYDRAULIC) ARE TRIGGERED, IN WHICH CASE OTHER WELLS IN THE AFFECTED AREA ALSO WILL BE MONITORED.

(C) RESPONSE ACTIONS:

1. IF, AFTER HYDRAULIC STABILIZATION, THE MONTHLY AVERAGE OF THE WATER LEVEL ELEVATION DIFFERENCE BETWEEN ANY PIEZOMETER PAIR IS LESS THAN 0.1 FOOT (INWARD GRADIENT), OCC WILL WITHIN 30 DAYS MODIFY THE OPERATION OF THE PROTOTYPE BEDROCK SYSTEM AND/OR INSTALL ADDITIONAL WELLS, IF NECESSARY, SUBJECT TO THE GOVERNMENTAL PARTIES APPROVAL, TO ACHIEVE THE SPECIFIED INWARD GRADIENT. NOTHING IN THIS SUBSECTION 4.4.1.B2 SHALL REQUIRE THE INSTALLATION OF ADDITIONAL WELLS AFTER THE FIRST 12 MONTHS OF OPERATION OF THE PROTOTYPE BEDROCK SYSTEM.

2. AFTER IMPLEMENTATION OF THE ABOVE ACTION(S), ONLY THE AREA AFFECTED BY THE MODIFICATION WILL BE EVALUATED TO DETERMINE WHEN HYDRAULIC STABILIZATION OCCURS, ALTHOUGH MONITORING WILL CONTINUE IN ALL AREAS.

B3. TRACER MONITORING:

(A) APL TRACER DISPERSION TESTING PROGRAM:

I. OBJECTIVE:

THE OBJECTIVE OF THE TRACER DISPERSION TEST IS TO COLLECT INFORMATION (INCLUDING GROUNDWATER VELOCITY, TRACER CONCENTRATION PROFILES AT RECEIVING WELLS AND BEDROCK POROSITY) FOR USE IN ASSESSING THE FEASIBILITY OF AN APL TRACER MONITORING PROGRAM AND, IF FEASIBLE, FOR DESIGNING A TRACER MONITORING PROGRAM FOR THE BEDROCK RRT SYSTEM.

2. PROGRAM IMPLEMENTATION:

(I) THE TRACER DISPERSION TEST WILL BE CONDUCTED AS FOLLOWS:

* PERFORM PROMPTLY FOLLOWING THE INSTALLATION OF THE BEDROCK PURGE WELL SELECTED FOR THE TEST.

* INJECT A WATER SOLUBLE TRACER (TRACER I) INTO A SHALLOW BEDROCK WELL TO BE INSTALLED IN THE NORTHERN PORTION OF THE EXISTING BEDROCK NAPL PLUME, 100 FEET SOUTHEAST OF THE BEDROCK PURGE WELL TO BE USED FOR THE TEST.

* SELECT TRACER I WHICH SATISFIES THE FOLLOWING CRITERIA: A CHEMICAL WHICH IS HIGHLY SOLUBLE IN WATER, UNLIKELY TO HAVE SIGNIFICANT CHEMICAL OR PHYSICAL INTERACTION WITH THE BEDROCK, AND IS READILY CAPABLE OF INTERFERENCE-FREE DETECTION USING GENERALLY ACCEPTED ANALYTICAL METHODS.

* TAKE AND ANALYZE APL SAMPLES FOR TRACER I FROM SIX SHALLOW BEDROCK WELLS (OW-225, OW-230, OW-231, OW-232, OW-233, AND BEDROCK RRT PURGE WELL USED FOR TEST).

* BASE THE INITIAL SAMPLING FREQUENCY FOR EACH WELL ON ESTIMATED TRAVEL TIME FROM THE INJECTION POINT TO THE WELL.

* CONTINUE SAMPLING UNTIL THE FIRST OF THE FOLLOWING THREE CONDITIONS OCCURS:

* THE CONCENTRATION OF TRACER I IN EACH OF THE TARGET WELLS HAS FALLEN TO 50 PERCENT OF THE PEAK CONCENTRATION MEASURED IN THAT WELL; OR

* THE START OF THE PUMPING TEST DESCRIBED IN (II) BELOW; OR

* ONE YEAR AFTER INJECTION, IF TRACER I IS DETECTED IN ANY

TARGET WELL WITHIN THREE MONTHS OF INJECTION OR BEFORE THE START OF THE PUMPING TEST (SEE (II) BELOW).

(II) THE PUMPING TEST WILL BE CONDUCTED AS FOLLOWS:

* PERFORM IF TRACER I IS NOT DETECTED IN ANY TARGET WELL WITHIN THREE MONTHS OF INJECTION.

* PERFORM AFTER INJECTION OF THE ADDITION OF TRACER I OR INJECTION OF A SECOND TRACER (TRACER IA) IF USE OF TRACER IA IS DEMONSTRATED BY OCC OR THE GOVERNMENTAL PARTIES TO BE PRACTICABLE.

* THE DURATION OF WELL PUMPING WILL BE FIVE TIMES THE ESTIMATED TRAVEL TIME FROM THE INJECTION POINT TO THE BEDROCK PURGE WELL UNDER PUMPING CONDITIONS.

* APL SAMPLES FROM THE BEDROCK PURGE WELL USED FOR THE TEST WILL BE TAKEN AND ANALYZED FOR TRACER I OR TRACER IA AT A FREQUENCY TO BE DETERMINED PRIOR TO THE START OF WELL PUMPING.

(III) THE FOLLOWING PERFORMANCE CRITERIA FOR THE TRACER DISPERSION TEST WILL BE UTILIZED:

* PERFORMANCE "SUCCESSFUL" IF TRACER I IS DETECTED IN A TARGET WELL BEFORE THE START OF THE PUMPING TEST.

* PERFORMANCE "UNSUCCESSFUL" IF TRACER I OR IA IS NOT DETECTED IN ANY TARGET WELL BEFORE OR DURING THE PUMPING TEST.

* IF TRACER I OR 1A IS DETECTED DURING, BUT NOT BEFORE THE PUMPING TEST, OCC WILL SUBMIT A REPORT TO THE GOVERNMENTAL PARTIES ASSESSING WHETHER APL TRACER MONITORING IS APPROPRIATE FOR THE BEDROCK RRT SYSTEM.

(B) NAPL TRACER MONITORING PROGRAM:

II. MONITORING OBJECTIVE: THE OBJECTIVES OF THE NAPL TRACER MONITORING PROGRAM (NTP) ARE AS FOLLOWS:

* DURING THE FIRST STAGE OF THE PROGRAM, TO COLLECT INFORMATION ON THE VOLUME AND VELOCITY OF SOUTHWARD NAPL PLUME MIGRATION ACROSS THE LINE OF NAPL RECOVERY WELLS IMMEDIATELY NORTH OF THE NIAGARA RIVER, AS SHOWN ON FIGURE 2, PRIOR TO THE INSTALLATION AND OPERATION OF THE PROTOTYPE BEDROCK SYSTEM, AND;

* DURING THE SECOND STAGE OF THE PROGRAM, TO COLLECT INFORMATION TO ASSIST IN EVALUATING THE EFFECTIVENESS OF THE PROTOTYPE BEDROCK SYSTEM IN CONTAINING SOUTHWARD NAPL PLUME MIGRATION ACROSS THE LINE OF NAPL RECOVERY WELLS IMMEDIATELY NORTH OF THE NIAGARA RIVER, AS SHOWN ON FIGURE 2.

2. PROGRAM IMPLEMENTATION:

(I) DURING THE FIRST STAGE OF THE PROGRAM, NTP MONITORING WILL BE CONDUCTED AS FOLLOWS:

* MONITORING WILL BE INITIATED AS SOON AS POSSIBLE

* OCC WILL SELECT A HYDROPHOBIC TRACER (TRACER II), MIX IT WITH S-AREA NAPL, AND INJECT THIS MIXTURE INTO WELLS OW-244 AND OW-245.

* APL AND NAPL FROM FOUR NAPL RECOVERY WELLS AND FROM FIVE SHALLOW BEDROCK MONITORING WELLS ALONG THE NIAGARA RIVER WILL BE SAMPLED AND ANALYZED SEMI-ANNUALLY FOR TWO YEARS AFTER INJECTION, AND ANNUALLY THEREAFTER, UNTIL HYDRAULIC STABILIZATION FOLLOWING INSTALLATION OF THE PROTOTYPE BEDROCK SYSTEM.

(II) DURING THE SECOND STAGE OF THE PROGRAM, NTP MONITORING WILL BE CONDUCTED AS FOLLOWS:

* PROGRAM WILL BE INITIATED PROMPTLY AFTER HYDRAULIC STABILIZATION FOLLOWING THE PROTOTYPE BEDROCK SYSTEM INSTALLATION.

* AN APPROPRIATE SECOND TRACER (TRACER 11A) WILL BE INJECTED INTO WELLS OW-244 AND OW-245.

* NAPL WILL BE SAMPLED AND ANALYZED FOR TRACER 11A FROM APPROPRIATE BEDROCK PURGE/RECOVERY WELLS AND BEDROCK MONITORING WELLS SEMI-ANNUALLY FOR TWO YEARS AFTER INJECTION AND ANNUALLY THEREAFTER.

* TRACER 11A WILL BE REPLENISHED BY ADDITIONAL INJECTIONS OVER TIME, AS APPROPRIATE.

* MONITORING FOR TRACER II IN APL AND NAPL FROM WELLS ALONG THE RIVER WILL CONTINUE AFTER HYDRAULIC STABILIZATION, IN PARALLEL WITH THE MONITORING FOR TRACER 11A IN NAPL FROM THESE AND OTHER APPROPRIATE WELLS.

* THE RESULTS OF THE MONITORING WILL BE SUBMITTED ANNUALLY TO THE GOVERNMENTAL PARTIES.

(C) RESPONSE ACTIONS: IF NAPL SAMPLING AND

ANALYSIS INDICATE THE PRESENCE OF TRACER II AND/OR TRACER 11A IN NONPUMPING WELLS ADJACENT TO THE RIVER, OCC WILL WITHIN 30 DAYS SUBMIT TO THE GOVERNMENTAL PARTIES A REPORT ASSESSING WHAT MODIFICATIONS TO THE OPERATION OF THE PROTOTYPE BEDROCK SYSTEM AND/OR INSTALLATION OF ADDITIONAL WELLS ARE NECESSARY TO CONTAIN SOUTHWARD NAPL PLUME MIGRATION ACROSS THE LINE OF NAPL RECOVERY WELLS IMMEDIATELY NORTH OF THE NIAGARA RIVER, AS SHOWN ON FIGURE 2. NOTHING IN THIS SUBSECTION 4.4.1.93(B) SHALL REQUIRE INSTALLATION OF ADDITIONAL WELLS AFTER THE FIRST 24 MONTHS OF OPERATION OF THE PROTOTYPE BEDROCK SYSTEM.

FOLLOWING IMPLEMENTATION OF THE ABOVE ACTION(S), OCC WILL ADJUST THE MONITORING PROGRAM, AS APPROPRIATE, TO ASSESS THE EFFECTIVENESS OF THE MODIFIED REMEDIAL SYSTEM.

B4. BASELINE CHEMICAL MONITORING:

(A) MONITORING OBJECTIVE: THE OBJECTIVE OF THE BASELINE CHEMICAL MONITORING IS TO COLLECT INFORMATION FOR USE IN DESIGNING THE SHALLOW BEDROCK CHEMICAL MONITORING PROGRAM (SBCP) FOR THE BEDROCK RRT SYSTEM.

(B) PROGRAM IMPLEMENTATION:

1. BASELINE CHEMICAL MONITORING AND SBCP MONITORING WILL BE CONDUCTED ON WELLS WITHIN THE UPPER 30 FEET OF THE BEDROCK SELECTED FROM THREE CONCENTRIC "RINGS," INCLUDING:

* AN OUTER RING CONSIDERABLY BEYOND THE S-AREA BEDROCK NAPL PLUME AND INSIDE THE FMP WELLS (OUTSIDE THE INFLUENCE OF BEDROCK RRT SYSTEM AND, IF TECHNICALLY PRACTICABLE, OUTSIDE ANY CHEMICAL PLUMES);

* A MIDDLE RING BEYOND THE BEDROCK NAPL PLUME AREAL BOUNDARY (I.E WITHIN THE S-AREA APL PLUME BUT OUTSIDE THE NAPL PLUME), WITH APPROXIMATELY EQUAL NUMBERS OF WELLS IMMEDIATELY ADJACENT TO AND SOMEWHAT REMOVED FROM THE AREAL BOUNDARY OF THE NAPL PLUME;

* AN INNER RING WITHIN THE S-AREA BEDROCK NAPL PLUME;

EXISTING WELLS AND WELLS INSTALLED FOR OTHER MONITORING PROGRAMS WILL BE USED WHEREVER FEASIBLE; HOWEVER, INSTALLATION OF UP TO EIGHT NEW SHALLOW BEDROCK MONITORING WELLS MAY BE NECESSARY.

2. SBCP BASELINE MONITORING WILL BE CONDUCTED AS FOLLOWS:

* MONITORING WILL BEGIN IN ACCORDANCE WITH THE RRT SCHEDULE.

* APL SAMPLES FROM FOUR INNER RING, EIGHT MIDDLE RING, AND FOUR OUTER RING WELLS WILL BE COLLECTED QUARTERLY FOR TWO YEARS, AND SEMI-ANNUALLY THEREAFTER UNTIL THE START OF SBCP MONITORING FOLLOWING HYDRAULIC STABILIZATION OF THE BEDROCK RRT SYSTEM.

* SAMPLES WILL BE ANALYZED FOR TOX AND BASELINE PARAMETERS.

4.4.2 PROTOTYPE BEDROCK SYSTEM (INTERMEDIATE AND DEEP BEDROCK ZONES)

A. REMEDIAL SYSTEM:

A1. REFINEMENT OF NAPL PLUME BOUNDARY: IN ORDER TO DESIGN THE PROTOTYPE BEDROCK SYSTEM FOR THE BEDROCK ZONES BENEATH THE SHALLOW BEDROCK, THE EXTENT OF THE NAPL PLUME ON THE EASTERN PORTION OF THE SITE WILL BE DEFINED BY INSTALLING A SUPPLEMENTAL BORING ABOUT 250 FEET WEST OF THE CWTP PUMP STATION. THE SUPPLEMENTAL BORING WILL BE INSTALLED TO THE TOP OF THE GASPORT FORMATION USING THE SAME PROTOCOLS SPECIFIED FOR CONDUCTING PRIOR SURVEY ACTIVITIES (JUDGMENT, ADDENDUM I, PARAGRAPH B).

FOLLOWING INSTALLATION, THE SUPPLEMENTAL BORING WILL BE GROUTED IF OCC CONCLUDES AND THE GOVERNMENTAL PARTIES AGREE THAT IT IS INAPPROPRIATE TO USE THIS BORING IN CONJUNCTION WITH THE MONITORING PROGRAMS DESCRIBED IN SECTION 4.5.2.

A2. SYSTEM DESIGN AND INSTALLATION: BASED ON DATA GENERATED BY THE REFINEMENT OF THE NAPL PLUME BOUNDARY AND OTHER AVAILABLE DATA, THE PROTOTYPE BEDROCK SYSTEM FOR THE INTERMEDIATE AND DEEP ZONES WILL BE INSTALLED AS FOLLOWS:

* FOUR PURGE/RECOVERY WELLS WILL BE INSTALLED, TWO IN EACH OF THE INTERMEDIATE AND DEEP ZONES (MAXIMUM DEPTH TO TOP OF GASPORT FORMATION).

* IF NAPL HAS BEEN FOUND IN THE SUPPLEMENTAL BORING INSTALLED IN THE INTERMEDIATE/DEEP ZONES, A THIRD PURGE/RECOVERY WELL WILL BE INSTALLED IN EACH ZONE WHERE NAPL WAS SO DETECTED.

A3. SYSTEM EVALUATION: THE FOLLOWING ACTIONS WILL BE TAKEN TO EVALUATE THE CAPABILITY OF THE PROTOTYPE BEDROCK SYSTEM IN ATTAINING THE OBJECTIVES SET FORTH IN SUBSECTION 4.1.

* SIX MONITORING WELLS/PIEZOMETER WILL BE INSTALLED IN EACH OF THE INTERMEDIATE AND DEEP ZONES (12 WELLS) OUTSIDE ANY EXISTING NAPL PLUME. THE WELLS IN THE DEEP ZONES SHALL BE INSTALLED TO THE TOP OF THE ROCHESTER FORMATION.

* EACH PURGE WELL IN THE PROTOTYPE BEDROCK SYSTEM WILL BE PUMPED AT THE MAXIMUM RATE ACHIEVABLE (TO A MAXIMUM 20 GAL/MIN.) FOR A DURATION OF 48 HOURS. PUMPING RATES AND WATER ELEVATIONS IN THE PUMP TEST WELLS AND MONITORING WELLS/PIEZOMETERS WILL BE RECORDED AND EVALUATED.

* BASED ON THE DATA GENERATED BY THE INDIVIDUAL PUMP TESTING, THE ENTIRE SYSTEM, INCLUDING THE INDIVIDUAL PURGE WELLS, WILL BE ASSESSED TO DETERMINE IF IT IS CAPABLE OF CREATING AN INWARD GRADIENT ACROSS THE AREAL BOUNDARY OF THE BEDROCK NAPL PLUME.

B. INTERMEDIATE/DEEP HYDRAULIC EVALUATION PROGRAM:

B1. OBJECTIVE: THE OBJECTIVE OF THE INTERMEDIATE/DEEP ZONES HYDRAULIC EVALUATION PROGRAM (IDHP) IS TO COLLECT HYDRAULIC DATA FOR USE IN DESIGNING THE INTERMEDIATE/DEEP COMPONENTS OF THE BEDROCK RRT SYSTEM AND DESIGNING THE HYDRAULIC MONITORING PROGRAM FOR THAT SYSTEM.

B2. PROGRAM IMPLEMENTATION:

(A) BASED ON PUMP TEST RESULTS, PUMPING RATES WILL BE SET TO MAXIMIZE NAPL/APL CONTAINMENT AND NAPL RECOVERY. PUMPING RATES WILL BE MEASURED AND WATER ELEVATIONS WILL BE TAKEN IN PURGE/RECOVERY WELLS.

INWARD GRADIENT MONITORING WILL BE PERFORMED.

(B) OCC WILL ALSO MEASURE WATER ELEVATIONS IN SIX OBSERVATION WELLS IN THE INTERMEDIATE ZONE AND IN SIX OBSERVATION WELLS IN THE DEEP ZONE AND IN SELECTED, THEN-EXISTING WELLS LOCATED IN THESE ZONES WITHIN 1000 FEET OF THE LANDFILL SITE. THESE WELLS WILL BE INSTALLED DURING PHASE II AND MONITORED IMMEDIATELY FOLLOWING INSTALLATION. THIS MONITORING SHALL INCLUDE:

* MONTHLY FREQUENCY;

* TWO CONTINUOUS DIGITAL RECORDERS INSTALLED, ONE IN THE INTERMEDIATE ZONE AND ONE IN THE DEEP ZONE;

* REASSESSMENT AFTER TWO YEARS.

B3. PROGRAM EVALUATION: FIVE YEARS AFTER PROGRAM INITIATION, OCC WILL SUBMIT TO THE GOVERNMENTAL PARTIES A REPORT ASSESSING THE PUMP TEST RESULTS AND ALL THE HYDRAULIC DATA COLLECTED TO DATE PURSUANT TO THE HYDRAULIC EVALUATION PROGRAM. THIS ASSESSMENT WILL BE USED TO DESIGN A FINAL HYDRAULIC MONITORING PROGRAM FOR THE INTERMEDIATE/DEEP BEDROCK ZONES PURSUANT TO SECTION 4.5.2.9, INFRA.

4.5 PHASE III - BEDROCK RRT SYSTEM (SHALLOW BEDROCK, INTERMEDIATE/DEEP ZONES)

4.5.1 REMEDIAL SYSTEM

A. THE BEDROCK RRT SYSTEM WILL BE DESIGNED AND INSTALLED IN THE SHALLOW BEDROCK AND INTERMEDIATE/DEEP ZONES BASED ON THE DATA GENERATED FROM THE PHASE I INITIAL TESTING PROGRAM AND PHASE II PROTOTYPE BEDROCK SYSTEM. EVALUATION OF THAT DATA BASE TO DETERMINE WHETHER THERE ARE SUFFICIENT DATA TO COMPLETE FINAL BEDROCK SYSTEM DESIGN WILL OCCUR ONE YEAR AFTER START-UP OF THE PROTOTYPE BEDROCK SYSTEM. OCC WILL SUBMIT A REPORT TO THE GOVERNMENTAL PARTIES ASSESSING WHETHER THE DATA ARE SUFFICIENT FOR THIS PURPOSE. IF OCC AND THE GOVERNMENTAL PARTIES AGREE THAT THE DATA ARE SUFFICIENT FOR THE FINAL DESIGN, OCC WILL SUBMIT A FINAL BEDROCK RRT SYSTEM DESIGN WITHIN 90 DAYS THEREAFTER. IF OCC AND THE GOVERNMENTAL PARTIES AGREE THAT THE DATA ARE NOT SUFFICIENT, THE ADDITIONAL DATA TO BE COLLECTED WILL BE IDENTIFIED BY OCC AND THE GOVERNMENTAL PARTIES AND WILL BE COLLECTED BY OCC. A RE-EVALUATION OF THE DATA BASE WILL BE MADE EVERY SIX MONTHS. TWENTY-FOUR MONTHS FOLLOWING STARTUP OF THE PROTOTYPE BEDROCK SYSTEM, SUFFICIENT DATA WILL BE DEEMED TO HAVE BEEN COLLECTED AND A FINAL DESIGN WILL BE SUBMITTED BY OCC TO THE GOVERNMENTAL PARTIES WITHIN 60 DAYS THEREAFTER. FOLLOWING APPROVAL OF FINAL DESIGN BY THE GOVERNMENTAL PARTIES, OCC WILL INSTALL, OPERATE, MONITOR AND MAINTAIN THE BEDROCK RRT SYSTEM TO ATTAIN SYSTEM DESIGN AND REMEDIAL OBJECTIVES.

B. THE DESIGN OF THE BEDROCK RRT SYSTEM MAY MODIFY AMONG OTHER THINGS, THE NUMBER OF WELLS, PUMPING RATES AND WELL LOCATIONS USED IN THE PROTOTYPE BEDROCK SYSTEM. THE DESIGN MAY ALSO CONSIDER INSTALLATION OF A BEDROCK GROUT CURTAIN ALONG THE EDGE OF THE RIVER. THE DESIGN FOR THE BEDROCK RRT SYSTEM SHALL INCLUDE A MONITORING PROGRAM AS PER SECTION 4.5.2. HOWEVER, UNDER THE BEDROCK RRT SYSTEM DESIGN, OCC WILL NOT BE REQUIRED TO INSTALL PURGE/RECOVERY WELLS IN THE DEEP ZONE BELOW THE TOP OF THE GASPORT FORMATION UNLESS DATA IS COLLECTED SHOWING NAPL BELOW THE GASPORT FORMATION.

4.5.2 MONITORING PROGRAMS

A. NAPL MONITORING:

A1. SHALLOW BEDROCK NAPL MONITORING:

(A) MONITORING OBJECTIVE: THE OBJECTIVE OF SHALLOW BEDROCK NAPL MONITORING PROGRAM (SBNP) IS TO EVALUATE THE EFFECTIVENESS OF THE BEDROCK RRT SYSTEM IN ATTAINING ITS OBJECTIVES AS SET FORTH IN SECTION 1.0.

(B) PROGRAM IMPLEMENTATION:

1. THE SBNP TO MONITOR NAPL RECOVERY BY THE BEDROCK RRT SYSTEM WILL BE DESIGNED AFTER TWO YEARS OF SBNP MONITORING OF THE PROTOTYPE BEDROCK SYSTEM.

2. THE FOLLOWING MONITORING FOR THE PRESENCE OF NAPL BEYOND THE EXISTING BEDROCK NAPL PLUME WILL BE CONDUCTED:

* MONITORING WILL BEGIN WHEN THE BEDROCK RRT SYSTEM IS INSTALLED.

* QUARTERLY FREQUENCY.

* METHOD: HAND BAILING BOTTOM OF WELL/PIEZOMETER OR PERFORMANCE EQUIVALENT.

* MONITOR EACH OUTSIDE PIEZOMETER.

* MONITOR EACH SHALLOW BEDROCK WELL WITHIN 200 FEET OF THE OUTSIDE BOUNDARY OF THE BEDROCK NAPL PLUME.

(C) RESPONSE ACTIONS:

I. RESPONSE ACTIONS WILL BE DETERMINED FOR THE SBNP MONITORING OF NAPL RECOVERY BY THE BEDROCK RRT SYSTEM BASED UPON THE DATA GENERATED FROM THE PHASE I INITIAL TESTING PROGRAM, THE PHASE II PROTOTYPE BEDROCK SYSTEM AND THE ASSOCIATED SBNP MONITORING. RESPONSE ACTIONS RELATING TO NAPL RECOVERY WILL CONSIST OF MONITORING OF THEN-EXISTING NONPUMPING WELLS TO DETERMINE IF THEY ARE CAPABLE OF PRODUCING REASONABLE AMOUNTS OF NAPL (AND THUS BECOME NAPL RECOVERY WELLS) AND, IF NECESSARY, IMPLEMENTATION OF OPERATIONAL MODIFICATIONS (AS DEFINED IN SECTION 5.1.1), SUCH AS THE INSTALLATION OF NEW NAPL RECOVERY WELLS.

2. IF SBNP MONITORING IN ANY SHALLOW BEDROCK WELL OR PIEZOMETER INDICATES THE PRESENCE OF NAPL OUTSIDE THE PREVIOUSLY-DEFINED BEDROCK NAPL PLUME, OCC WILL:

* PROCEED PURSUANT TO SECTION 5.1.1 TO DETERMINE WHAT OPERATIONAL MODIFICATIONS (AS DEFINED IN SECTION 5.1.1) TO THE BEDROCK RRT SYSTEM ARE REQUIRED TO CONTAIN NAPL, UNLESS THE SOURCE OF THE NAPL IS DEMONSTRATED NOT TO BE FROM THE S-AREA NAPL PLUME.

* FOLLOWING IMPLEMENTATION OF THE OPERATIONAL MODIFICATIONS DESCRIBED ABOVE, ADJUST MONITORING PROGRAM, AS APPROPRIATE, TO ASSESS THE EFFECTIVENESS OF THE MODIFIED REMEDIAL SYSTEM.

* IF FURTHER SBNP MONITORING INDICATES THAT ACTION DESCRIBED ABOVE IS NOT EFFECTIVE IN CONTAINING NAPL WITHIN THE NEWLY DEFINED BEDROCK NAPL PLUME, OCC SHALL PROCEED PURSUANT TO SECTION 5.1.2.

A2. INTERMEDIATE/DEEP NAPL MONITORING:

(A) MONITORING OBJECTIVE: THE OBJECTIVE OF THE INTERMEDIATE/DEEP NAPL MONITORING PROGRAM (IDNP) IS TO MONITOR THE EFFECTIVENESS OF THE BEDROCK RRT SYSTEM AT CONTAINING NAPL IN THE INTERMEDIATE AND DEEP ZONES WITHIN THE VERTICAL PROJECTION OF THE EXISTING BEDROCK NAPL PLUME.

(B) PROGRAM IMPLEMENTATION: IDNP MONITORING WILL BE CONDUCTED AS FOLLOWS:

* BEGIN MONITORING IMMEDIATELY FOLLOWING THE INSTALLATION OF THE INTERMEDIATE/DEEP ZONES HYDRAULIC EVALUATION PROGRAM OBSERVATION WELLS;

* HAND BAIL FROM SELECTED WELLS/PIEZOMETERS WITHIN 400 FEET OF THE BEDROCK NAPL PLUME IN DEEP AND INTERMEDIATE ZONES;

* ANNUAL MONITORING FREQUENCY.

(C) RESPONSE ACTIONS: IF IDNP MONITORING INDICATES THE PRESENCE OF NAPL IN ANY WELL OUTSIDE OF THE PREVIOUSLY-DEFINED NAPL PLUME IN THE INTERMEDIATE OR DEEP BEDROCK ZONES, OCC WILL TAKE RESPONSE ACTIONS AS DESCRIBED IN SECTION 4.5.2 AL.(C)(2).

B. HYDRAULIC MONITORING:

B1. SHALLOW BEDROCK HYDRAULIC MONITORING: THE OBJECTIVE OF THE SHALLOW BEDROCK HYDRAULIC MONITORING PROGRAM (SBHP) IS TO EVALUATE THE EFFECTIVENESS OF THE BEDROCK RRT SYSTEM IN MAINTAINING AN INWARD GRADIENT ACROSS THE AREAL BOUNDARY OF THE S-AREA SHALLOW BEDROCK NAPL PLUME.

A HYDRAULIC MONITORING PROGRAM FOR THE BEDROCK RRT SYSTEM WILL BE DEVELOPED FOLLOWING THE COMPLETION OF THE PROTOTYPE BEDROCK PROGRAM. FINAL MONITORING CRITERIA AND RESPONSE ACTIONS FOR THE BEDROCK RRT SYSTEM WILL BE DEVELOPED AS PART OF THE FINALIZATION OF THE BEDROCK RRT SYSTEM DESIGN.

B2. INTERMEDIATE/DEEP ZONES HYDRAULIC MONITORING: A HYDRAULIC MONITORING PROGRAM FOR THE INTERMEDIATE AND DEEP BEDROCK ZONES WILL BE ASSESSED AFTER COMPLETION OF THE IDHP PURSUANT TO SECTION 4.4.2.B, INFRA. BASED ON THE RESULTS OF THIS ASSESSMENT, OCC WILL DESIGN A HYDRAULIC MONITORING PROGRAM, INCLUDING FINAL MONITORING CRITERIA AND RESPONSE ACTIONS, AS PART OF THE BEDROCK RRT SYSTEM DESIGN.

C. CHEMICAL MONITORING:

C1. SHALLOW BEDROCK CHEMICAL MONITORING:

(A) MONITORING OBJECTIVE: THE OBJECTIVE OF THE SHALLOW BEDROCK CHEMICAL MONITORING PROGRAM (SBCP) IS TO EVALUATE, IN CONJUNCTION WITH OTHER APPLICABLE MONITORING PROGRAMS, THE EFFECTIVENESS OF THE BEDROCK RRT SYSTEM.

(B) PROGRAM IMPLEMENTATION: SBCP MONITORING FOR INDICATOR CHEMICALS WILL BE CONDUCTED AS FOLLOWS:

* UPON HYDRAULIC STABILIZATION FOLLOWING INSTALLATION OF THE BEDROCK RRT SYSTEM, INDICATOR CHEMICALS CHARACTERISTIC OF THE S-AREA LANDFILL WILL BE SELECTED BASED ON DETECTION FREQUENCY OF BASELINE PARAMETERS ANALYZED DURING BASELINE CHEMICAL MONITORING.

* THE NEED TO INCLUDE ADDITIONAL INDICATOR CHEMICALS WHICH ARE CHARACTERISTIC OF N-AREA OR OTHER PLANT SITE CHEMICALS WILL BE ASSESSED AT THIS TIME.

* MONITORING WILL BEGIN WITHIN 60 DAYS AFTER HYDRAULIC STABILIZATION OF THE BEDROCK RRT SYSTEM (SHALLOW ZONE) AND SELECTION OF INDICATOR CHEMICALS. BASELINE CHEMICAL MONITORING WILL CONTINUE UNTIL INDICATOR CHEMICALS HAVE BEEN SELECTED BY OCC AND APPROVED BY THE GOVERNMENTAL PARTIES.

* APL SAMPLES FROM SIN INNER RING, 16 MIDDLE RING, AND SIX OUTER RING WELLS WILL BE COLLECTED AND ANALYZED SEMI-ANNUALLY FOR INDICATOR CHEMICALS.

* MONITORING OF SOME OR ALL OF THE SIX INNER RING WELLS MAY BE DISCONTINUED BASED ON THE BASELINE CHEMICAL MONITORING RESULTS.

(C) RESPONSE ACTIONS:

1. OCC WILL PROCEED PURSUANT TO SECTION 5.1.1 TO DETERMINE THE NEED FOR OPERATIONAL MODIFICATIONS (AS DEFINED IN SECTION 5.1.1) TO THE SYSTEM IF:

* A STATISTICALLY SIGNIFICANT INCREASE IN SBCP INDICATOR CHEMICAL CONCENTRATIONS IN ANY ONE OR MORE MIDDLE RING WELL(S) OCCURS. "SIGNIFICANCE IS DEFINED AS AN INCREASE OF SAMPLING ROUNDS, IN THE CONCENTRATIONS OF AT LEAST ONE-HALF OF THE SBCP INDICATOR PARAMETERS WHICH ARE DETECTED IN EACH SAMPLING ROUND, WITH A CONFIDENCE LEVEL GREATER THAN 95 PERCENT.

2. IF FURTHER SBCP MONITORING INDICATES A STATISTICALLY SIGNIFICANT INCREASE IN SBCP INDICATOR CHEMICAL CONCENTRATIONS FOLLOWING IMPLEMENTATION OF OPERATIONAL MODIFICATIONS, OCC SHALL PROCEED PURSUANT TO SECTION 5.1.2.

3. THE SBCP, INCLUDING SAMPLING FREQUENCY, NUMBER OF WELLS SAMPLED, AND INDICATOR CHEMICALS ANALYZED, WILL BE REVIEWED AND THE NEED FOR SBCP MODIFICATIONS ASSESSED IF:

* OVER AN APPROPRIATE NUMBER OF SAMPLING ONE-QUARTER AND ONE-HALF OF THE SBCP PARAMETERS WHICH ARE DETECTED IN EACH SAMPLING ROUND INCREASE WITH A CONFIDENCE LEVEL GREATER THAN 95 PERCENT OR

* THE LEVEL OF TOX IN ANY WELL INCREASES WITH A CONFIDENCE LEVEL GREATER THAN 95 PERCENT ON TWO CONSECUTIVE OR THREE OF FIVE CONSECUTIVE SAMPLING EVENTS.

C2. INTERMEDIATE/DEEP ZONES CHEMICAL MONITORING PROGRAM:

(A) MONITORING OBJECTIVE: THE OBJECTIVE OF THE INTERMEDIATE/DEEP ZONES CHEMICAL MONITORING PROGRAM (IDCP) IS TO COLLECT CHEMICAL DATA IN THE INTERMEDIATE AND DEEP ZONES AND TO UTILIZE THE DATA IN DEVELOPING A FINAL CHEMICAL MONITORING PROGRAM FOR THOSE ZONES.

(B) PROGRAM IMPLEMENTATION: IDCP MONITORING WILL BE CONDUCTED AS FOLLOWS:

* FOLLOWING INSTALLATION, SAMPLE AND ANALYZE EACH WELL ONCE FOR SBCP BASELINE PARAMETERS.

* BEGIN MONITORING UPON THE START OF PHASE III (START OF OPERATION OF BEDROCK RRT SYSTEM).

* SAMPLE SIX WELLS (NEW OR EXISTING) IN EACH OF THE INTERMEDIATE AND DEEP ZONES.

* SAMPLE AND ANALYZE SEMI-ANNUALLY.

* ANALYZE SAMPLES FOR SBCP INDICATOR CHEMICALS SELECTED AS DISCUSSED ABOVE.

(C) RESPONSE ACTIONS:

FIVE YEARS AFTER INITIATION OF IDCP, OCC WILL SUBMIT A REPORT TO THE GOVERNMENTAL PARTIES ASSESSING WHETHER A CHEMICAL MONITORING PROGRAM (CMP) IN THE INTERMEDIATE AND DEEP ZONES' IS USEFUL IN EVALUATING SYSTEM PERFORMANCE. BASED ON THE RESULTS OF THAT ASSESSMENT, OCC WILL, IF APPROPRIATE, DESIGN A CMP, INCLUDING FINAL MONITORING CRITERIA, AND DEVELOP RESPONSE ACTIONS, SUBJECT TO THE GOVERNMENTAL PARTIES APPROVAL.

D. TRACER MONITORING:

D1. APL TRACER MONITORING PROGRAM:

(A) MONITORING OBJECTIVE: THE OBJECTIVE OF THE APL TRACER MONITORING PROGRAM IS TO EVALUATE, IN CONJUNCTION WITH OTHER APPLICABLE MONITORING PROGRAMS, THE PERFORMANCE OF THE BEDROCK RRT SYSTEM.

(B) PROGRAM IMPLEMENTATION: APL TRACER MONITORING WILL BE CONDUCTED AS FOLLOWS: IF THE TRACER DISPERSION TEST IS DEEMED SUCCESSFUL OR IF APL TRACER MONITORING IS DEEMED APPROPRIATE PURSUANT TO SECTION 4.4.1.B3.(A):

* APL TRACER MONITORING WILL BE INITIATED AFTER ALL PIEZOMETER PAIRS HAVE SATISFIED THE HYDRAULIC MONITORING CRITERIA (I.E, AT LEAST 0.1 FT. INWARD HEAD DIFFERENTIAL BETWEEN THE OUTER AND INNER PIEZOMETER OF EACH PAIR).

* TRACER I OR TRACER IA WILL BE INJECTED IN THE INNER PIEZOMETER OF THE PAIR WHICH DISPLAYS THE SMALLEST INWARD GRADIENT.

* APL SAMPLES WILL BE TAKEN FROM THE OUTER PIEZOMETER OF THAT PAIR AND AT OTHER APPROPRIATE BEDROCK RRT PURGE WELLS AT A FREQUENCY BASED ON THE RESULTS OF THE DISPERSION TEST.

* TRACER I OR TRACER IA WILL BE REPLENISHED BY INJECTING ADDITIONAL TRACER, AS APPROPRIATE.

TWO YEARS AFTER INITIAL INJECTION OF TRACER FOR APL MONITORING, OCC WILL INITIATE AN ASSESSMENT WHETHER ATP MONITORING IS USEFUL IN EVALUATING SYSTEM PERFORMANCE AND SUBMIT A REPORT CONTAINING THE ASSESSMENT TO THE GOVERNMENTAL PARTIES WITHIN 60 DAYS AFTER INITIATION. SUCH ASSESSMENT WILL CONSIDER CONTINUATION, MODIFICATION, AND TERMINATION OF ATP MONITORING.

(C) RESPONSE ACTIONS: IF ATP MONITORING INDICATES THE PRESENCE OF TRACER I OR TRACER IA IN AN OUTER PIEZOMETER, OCC WILL PROCEED PURSUANT TO SECTION 5.1.1. TO DETERMINE WHAT OPERATIONAL MODIFICATIONS (AS DEFINED IN SECTION 5.1.1.) ARE REQUIRED TO CONTAIN APL WITHIN THE EXISTING BEDROCK NAPL PLUME. FOLLOWING IMPLEMENTATION OF OPERATIONAL MODIFICATIONS DESCRIBED ABOVE, OCC WILL ADJUST THE MONITORING PROGRAM, AS APPROPRIATE, TO ASSESS THE EFFECTIVENESS OF THE MODIFIED REMEDIAL SYSTEM.

* FOLLOWING - OPERATIONAL MODIFICATIONS DESCRIBED ABOVE, IF ATP MONITORING AGAIN INDICATES THE PRESENCE OF TRACER I OR TRACER IA AND AT LEAST TWO YEARS HAVE ELAPSED SINCE INITIAL TRACER I OR TRACER IA INJECTION, OCC SHALL PROCEED AS PER SECTION 5.1.2.

D2. NAPL TRACER MONITORING PROGRAM:

(A) MONITORING OBJECTIVE: THE OBJECTIVE OF THE NAPL TRACER MONITORING PROGRAM (NTP) IS:

* TO COLLECT INFORMATION TO EVALUATE THE EFFECTIVENESS OF THE BEDROCK RRT SYSTEM IN CONTAINING SOUTHWARD NAPL PLUME MIGRATION ACROSS THE LINE OF NAPL RECOVERY WELLS IMMEDIATELY NORTH OF THE NIAGARA RIVER, AS SHOWN ON FIGURE 2.

(B) PROGRAM IMPLEMENTATION: NTP MONITORING WILL BE CONDUCTED AS FOLLOWS:

* THE PROGRAM DESCRIBED IN SECTION 4.4.1.B3.B(2) WILL BE CONTINUED FOLLOWING THE INSTALLATION OF THE BEDROCK RRT SYSTEM.

* THE RESULTS OF THE MONITORING WILL BE SUBMITTED ANNUALLY TO THE GOVERNMENTAL PARTIES. FIVE YEARS AFTER THE TRACER 11A INJECTION, OCC WILL SUBMIT A REPORT TO THE GOVERNMENTAL PARTIES ASSESSING WHETHER NTP MONITORING IS USEFUL IN EVALUATING SYSTEM PERFORMANCE AND WHETHER THE PROGRAM SHOULD BE CONTINUED, MODIFIED OR TERMINATED.

(C) RESPONSE ACTIONS: IF NAPL SAMPLING AND ANALYSIS INDICATE THE PRESENCE OF TRACER II OR TRACER 11A IN NON-PUMPING WELLS ADJACENT TO THE RIVER, OCC WILL PROCEED PURSUANT TO SECTION 5.1.1.

FOLLOWING IMPLEMENTATION OF THE OPERATIONAL MODIFICATIONS DESCRIBED ABOVE, OCC WILL ADJUST THE MONITORING PROGRAM, AS APPROPRIATE, TO ASSESS THE EFFECTIVENESS OF THE MODIFIED REMEDIAL SYSTEM. IF FURTHER NTP MONITORING INDICATES THAT THE OPERATIONAL MODIFICATIONS DESCRIBED ABOVE ARE NOT EFFECTIVE IN CONTAINING SOUTHWARD NAPL PLUME MIGRATION ACROSS THE LINE OF WELLS IMMEDIATELY NORTH OF THE NIAGARA RIVER, AS SHOWN ON FIGURE 2, OCC WILL PROCEED PURSUANT TO SECTION 5.1.2.

E. ENVIRONMENTAL MONITORING PROGRAM

E1. MONITORING OBJECTIVE: THE OBJECTIVE OF THE ENVIRONMENTAL MONITORING PROGRAM (EMP) IS TO EVALUATE THE EFFECTIVENESS OF THE BEDROCK RRT SYSTEM IN PROTECTING HUMAN HEALTH AND THE ENVIRONMENT FROM ENDANGERMENT BY CHEMICAL MIGRATION FROM THE LANDFILL SITE.

E2. PROGRAM IMPLEMENTATION:

(A) PLANS AND SPECIFICATIONS FOR THE INSTALLATION OF THE EMP WELLS WILL BE SUBMITTED TO THE GOVERNMENTAL PARTIES IN CONJUNCTION WITH THE BEDROCK RRT SYSTEM DESIGN.

(B) EIGHT EMP WELLS WILL BE INSTALLED IN THE SHALLOW BEDROCK ZONE IN AN AREA EXTENDING FROM WEST TO NORTHEAST OF THE LANDFILL SITE AND LOCATED BEYOND THE GROUNDWATER CAPTURE ZONE OF THE BEDROCK RRT SYSTEM. (SEE FIGURE 5.)

(C) FOLLOWING HYDRAULIC STABILIZATION OF THE BEDROCK RRT SYSTEM, SAMPLES WILL BE COLLECTED QUARTERLY FROM THE WELLS AND ANALYZED.

(D) GROUNDWATER FLOW WILL BE CALCULATED BASED ON QUARTERLY ELEVATION DATA GATHERED FROM THE EMP WELLS. AS NECESSARY, PIEZOMETERS OR OTHER WELLS WILL BE USED TO SUPPLEMENT THE WELLS FOR THE PURPOSE OF CALCULATING GROUNDWATER FLOW HYDRAULIC DATA.

(E) THE COLLECTED DATA WILL BE USED TO CALCULATE THE AVERAGE GROUNDWATER CONCENTRATION IN THE MONITORED AQUIFER FOR EACH EMP PARAMETER ON A QUARTERLY BASIS, AS FOLLOWS:

* THE SAMPLES COLLECTED FROM THE EIGHT EMP WELLS WILL BE ANALYZED FOR THE PARAMETERS LISTED IN SUBPARAGRAPH (F). EMP PARAMETERS NOT DETECTED WILL BE ASSIGNED A VALUE OF ONE-HALF THE DETECTION LEVEL FOR THAT SAMPLING PERIOD IF DURING SUCH SAMPLING THE PARAMETER IS DETECTED IN A SAMPLE FROM ANY OF THE EIGHT WELLS; OTHERWISE, IT WILL BE ASSIGNED A VALUE OF ZERO.

* THE GROUNDWATER FLOW WEIGHTED AVERAGE AQUIFER CONCENTRATION (AAC) OF EACH EMP PARAMETER IDENTIFIED IN THE MONITORED AQUIFER WILL THEN BE CALCULATED.

(F) FOR THE PURPOSES OF THE EMP, THE FOLLOWING ACTION LEVELS WILL BE APPLICABLE:

EMP PARAMETER	ACTION LEVEL (PPB)
1,1-DICHLOROETHYLENE	5
ENDOSULFAN	10
HEXACHLOROCYCLOHEXANE (EACH ISOMER)	7
2,3,7,8 TCDD EQUIVALENTS	0.0005
HEXCHLOROBENZENE	7
MIREX (C10 CL12)	7
TETRACHLOROETHYLENE	5

E3. RESPONSE ACTIONS:

(A) IF THE AAC LEVEL CALCULATED PER SUBPARAGRAPH E2(E) EXCEEDS THE EMP ACTION LEVEL FOR THE SAME EMP PARAMETER FOR TWO CONSECUTIVE QUARTERS, OCC WILL, WITHIN 30 DAYS THEREAFTER, SUBMIT A REPORT TO THE GOVERNMENTAL PARTIES ASSESSING WHAT OPERATIONAL MODIFICATIONS (AS DEFINED IN SECTION 5.1.1), IF ANY, ARE REQUIRED TO REDUCE THE AAC LEVELS FOR THOSE PARAMETERS.

(B) IF FURTHER EMP MONITORING INDICATES THAT THE OPERATIONAL MODIFICATIONS UNDERTAKEN PURSUANT TO (A) WERE INEFFECTIVE IN REDUCING THE AAC LEVEL(S) BELOW THE INDICATED EMP ACTION LEVEL(S), OCC WILL PROCEED PURSUANT TO SECTION 5.1.2.

(C) WITH RESPECT TO HEXACHLOROCYCLOHEXANE AND TETRACHLOROETHYLENE, RESPONSE ACTIONS UNDER THIS SUBPARAGRAPH E3 NEED NOT BE UNDERTAKEN UNLESS THE TOTAL CHEMICAL FLUX OF ALL EMP PARAMETERS EXCEEDS A CALCULATED RESPONSE ACTION FLUX LEVEL. THIS RESPONSE ACTION FLUX LEVEL WILL BE CALCULATED AS THE SUM OF THE EMP ACTION LEVELS TIMES THE TOTAL MONITORED AQUIFER FLOW. THE TOTAL CHEMICAL FLUX WILL BE CALCULATED AS THE PRODUCT OF THE AAC, CALCULATED PURSUANT TO SUBPARAGRAPH E2(E), AND THE TOTAL MONITORED AQUIFER FLOW.

(D) THE EMP WILL CONTINUE UNLESS OR UNTIL IT IS SUPERSEDED BY APPLICABLE NIAGARA PLANT MONITORING PROGRAMS.

5.0 REMEDIAL SYSTEM - RESPONSE ACTIONS REASSESSMENTS, ETC.

5.1 PROCEDURES REGARDING RESPONSE ACTIONS

SECTIONS 2.0, 3.0, AND 4.0 ABOVE SET FORTH THE REMEDIAL SYSTEMS SELECTED TO ADDRESS THE ENVIRONMENTAL CONDITIONS IDENTIFIED AT THE LANDFILL SITE. THE MONITORING PROGRAMS SELECTED FOR THESE REMEDIAL SYSTEMS, AS DESCRIBED IN SECTIONS 2.0 AND 4.0, ARE INTENDED TO DETERMINE WHETHER THE OBJECTIVES OF THESE REMEDIAL SYSTEMS ARE BEING MET AND WHETHER RESPONSE ACTIONS ARE REQUIRED.

THE FOLLOWING IS THE PROCESS WHICH THE PARTIES HAVE AGREED TO FOLLOW IF A RESPONSE ACTION IS TRIGGERED BY THE MONITORING PROGRAMS.

5.1.1 OPERATIONAL MODIFICATIONS

A. "OPERATIONAL MODIFICATIONS" ARE DEFINED TO CONSIST' OF UPGRADING EXISTING EQUIPMENT, CHANGES IN OPERATING PUMPING RATES OF EXISTING WELLS, AND INSTALLATION OF NEW WELLS OR OTHER EQUIPMENT IN ORDER TO ATTAIN THE OBJECTIVES OF THE REMEDIAL SYSTEM BEING MONITORED. OPERATIONAL MODIFICATIONS' SHALL BE CONSISTENT WITH GOOD ENGINEERING PRACTICE.

OPERATIONAL MODIFICATIONS DO NOT INCLUDE: (I) ACTIONS WHICH EXCEED THE "MAXIMUM" MODIFICATIONS PURSUANT TO SECTION 5.1.1.B, OR (II) IF SUCH MAXIMUMS HAVE NOT BEEN ESTABLISHED, ACTIONS WHICH SIGNIFICANTLY ALTER THE BASIC FEATURES OF THE INITIALLY INSTALLED REMEDIAL SYSTEM' OR ASSOCIATED TREATMENT OR STORAGE FACILITIES WITH RESPECT TO SCOPE OR COST.

B. OCC SHALL PROPOSE, AS PART OF THE DESIGN OF THE SITE CONTAINMENT SYSTEM, THE OVERBURDEN RRT SYSTEM, AND THE BEDROCK RRT SYSTEM, SPECIFIED MAXIMUM MODIFICATIONS TO THAT' SYSTEM (E.G., MAXIMUM NUMBER OF ADDITIONAL WELLS OR MAXIMUM INCREASE IN PUMPING RATES) WHICH CONSTITUTE OPERATIONAL MODIFICATIONS. OCC AND EPA/STATE SHALL, PRIOR TO APPROVAL OF THE DESIGN FOR A FINAL REMEDIAL SYSTEM, USE THEIR BEST EFFORTS TO AGREE TO SPECIFIED MAXIMUM MODIFICATIONS TO THE SYSTEM. IF OCC AND EPA/STATE CANNOT AGREE TO SUCH MAXIMUMS AT THE TIME OF DESIGN APPROVAL, OCC WILL IMPLEMENT THE APPROVED DESIGN WITHOUT SUCH MAXIMUMS AND EITHER OCC OR EPA/STATE MAY PURSUE THE RESOLUTION OF MAXIMUMS THROUGH DISPUTE RESOLUTION.

C. IF, DURING OPERATION OF ANY OF THE REMEDIAL SYSTEMS DESCRIBED IN PARAGRAPH B, THE MONITORING PROGRAM APPLICABLE TO THE SPECIFIC REMEDIAL SYSTEM(S) TRIGGERS OPERATIONAL MODIFICATIONS OCC WILL IMPLEMENT OPERATIONAL MODIFICATIONS TO THOSE SYSTEMS AS PROVIDED BELOW:

C1. OCC SHALL SUBMIT AN ASSESSMENT REPORT TO EPA/STATE PROPOSING WHAT OPERATIONAL MODIFICATIONS OCC WILL IMPLEMENT. HOWEVER, SUCH REPORT SHALL NOT BE REQUIRED FOR OPERATIONAL MODIFICATION(S) INVOLVING ONLY INCREASED RATES OF OPERATION.

C2. FOR THOSE OPERATIONAL MODIFICATIONS NOT REQUIRING AN ASSESSMENT REPORT, OCC SHALL IMPLEMENT THE RESPONSE ACTION, AS SOON AS PRACTICABLE, AND SHALL NOTIFY THE EPA/STATE WITHIN FOURTEEN (14) DAYS OF THE INITIAL RESPONSE ACTION TRIGGER DATE. SUCH NOTIFICATION SHALL BE IN WRITING AND SHALL DESCRIBED THE OPERATIONAL MODIFICATION(S) TAKEN OR TO BE TAKE THE REASON FOR TAKING SUCH MODIFICATION(S), AND THE JUSTIFICATION FOR THE SELECTED LEVEL OF RESPONSE.

C3. FOR OPERATIONAL MODIFICATIONS REQUIRING AN ASSESSMENT REPORT, OCC WILL SUBMIT SUCH REPORT WITHIN TWENTY-ONE (21) DAYS OF THE INITIAL RESPONSE ACTION TRIGGER DATE. THE REPORT SHALL INCLUDE: A DESCRIPTION OF THE PROBLEM, INCLUDING DATA AND ANALYSES; OPERATIONAL MODIFICATION(S) THAT OCC HAS CONSIDERED; AN EVALUATION OF THE PROPOSED OPERATIONAL MODIFICATION(S), INCLUDING ASSUMPTIONS AND ANALYSES USED AND JUSTIFICATIONS FOR THE PROPOSAL; AND THE TOTAL TIME ESTIMATE TO IMPLEMENT EACH ALTERNATIVE. AS SOON AS PRACTICABLE BUT NOT LATER `THAN' THIRTY (30) DAYS AFTER EPA/STATE APPROVAL OF THE OPERATIONAL MODIFICATION(S), SHALL SUBMIT AN IMPLEMENTATION SCHEDULE AND PLANS AND SPECIFICATIONS (TO THE EXTENT NOT ALREADY APPROVED FOR SUCH USE) FOR THE APPROVED OPERATIONAL MODIFICATION(S). OCC SHALL IMPLEMENT OPERATIONAL MODIFICATIONS, FOLLOWING EPA/STATE APPROVAL, IN ACCORDANCE WITH THE APPROVED SCHEDULE.

5.1.2 SYSTEM MODIFICATIONS AND SUPPLEMENTS

A1. AS USED HEREIN, "SYSTEM MODIFICATION" ARE DEFINED TO CONSIST OF PHYSICAL ALTERATIONS TO AN RRT REMEDIAL SYSTEM THAT:

* ARE ABOVE AND BEYOND OPERATIONAL MODIFICATIONS;

* ARE COMPATIBLE WITH THE INSTALLED RRT REMEDIAL SYSTEMS;

* ARE DESIGNED TO MEET THE SAME GOALS AND OBJECTIVES AS THE INSTALLED RRT REMEDIAL SYSTEMS. (SYSTEM MODIFICATIONS MAY BE ACCOMPANIED, AS NECESSARY, BY REVISIONS TO SPECIFIC MONITORING PROGRAM REQUIREMENTS.)

A SYSTEM MODIFICATION, IN GENERAL, IS A PHYSICAL ALTERATION THAT WILL AUGMENT OR OTHERWISE ENHANCE THE PERFORMANCE OF THE INSTALLED RRT REMEDIAL SYSTEM WITHOUT SIGNIFICANTLY ALTERING THE INSTALLED SYSTEM IN EITHER TECHNOLOGY, SCOPE, OR FUNCTION. SYSTEM MODIFICATIONS ARE INTENDED' TO INCLUDE ONLY ALTERATIONS USING ENGINEERING AND CONSTRUCTION PRACTICES USED OR ACCEPTED FOR USE IN LANDFILL CONTAINMENT PROJECTS OR OTHER INDUSTRIAL PROJECTS WHICH ARE APPLICABLE TO THE MATERIALS AND HYDROGEOLOGIC CONDITIONS FOUND AT THE S-AREA/TREATMENT PLANT AREA AND WILL NOT INCLUDE UNPROVEN NEW TECHNOLOGIES OR SOURCE CONTROL EFFORT MUCH AS FULL OR PARTIAL EXCAVATION, VITRIFICATION, ETC. EXAMPLES OF SYSTEM MODIFICATIONS INCLUDE, AMONG OTHER, ADDITIONAL OR RELOCATED HYDRAULIC COLLECTION OR CONTAINMENT INSTALLATIONS WELL INSTALLATIONS, SLURRY OR GROUT WALLS). SYSTEM MODIFICATIONS SHALL BE DESIGNED AND INSTALLED TO BE CONSISTENT WITH GOOD ENGINEERING PRACTICE AND COST-EFFECTIVE IN COMPLIANCE WITH PARAGRAPH C.

A2. AS USED HEREIN, "SYSTEM SUPPLEMENTS" ARE DEFINED AS REMEDIES USING REMEDIAL TECHNOLOGY (AS DEFINED IN PARAGRAPH 4(A) OF THE JUDGMENT) WHICH ARE DIFFERENT THAN THOSE USE IN THE INSTALLED RRT REMEDIAL SYSTEMS AND WHICH ARE DESIGNED TO SUPPLEMENT AN RRT SYSTEM BY SPECIFICALLY ADDRESSING THE CONDITIONS TRIGGERING THE RESPONSE ACTION. SYSTEM SUPPLEMENTS SHALL BE DESIGNED TO BE CONSISTENT WITH GOOD ENGINEERING PRACTICE AND COST-EFFECTIVE IN COMPLIANCE WITH PARAGRAPH C.

B. IF, AFTER OCC HAS IMPLEMENTED ALL REQUIRED OPERATIONAL MODIFICATIONS PURSUANT TO SECTION 5.1.1, AND ONE OR MORE RESPONSE ACTION TRIGGERS DESCRIBED IN SECTIONS 2.0 OR 4.0 REQUIRE OCC TO TAKE FURTHER ACTION PURSUANT TO SECTION 5.1.2, OCC WILL PROCEED AS FOLLOWS:

B1. NAPL AND CERTAIN HYDRAULIC MONITORING: THE PROCEDURES OF THIS SUBPARAGRAPH B.1 WILL BE APPLICABLE IF A RESPONSE ACTION FOR SYSTEM MODIFICATIONS IS TRIGGERED BY THE MONITORING DESCRIBED IN SECTION 2.3.1.C6 (OVERBURDEN NAPL MONITORING), SECTION 2.3.2.C2 (INWARD GRADIENT OVERBURDEN HYDRAULIC MONITORING), SECTIONS 4.5.2.A.C.2 AND 4.5.2.A2.C II, (BEDROCK NAPL PRESENCE MONITORING), OR SECTION 4.5.2.B1 (SHALLOW BEDROCK HYDRAULIC MONITORING). OCC WILL SUBMIT TO EPA/STATE, WITHIN 90 DAYS OF THE RESPONSE ACTION TRIGGER DATE, A FOCUSED FEASIBILITY STUDY WHICH EVALUATES ALTERNATIVE SYSTEM MODIFICATIONS TO THE REMEDIAL SYSTEM WHICH WOULD ENABLE THE SYSTEM TO PREVENT FURTHER RESPONSE ACTION TRIGGER AND MEET SYSTEM OBJECTIVES OF SECTION 1.0. OCCS FOCUSED FEASIBILITY STUDY WILL ADDRESS AT LEAST THE FOLLOWING FACTORS:

* THE NATURE AND EXTENT OF THE CONDITION TRIGGERING THE RESPONSE ACTION;

* THE DEGREE TO WHICH EACH MODIFICATION ALTERNATIVE WILL ENABLE THE REMEDIAL SYSTEM TO PREVENT FURTHER RESPONSE ACTION TRIGGERS AND MEET SYSTEM DESIGN OBJECTIVES OF SECTION 1.0; AND

* THE COST AND SCHEDULE FOR IMPLEMENTING SUCH MODIFICATION ALTERNATIVE.

AFTER SUBMISSION OF THE FOCUSED FEASIBILITY STUDY TO EPA/STATE, THE PARTIES WILL PROCEED AS DESCRIBED IN PARAGRAPH C OF THIS SECTION.

B2. OTHER MONITORING: FOR THOSE MONITORING PROGRAMS NOT IDENTIFIED IN SUBPARAGRAPH B1, THE PROCEDURES OF THIS SUBPARAGRAPH B2 WILL BE APPLICABLE IF A RESPONSE ACTION IS TRIGGERED BY ANY MONITORING PROGRAM DESCRIBED IN SECTIONS 2.0 OR 4.0 WHICH REQUIRES RESPONSE UNDER SECTION 5.1.2. OCC WILL PREPARE THE SAME TYPE OF FOCUSED FEASIBILITY STUDY OF SYSTEM MODIFICATIONS SET FORTH IN SUBPARAGRAPH B1. THE FEASIBILITY STUDY SHALL ALSO IDENTIFY AND EVALUATE SYSTEM SUPPLEMENTS. IN ADDITION, IF OCC CHOOSES, THE FEASIBILITY

STUDY MAY ALSO EVALUATE WHETHER SYSTEM MODIFICATIONS OR SYSTEM SUPPLEMENTS ARE "REQUISITE" (AS DEFINED IN PARAGRAPH 4(A) OF THE JUDGMENT) AND WHETHER THE ENVIRONMENTAL, CHEMICAL OR TRACER MONITORING PROGRAMS ACCURATELY EVALUATE THE REMEDIAL SYSTEMS PERFORMANCE IN MEETING THE REMEDIAL OBJECTIVES IN SECTION 1.0.

OCC WILL SUBMIT THIS FOCUSED FEASIBILITY STUDY TO EPA/STATE WITHIN 90 DAYS AFTER THE RESPONSE ACTION TRIGGER DATE. AFTER SUBMISSION OF THE FOCUSED FEASIBILITY STUDY TO EPA/STATE, THE PARTIES WILL PROCEED AS DESCRIBED IN PARAGRAPH C OF THIS SECTION.

C. WITHIN 120 DAYS FOLLOWING RECEIPT OF AN OCC SUBMISSION DESCRIBED IN PARAGRAPH B, EPA/STATE WILL RESPOND IN WRITING TO THE SUBMISSION. EPA/STATE WILL EITHER APPROVE THE RECOMMENDATIONS IN OCCS FEASIBILITY STUDY OR PROPOSE (EITHER FROM OCCS FEASIBILITY STUDY OR ANY SIMILARLY PREPARED STUDY OF ITS OWN) COST-EFFECTIVE SYSTEM MODIFICATIONS OR SYSTEM SUPPLEMENTS, AS APPROPRIATE, WHICH ENABLE THE SYSTEM TO MEET THE OBJECTIVES OF SECTION 1.0 AND EFFECTIVELY PREVENT FURTHER RESPONSE ACTION TRIGGERS. OCC WILL BE REQUIRED TO IMPLEMENT THE SYSTEM MODIFICATIONS OR SYSTEM SUPPLEMENTS PROPOSED BY EPA/STATE IN ACCORDANCE WITH THE TERMS AND CONDITIONS OF THIS SECTION 5.0 UNLESS, UPON THE EVIDENCE, THE COURT DETERMINES:

C. THAT THE EPA/STATE PROPOSAL DOES NOT SATISFY THE DEFINITION OF SYSTEM MODIFICATIONS OR SYSTEM SUPPLEMENTS, AS APPROPRIATE, SET FORTH IN SUBSECTION 5.1.2.A; OR

C2. THAT CONSIDERING THE FACTORS SET FORTH IN B1(A)-(C) AND ALL RELEVANT MONITORING DATE IT WOULD BE ARBITRARY AND CAPRICIOUS TO REQUIRE OCC TO IMPLEMENT THE PROPOSED SYSTEM MODIFICATIONS OR SYSTEM SUPPLEMENTS: OR

C3. THAT, IN THE CASE OF SYSTEM MODIFICATIONS' TRIGGERED BY THE MONITORING PROGRAMS REFERENCED IN SUBSECTION B.2 OR SYSTEM SUPPLEMENTS:

(I) THE PROPOSED SYSTEM MODIFICATIONS OR SYSTEM SUPPLEMENTS ARE NOT "REQUISITE" (AS DEFINED IN PARAGRAPH 4(B) OF THE JUDGMENT; OR

(II) THOSE MONITORING TRIGGERS ARE NOT ACCURATE MEASUREMENTS OF MEETING THE APPLICABLE OBJECTIVES.

5.1.3 RRT STUDY

IF, AFTER OCC IMPLEMENTS ALL REQUIRED SYSTEM MODIFICATIONS OR SYSTEM SUPPLEMENTS TO THE REMEDIAL SYSTEM, PURSUANT TO SECTION 5.1.2, A RESPONSE ACTION DESCRIBED IN SECTION 2.0 OR SECTION 4.0 IS STILL BEING TRIGGERED BY A MONITORING PROGRAM REQUIRING RESPONSE AND IF OCC AND EPA/STATE AGREE OR THE COURT DETERMINES THAT NO FURTHER MODIFICATION(S) WILL ENABLE THE SYSTEM TO MEET THE SYSTEM OBJECTIVES OF SECTION 1.0, OCC SHALL UNDERTAKE AN RRT STUDY. THE RRT STUDY SHALL INCLUDE AN EVALUATION OF WHETHER THE IMPLEMENTATION OF ANY OTHER REMEDIAL TECHNOLOGY (INCLUDING SOURCE CONTROL) WOULD BE MORE EFFECTIVE IN ACHIEVING THE GOALS OF THE JUDGMENT THAN THE INSTALLED REMEDIAL SYSTEMS. THAT EVALUATION WILL BE BASED ON WILL BE BASED ON THE REQUISITE REMEDIAL TECHNOLOGY CRITERIA OF PARAGRAPH 4 OF THE JUDGMENT. OCC WILL IMPLEMENT ANY REMEDY SELECTED PURSUANT TO PARAGRAPH 4 OF THE JUDGMENT IN ACCORDANCE WITH A SCHEDULE APPROVED BY EPA/STATE.

5.2 MONITORING PROGRAM REASSESSMENT AND MODIFICATION

5.2.1 REASSESSMENT

EVERY FIVE YEARS AFTER THE BEGINNING OF THE OPERATION OF THE BEDROCK RRT SYSTEM, OCC WILL SUBMIT TO EPA/STATE A REASSESSMENT OF SUCH MONITORING PROGRAMS (INCLUDING ASSOCIATED RESPONSE ACTION TRIGGERS) THEN IN EFFECT. EPA/STATE MAY REQUIRE OCC TO CONDUCT A MONITORING PROGRAM REASSESSMENT SOONER OR AT MORE FREQUENT INTERVALS, IF AT ANY TIME, IT IS DETERMINED EITHER BY AGREEMENT OF EPA/STATE AND OCC OR BY ORDER OF THE COURT, THAT THERE IS AN ENDANGERMENT TO HUMAN HEALTH, THE ENVIRONMENT, OR THE USERS OF THE CITY OF NIAGARA FALLS DRINKING WATER RESULTING FROM CHEMICAL MIGRATION FROM THE LANDFILL SITE WHICH IS NOT TRIGGERING RESPONSE ACTIONS THEN IN EFFECT UNDER SECTIONS 2.0 AND 4.0. IN ADDITION, EPA/STATE, THE CITY, (WHO CONDITIONS AT THE CWTP ARE SPECIFICALLY AFFECTED) OR OCC AT ITS OPTION, MAY CONDUCT AND, FOR GOOD CAUSE, SUBMIT TO THE OTHER PARTIES A REASSESSMENT OF SUCH MONITORING PROGRAMS, PROVIDED THAT IT IS CONDUCTED AFTER THE FIRST FIVE YEAR ASSESSMENT HAS BEEN CONDUCTED AND REVIEWED.

5.2.2 MODIFICATION

AS A RESULT OF ANY REASSESSMENT CONDUCTED PURSUANT TO SECTION 5.2.1, EPA/STATE, THE CITY (WHEN CONDITIONS AT THE ARE SPECIFICALLY AFFECTED) OR OCC MAY PROPOSE MONITORING PROGRAM (INCLUDING ASSOCIATED RESPONSE ACTION TRIGGERS) MODIFICATIONS IF ANY CONSISTENT WITH APPLICABLE OBJECTIVES DESCRIBED IN SECTION 1.0. SUCH MODIFICATIONS MAY INCLUDE, WITHOUT LIMITATIONS, THE FOLLOWING: THE NUMBER AND LOCATION OF MONITORING SAMPLING POINTS, THE RESPONSE ACTION TRIGGERS ASSOCIATED WITH THAT PROGRAM, THE FREQUENCY OF SUCH SAMPLING, THE PARAMETERS TO BE ANALYZED, THE LEVELS RELATED TO SUCH PARAMETERS, AND THE FREQUENCY OF FUTURE REASSESSMENTS REQUIRED IN SECTION 5.2.1. IN THE EVENT EPA/STATE AND OCC DO NOT AGREE REGARDING THE PROPOSED MODIFICATION OF A MONITORING PROGRAM, THE PARTY SEEKING SUCH MODIFICATION MAY PETITION THE COURT TO RESOLVE THE DISPUTE. THE PETITIONER SHALL BEAR THE BURDEN TO DEMONSTRATE TO THE COURT THAT THE CONTINUED UTILIZATION OF THE EXISTING MONITORING PROGRAM IS INAPPROPRIATE IN ASSESSING WHETHER A REMEDIAL SYSTEM IS ATTAINING ITS OBJECTIVES AS DESCRIBED IN SECTION 1.0 AND THAT THE PROPOSED MODIFICATION IS CONSISTENT WITH THOSE OBJECTIVES. IF THE PETITIONER SEEKS TO CHANGE ANY RESPONSE ACTION TRIGGERS WHICH ARE AGREED TO AS PART OF THE RRT STIPULATION, THERE WILL BE A REBUTTABLE PRESUMPTION THAT THE RESPONSE ACTIONS TRIGGERS THEN IN EFFECT UNDER SECTIONS 2.0 AND 4.0 ARE APPROPRIATE MEASURES OF MEETING THE OBJECTIVES OF SECTION 1.0.

5.3 SYSTEM OPERATION REDUCTION

A. OPERATION OF ANY COMPONENT OF A FINAL REMEDIAL SYSTEM INSTALLED UNDER THE S-AREA RRT REMEDIAL PLAN MAY BE REDUCED IF IT IS DETERMINED BY AGREEMENT OF OCC AND EPA/STATE, OR BY ORDER OF THE COURT, THAT THE FOLLOWING CONDITIONS ARE MET: (1) THE REMEDIAL SYSTEM AS INSTALLED AND WITHOUT REDUCTIONS IS NOT TRIGGERING ANY APPLICABLE MONITORING PROGRAM RESPONSE ACTIONS THEN IN EFFECT UNDER SECTIONS 2.0 AND 4.0 AND (2) THE OPERATION OF THE PROPOSED REDUCED SYSTEM WOULD NOT TRIGGER ANY OF THE APPLICABLE MONITORING PROGRAM RESPONSE ACTIONS THEN IN EFFECT UNDER SECTIONS 2.0 AND 4.0. SUCH REDUCTION MAY INCLUDE A REDUCTION OF PUMPING RATES AND/OR IN THE NUMBER OF PURGE WELLS AND/OR RECOVERY WELLS. IF SUCH REDUCTION TRIGGERS A RESPONSE ACTION AS STATED ABOVE, OR IF NAPL COLLECTION IS REDUCED AS A RESULT OF THE SYSTEM REDUCTION, OCC SHALL REINSTITUTE THE PROGRAM AS IT EXISTED BEFORE THE REDUCTION.

B. PRIOR TO ANY SYSTEM REDUCTION DESCRIBED IN SECTION 5.3.A, OCC SHALL MAKE A SUBMISSION TO EPA/STATE SETTING FORTH ITS PROPOSED ACTION AND ITS ASSESSMENT OF THE IMPACT THEREOF, ALONG WITH ALL UNDERLYING DATA. SUCH SUBMISSION SHALL INCLUDE, WITHOUT LIMITATION, AN EVALUATION OF WHETHER MORE FREQUENT MONITORING OF THE REDUCED SYSTEM FOR A DEFINED PERIOD OF TIME IS REQUIRED, THE NEED FOR CONTINUED MAINTENANCE OF THE SUBJECT SYSTEM, AND THE CIRCUMSTANCES UNDER WHICH PRE-REDUCTION SYSTEM OPERATIONS WOULD BE RESUMED.

C. WITHIN 60 DAYS OF RECEIPT OF SUCH SUBMISSION, EPA/STATE WILL RESPOND TO OCC IN WRITING STATING EITHER ITS AGREEMENT OR DISAGREEMENT WITH OCCS POSITION, THE OPERATION AND/OR MAINTENANCE OF THE AFFECTED REMEDIAL SYSTEM MAY BE REDUCED BY AGREEMENT OF EPA/STATE AND OCC. IN THE EVENT EPA/STATE DISAGREES WITH OCCS PROPOSAL, THE REASONS FOR SUCH DISAGREEMENT WILL BE SET FORTH IN ITS WRITTEN RESPONSE.

D. IN THE EVENT THAT OCC AND EPA/STATE DO NOT AGREE REGARDING REDUCTION OF A REMEDIAL SYSTEM, OCC MAY PETITION THE COURT TO RESOLVE THE DISPUTE, THE OPERATION AND/OR MAINTENANCE OF THE AFFECTED REMEDIAL SYSTEM MAY BE REDUCED IF OCC DEMONSTRATES TO THE COURT THAT AFTER SUCH REDUCTION THE SYSTEM WOULD NOT TRIGGER ANY OF THE RESPONSE ACTIONS THEN IN EFFECT UNDER SECTIONS 2.0 AND 4.0. DURING THE PENDENCY OF THE COURT'S REVIEW OF THE MATTER, SHALL CONTINUE OPERATION, MONITORING, AND MAINTENANCE OF THE AFFECTED REMEDIAL SYSTEM WITHOUT IMPLEMENTING THE PROPOSED REDUCTIONS.

5.4 TERMINATION

A. OPERATION, MONITORING, AND MAINTENANCE ACTIVITIES UNDERTAKEN IN ORDER TO COMPLY WITH THE TERMS AND CONDITIONS OF THE JUDGMENT AND THE RRT STIPULATION SHALL NOT BE TERMINATED FOR 35 YEARS FOLLOWING SUBMISSION OF THE FINAL DESIGN FOR THE BEDROCK RRT SYSTEM AS PER SECTION 4.5.1. AFTER SUCH 35 YEAR PERIOD, ALL OR A PORTION OF SUCH ACTIVITIES MAY BE TERMINATED IF IT IS DETERMINED, BY AGREEMENT OF EPA/STATE AND OCC OR BY ORDER OF THE COURT, THAT SUCH ACTIVITIES ARE NO LONGED NECESSARY TO SATISFY THE GOALS OF THE JUDGMENT.

B. PRIOR TO ANY TERMINATION UNDER THIS SECTION, OCC SHALL SUBMIT AN ASSESSMENT REPORT TO ALL OTHER SIGNATORY PARTIES SETTING FORTH THE BASIS FOR ITS PROPOSED TERMINATION ALONG WITH ALL DATA RELIED UPON BY OCC IN

SUPPORT OF ITS POSITION. THE SUBMISSION SHALL INCLUDE, WITHOUT LIMITATION, THE FOLLOWING: THE IMPACT OF SUCH TERMINATION WITH REGARD TO THE OBJECTIVES OF SECTION 1.0; THE BASIS FOR OCCS CONCLUSION THAT THE ACTIVITIES ARE NO LONGER NECESSARY TO SATISFY THE GOALS OF THE JUDGMENT; PROPOSALS FOR A MINIMUM THREE YEAR POST-TERMINATION MONITORING PROGRAM(S); MAINTENANCE PROGRAMS FOR THE TERMINATED SYSTEMS; AND THE RESPONSE ACTIONS TRIGGERS WHICH WOULD REQUIRE RESUMPTION OF TERMINATED ACTIVITIES.

C. WITHIN 60 DAYS OF RECEIPT OF SUCH SUBMISSION, EPA/STATE WILL RESPOND TO OCC IN WRITING STATING EITHER ITS AGREEMENT OR DISAGREEMENT WITH OCCS POSITION. IN THE EVENT EPA/STATE DISAGREES WITH OCCS PROPOSAL, THE REASONS FOR SUCH DISAGREEMENT WILL BE SET FORTH IN ITS WRITTEN RESPONSE. THE OPERATION, MONITORING AND/OR MAINTENANCE OF THE SUBJECT REMEDIAL SYSTEM(S) MAY BE TERMINATED BY AGREEMENT OF THE PARTIES AND NOTICE TO THE COURT OR BY ORDER OF THE COURT.

D. IN THE EVENT THAT OCC AND EPA/STATE DO NOT AGREE REGARDING TERMINATION UNDER THIS SECTION, OCC MAY PETITION THE COURT TO RESOLVE THE DISPUTE. OCC SHALL NOT TERMINATE ANY ACTIVITIES PURSUANT TO THIS SECTION UNTIL A DETERMINATION DESCRIBED IN PARAGRAPH A HAS BEEN MADE, EITHER BY AGREEMENT OF EPA/STATE AND OCC OR BY ORDER OF THE COURT.

5.5 CITY REVIEW AND APPROVAL RESPONSIBILITY

A. SUBMITTALS

ANY TIME A SUBMITTAL OR NOTICE IS REQUIRED UNDER SECTION 5.0, COPIES SHALL BE PROVIDED TO THE CITY.

B. APPROVAL

ANY TIME REVIEW, APPROVAL, DETERMINATION OR CONCURRENCE IS REQUIRED OF EPA/STATE UNDER SECTION 5.0, THE CITY (WHEN CONDITIONS AT THE CWTP ARE SPECIFICALLY AFFECTED) MAY ALSO CONDUCT A CONCURRENT REVIEW, APPROVAL, DETERMINATION OR CONCURRENCE PROCESS EXCEPT THAT FAILURE OF THE CITY TO ISSUE ITS APPROVAL, DETERMINATION OR CONCURRENCE DECISION TIMELY IN A PARTICULAR INSTANCE SHALL BE DEEMED A WAIVER OF THAT RIGHT IN THAT PARTICULAR INSTANCE.

C. COMMENTS

NOTHING HEREIN SHALL PREVENT THE CITY FROM SUBMITTING TIMELY COMMENTS ON ANY OTHER SUBMITTALS; HOWEVER, THE PARTIES SHALL CONSIDER, AS APPROPRIATE, BUT ARE NOT OBLIGATED TO RESPOND TO OR ADOPT ANY SUCH COMMENTS.