Excavation and Off-Site Waste Disposal Evaluation

Appendix C
Corrective Measures Study Work Plan

TECUMSEH REDEVELOPMENT SITE
LACKAWANNA, NEW YORK

February 2009 0071-008-111

Prepared for:

TECUMSEH REDEVELOPMENT, INC.

Prepared By:

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

In Association With

TURNKEY ENVIRONMENTAL RESTORATION, LLC

EXCAVATION AND OFF-SITE WASTE DISPOSAL EVALUATION

Tecumseh Redevelopment Site
Lackawanna, New York

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1.0 INTRODUCTION

This document presents an evaluation of the potential feasibility of excavating, transporting and disposing off-site all solid and hazardous waste fill from the 42 Solid Waste Management Unit (SWMUs) identified by the United States Environmental Protection Agency (USEPA) and the New York State Department of Environmental Conservation (NYSDEC) on the Tecumseh Redevelopment, Inc. site located in Lackawanna, New York as requiring further evaluation and/or remediation under the RCRA Corrective Action Program. For the purpose of this evaluation, the SWMUs were designated into two groups: SWMUs containing solid wastes and SWMUs containing hazardous wastes. These designations were based primarily on the data presented and evaluated in the RCRA Facility Investigation Report (RFI). These designations are not final and would be confirmed or reassessed through additional data collection, as proposed in the CMS Work Plan.

SWMUs designated as containing solid wastes include: S-1 through S-7/S-20, S-12, S-14, S-15, S-17, S-21, S-27, S-28, SRWT/NRWT, and Tank Farm Area (P-8, P-74, and P-75). SWMUs designated as containing hazardous wastes include: S-13, S-16, S-18, S-23, Benzol Area hotspots, P-7, P-9, P-11, and P-18 A & B. A more detailed description of each SWMU is included in the RFI and CMS Work Plan.

The Smokes Creek watercourse, Acid Tar Pits (SWMUs S-11 and S-22), and Agitator Sludge (SWMU S-24) are the subject of Interim Corrective Measures (ICM) and are therefore not included in this evaluation.

2.0 PRELIMINARY SCREENING EVALUATION

Preliminary screening of the waste fill excavation and off-site disposal alternative is accomplished by evaluating the remedial alternative based on:

- Overall Protection of Human Health and the Environment
- Compliance with Standards, Criteria, & Guidance (SCGs)
- Long-term Effectiveness & Permanence
- Reduction of Toxicity, Mobility, or Volume
- Short-term Effectiveness
- Implementability
- Cost
- Community Acceptance

A brief description of each of these criteria is provided below:

- ***Overall Protection of Human Health and the Environment*** - This criterion addresses whether the alternative is protective of human health and the environment.
- ***Compliance with SCGs*** - This criterion identifies applicable or relevant and appropriate Federal and State regulatory requirements and whether, and to what extent, the alternative is likely to comply.
- ***Long-Term Effectiveness*** - This criterion addresses the extent to which a remedial action is expected to continue to protect human health and the environment. The primary focus of this evaluation is to determine the extent and effectiveness of the controls that may be required to manage the risk posed by residual contamination. The factors to be evaluated include the magnitude of remaining risk (measured by standards such as reduction in off-site contaminant loadings and associated risk reduction), and the adequacy, suitability and long-term reliability of engineering and institutional controls for providing continued exposure protection from exposure to residual (i.e., assessment of potential failure of the technical components) in groundwater and soil.
- ***Reduction of Toxicity, Mobility, or Volume*** - This criterion addresses the statutory preference for selecting remedial actions that permanently and significantly reduce toxicity, mobility or volume of the contaminants. The factors to be evaluated include the remediation process employed; the amount of hazardous material destroyed or treated; the degree of reduction expected in toxicity, mobility or volume; and the type and quantity of residuals.
- ***Short-Term Effectiveness*** - This criterion addresses the effects of the alternative during the construction and implementation phase. Each alternative is evaluated with respect to its effects on the community and on-site workers during

the remedial action, environmental impacts resulting from implementation, and the amount of time until protection is achieved.

- ***Implementability*** **-** This criterion addresses the technical and administrative feasibility of implementing an alternative and the availability of various services and materials required during its implementation. Technical feasibility considers construction and operational difficulties, reliability, ease of undertaking additional remedial action (if required), and the ability to monitor its effectiveness. Administrative feasibility considers activities needed to coordinate with other agencies (e.g., State and local) in regard to obtaining permits or approvals for implementing remedial actions.
- ***Cost*** **-** This criterion addresses the capital costs of construction as well as the long-term operating, maintenance and monitoring costs. In order to evaluate alternatives on a consistent economic basis, annual costs are converted to a 30-year present worth basis.
- ***Community Acceptance*** **-** This criterion seeks to identify likely concerns with remedial alternatives and to identify potential means to integrate those concerns with remedial alternatives. Often, community (and also State) acceptance cannot be pre-determined during development of the CMS. Community involvement is expected to continue through the remedy selection process and through implementation of the final remedial measures. Preliminary judgment of community acceptance will be incorporated in the screening, and will be modified as necessary following public comment on the CMS report.
- ***Land Use*** **-** In addition to the above criteria, 6NYCRR Part 375-1 specifies that the criterion of land use (i.e., the current, intended, and reasonably anticipated future land uses of the Site and its surroundings) be considered in the selection of the remedy.

3.0 EXCAVATION AND OFF-SITE DISPOSAL ALTERNATIVE

This remedial alternative would entail excavation of all waste fill materials from the SWMUs listed in Section 1.0 above, with transport of the excavated materials to permitted off-site landfills for disposal. Waste fill exhibiting hazardous waste characteristics would be manifested and transported to the Chemical Waste Management Facility in Model City, New York or other commercially-permitted off-site treatment, storage or disposal facility. If the hazardous waste was determined to exceed State and Federal Land Disposal Restrictions it would require on-site or off-site treatment prior to land disposal. Other solid wastes would be transported to local commercially-permitted sanitary landfills such as: Modern Landfill in Lewiston, New York; Waste Management's Chaffee NY Landfill; or Casella's Angelica NY Landfill.

Following removal and verification sampling of the excavation sidewalls and bottom, each SMWU would be backfilled to match the surrounding grade with suitable slag fill from on-site sources in accordance with the site-specific Soil/Fill Management Plan (SFMP). Excavation of saturated SWMU waste fill (below water table) may require groundwater dewatering and treatment. On-site dewatering of the saturated waste material excavated and/or admixing with soil amendments would likely be required during removal in order to meet landfill acceptance criteria for minimum percent solids and to eliminate free liquids. Temporary containment fencing may need to be installed to preclude workers and trespassers from falling into large excavations.

Dust controls and monitoring would likely be required during the removal work. An estimated 1.5 million tons of excavated waste fill, resulting in approximately 74,600 tandem truckloads (assumes approx 20 tons per truckload) of hazardous and non-hazardous material would be shipped off-site through the surrounding residential neighborhood resulting in a round trip total of nearly 150,000 truck trips to/from the Site. In addition, a substantial number of truckloads of clean soil for final cover purposes may be required brought in over the projected 10-year construction period estimated to be necessary to implement this alternative.

- ***Overall Protection of Human Health and the Environment*** - This alternative would be protective of human health and the environment, if it was feasible to substantially remove all solid and hazardous wastes from all SWMU's. It is likely not feasible to remove all saturated fill and some residual concentrations in slag/soil fill are likely to exceed restricted industrial soil cleanup objectives (SCOs)

as defined in 6NYCRR Part 375-6. Similarly residual contaminant concentrations in Site groundwater are not likely to be significantly changed by this alternative. As such, some soil or slag cover and groundwater containment, collection and/or treatment would likely be required to protect human health and the environment.

- ***Compliance with SCGs*** - Additional characterization of the waste material may be required by the off-site disposal facility to assure compliance with its operating permit and the Land Disposal Restrictions prior to off-site disposal of the material. Waste transporter permits would be required per 6NYCRR Part 364. Excavation would necessitate preparation of and adherence to a community air monitoring plan (CAMP) for VOCs and particulates in accordance with NYSDEC TAGM 4031. As stated above, this alternative is not likely to meet soil SCGs without placement of soil cover. Groundwater SCGs are also not likely to be met, but may nevertheless be protective of public health in conjunction with existing institutional controls. The residual groundwater quality, especially in the vicinity of several high-priority SWMUs (e.g. ATP Group) is likely not protective of the environment without additional containment, collection and/or treatment.
- ***Long-Term Effectiveness and Permanence –*** This alternative would substantially and permanently remove most of the waste fill from all SWMUs requiring further action on the Site. However, as discussed above, residual risks to public health and the environment would remain as it is not feasible to remove all the waste and impacted groundwater from the site. As such, without additional remedial measures, this alternative is not considered effective.
- ***Reduction of Toxicity, Mobility, or Volume Through Treatment*** - Excavating and disposing the waste material off-site would reduce the mobility of chemicals of concern within the SWMU-related areas of the Site. However, the toxicity or volume of the excavated material or constituents would not be reduced with this alternative, simply relocated to an off-site location. The potential of admixing saturated waste material with soil amendments in order to meet landfill acceptance criteria for minimum percent solids and to eliminate free liquids would increase the volume of waste requiring disposal, as well as reduce toxicity and/or mobility of waste constituents in the excavated fill.
- ***Short-Term Effectiveness*** - Significant short-term risks and disruption of the community are expected under this alternative. These include: excessive truck traffic and noise from extensive heavy equipment and truck use throughout the prolonged 10-year implementation period; the potential for spillage of the excavated material during transport; odors; and heavy-equipment related diesel emissions. Site workers would be required to wear personal protective equipment (PPE) to prevent direct contact with the contaminated material during excavation. Dust control methods would be used to limit the release of particulate matter during intrusive activities and placement of clean backfill.

- ***Implementability*** **-** Technical implementability issues associated with this alternative include the need for traffic coordination as well as implementation of odor, noise, and dust controls. Truck and traffic coordination issues would pose a significant challenge. Based on the calculated waste volumes and a 10-year construction period, coordination of 25 truckloads of material leaving the Site per day, six days a week, 50 weeks a year, for the entire construction period, with additional trucking of backfill material being brought on-site for select closure of some of the SWMUs. The off-site disposal transportation activities would account for approximately 150,000 truck round trips to/from the Site. The need for dewatering of the waste material and/or admixing of soils to achieve landfill solids requirements would pose additional implementability difficulty especially during the spring and fall months when precipitation is heaviest. Administrative implementability issues may be encountered in securing approval for disposal of the material at an off-site facility due to the extremely large volume of material and its physical nature. Contracts with multiple off-site disposal facilities may be required to avoid exceeding annual tonnage limitations and potential concerns relative to landfill stability if the waste material represents a significant percentage of daily disposal volume.
- ***Cost*** **-** The estimated capital cost for this alternative is approximately $130 million. Based on the estimated construction timeframe of 10 years; increased capital cost based on inflation during this time frame would indicate a capital cost range between $130 million and $150 million. These cost estimates do not include additional remedial measures likely to be required to protect public health and the environment. Tables 1 and 2 summarize the hazardous and non-hazardous waste disposal costs for all SWMUs. The cost details for each SWMU are included as Attachment 1.
- ***Community Acceptance*** **-** This alternative would address community desire to have all SWMU-related materials removed from the Site. However, this alternative would likely meet with strong public resistance due to the excessive disruption and risks to the community over the estimated 10-year construction period. Truck traffic, noise, odors, dust, heavy-equipment emissions, and potential of spillage related to vehicle accidents would increase public opposition.
- ***Land Use*** **-** This alternative is consistent with the reasonably anticipated future land use of the Site in a commercial/industrial capacity; however, development would be delayed by the estimated 10-year construction period. The reasonably anticipated future use of the Site is further discussed in Attachment 2.

4.0 CONCLUSION

Excavation and off-site disposal of SWMU-related media is not an economically or technologically viable remedial alternative due to the following:

- Ineffective protection of public health and the environment due to residual levels of contaminant in saturated soil/slag fill and groundwater;
- Lack of reduction of toxicity or volume;
- Significant short-term impacts to the neighboring community;
- Multiple implementability issues related to truck traffic, noise, transportation and disposal;
- Delays in Site redevelopment due to the estimated minimum 10-year construction period required to complete this alternative; and
- Excessive cost to implement the alternative

5.0 REFERENCES

1. URS Consultants, Inc. *RCRA Facility Investigation (RFI) Report for the Former Bethlehem Steel Corporation Facility, Lackawanna, New York, Parts I through VII.* Prepared for Bethlehem Steel Corporation. October 2004.

2. Benchmark Environmental Engineering and Science, PLLC. *DRAFT - Corrective Measures Study Work Plan. Tecumseh Redevelopment Site Lackawanna New York.* Prepared for ArcelorMittal Tecumseh Redevelopment Inc.

TABLES

Table 1

Tecumseh Redevelopment, Inc.
Lackawanna, NY Site
Corrective Measures Study

Estimated Off-Site Solid Waste Disposal Costs

SWMU	Estimated Mass (tons)	Projected Off-Site Disposal Cost
S-1	122,250	$ 10,130,000
S-2	144,300	$ 3,030,000
S-3	180,000	$ 14,900,000
S-4	225,000	$ 18,620,000
S-5	81,000	$ 6,720,000
S-6	99,375	$ 8,240,000
S-7/S-20	423,750	$ 35,020,000
S-21	225	$ 50,000
S-27	36,000	$ 3,000,000
S-12	750	$ 80,000
S-14	85,500	$ 7,090,000
S-15	1,500	$ 140,000
S-17	675	$ 70,000
S-28	1,800	$ 160,000
SRWT/NRWT	1,500	$ 150,000
Tank Farm	111,000	$ 9,200,000
Project Total	**1,514,625**	**$ 116,600,000**

Table 2

Tecumseh Redevelopment, Inc.
Lackawanna, NY Site
Corrective Measures Study

Estimated Off-Site Hazardous Waste Disposal Costs

SWMU	Estimated Mass (tons)	Projected Off-Site Disposal Cost
S-13	8,400	$ 1,710,000
S-16	9,000	$ 1,830,000
S-18	3,750	$ 770,000
S-23	5,600	$ 4,240,000
Benzol Area	15,000	$ 3,030,000
P-7	135	$ 40,000
P-9	1,500	$ 320,000
P-11	30	$ 20,000
P-18 (a&b)	8,100	$ 1,640,000

Project Total	**51,515**	**$**	**13,600,000**

Notes:

ATP (S-11 & S-22) and Agitator sludge (S-24) not included

ATTACHMENT 1

COST ESTIMATES

ATTACHMENT 1

ESTIMATED OFF-SITE NON-HAZARDOUS WASTE DISPOSAL COST
SWMU S-1

Corrective Measures Study
Tecumseh Redevelopment, Inc.
Lackawanna, New York

Item Description	Unit	Unit Cost	Quantity	Total Cost	Comments
Contaminated Soil Excavation/Removal/Disposal					
Excavate/Haul Contaminated Material	CY	$ 15.00	81,500	$ 1,223,000	
Analytical testing	LS	$ 525.00	2	$ 1,100	
Soils Disposal (Non-Haz)	Ton	$ 35.00	122,250	$ 4,279,000	1.5 Ton/CY
Backfill Excavate/Haul /Place	CY	$ 25.00	81,500	$ 2,038,000	
Analytical testing (non-virgin source)	LS	$ 632.00	25	$ 16,000	
			Sub-Total	**$ 7,557,100**	
Decon (Construct/Operate/Decommision)				$ 7,500	
Contractor's Health & Safety Costs				$ 227,000	Add 3% to Subtotal
Total Construction Cost:				$ 7,791,600	
Engineering & Contingency (includes C.A.M.P.)				$ 2,337,000	Add 30% to Const. Cost
NYSDEC Oversight Costs				$ -	
			TOTAL:	**$ 10,130,000**	

ATTACHMENT 1

ESTIMATED OFF-SITE NON-HAZARDOUS WASTE DISPOSAL COST
SWMU S-2

Corrective Measures Study
Tecumseh Redevelopment, Inc.
Lackawanna, New York

Item Description	Unit	Unit Cost	Quantity	Total Cost	Comments
Contaminated Soil Excavation/Removal/Disposal					
Excavate/Haul Contaminated Material	CY	$ 15.00	96,200	$ 1,443,000	
Analytical testing	LS	$ 525.00	2	$ 1,100	
Soils Disposal (Hazardous)	Ton	$ 90.00		$ -	
Soils Disposal (Non-Haz)	Ton	$ 35.00	144,300	$ 5,051,000	1.5 Ton/CY
Backfill Excavate/Haul /Place	CY	$ 25.00	96,200	$ 2,405,000	
Analytical testing (non-virgin source)	LS	$ 632.00	25	$ 16,000	
			Sub-Total	**$ 8,916,100**	
Decon (Construct/Operate/Decommision)				$ 7,500	
Contractor's Health & Safety Costs				$ 267,000	Add 3% to Subtotal
Total Construction Cost:				$ 9,190,600	
Engineering & Contingency (includes C.A.M.P.)				$ 2,757,000	Add 30% to Const. Cost
NYSDEC Oversight Costs				$ -	
			TOTAL:	**$ 3,020,000**	

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ATTACHMENT 1

ESTIMATED OFF-SITE NON-HAZARDOUS WASTE DISPOSAL COST
SWMU S-3

Corrective Measures Study
Tecumseh Redevelopment, Inc.
Lackawanna, New York

Item Description	Unit	Unit Cost	Quantity	Total Cost	Comments
Contaminated Soil Excavation/Removal/Disposal					
Excavate/Haul Contaminated Material	CY	$ 15.00	120,000	$ 1,800,000	
Analytical testing	LS	$ 525.00	2	$ 1,100	
Soils Disposal (Hazardous)	Ton	$ 90.00		$ -	
Soils Disposal (Non-Haz)	Ton	$ 35.00	180,000	$ 6,300,000	1.5 Ton/CY
Backfill Excavate/Haul /Place	CY	$ 25.00	120,000	$ 3,000,000	
Analytical testing (non-virgin source)	LS	$ 632.00	30	$ 19,000	
			Sub-Total	**$ 11,120,100**	
Decon (Construct/Operate/Decommision)				$ 7,500	
Contractor's Health & Safety Costs				$ 334,000	Add 3% to Subtotal
Total Construction Cost:				$ 11,461,600	
Engineering & Contingency (includes C.A.M.P.)				$ 3,438,000	Add 30% to Const. Cost
NYSDEC Oversight Costs				$ -	
			TOTAL:	**$ 14,900,000**	

ATTACHMENT 1

ESTIMATED OFF-SITE NON-HAZARDOUS WASTE DISPOSAL COST
SWMU S-4

Corrective Measures Study
Tecumseh Redevelopment, Inc.
Lackawanna, New York

Item Description	Unit	Unit Cost	Quantity	Total Cost	Comments
Contaminated Soil Excavation/Removal/Disposal					
Excavate/Haul Contaminated Material	CY	$ 15.00	150,000	$ 2,250,000	
Analytical testing	LS	$ 525.00	2	$ 1,100	
Soils Disposal (Hazardous)	Ton	$ 90.00		$ -	
Soils Disposal (Non-Haz)	Ton	$ 35.00	225,000	$ 7,875,000	1.5 Ton/CY
Backfill Excavate/Haul /Place	CY	$ 25.00	150,000	$ 3,750,000	
Analytical testing (non-virgin source)	LS	$ 632.00	37	$ 24,000	
			Sub-Total	**$ 13,900,100**	
Decon (Construct/Operate/Decommision)				$ 7,500	
Contractor's Health & Safety Costs				$ 417,000	Add 3% to Subtotal
Total Construction Cost:				$ 14,324,600	
Engineering & Contingency (includes C.A.M.P.)				$ 4,297,000	Add 30% to Const. Cost
NYSDEC Oversight Costs				$ -	
			TOTAL:	**$ 18,620,000**	

ATTACHMENT 1

ESTIMATED OFF-SITE NON-HAZARDOUS WASTE DISPOSAL COST
SWMU S-5

Corrective Measures Study
Tecumseh Redevelopment, Inc.
Lackawanna, New York

Item Description	Unit	Unit Cost	Quantity	Total Cost	Comments
Contaminated Soil Excavation/Removal/Disposal					
Excavate/Haul Contaminated Material	CY	$ 15.00	54,000	$ 810,000	
Analytical testing	LS	$ 525.00	2	$ 1,100	
Soils Disposal (Hazardous)	Ton	$ 90.00		$ -	
Soils Disposal (Non-Haz)	Ton	$ 35.00	81,000	$ 2,835,000	1.5 Ton/CY
Backfill Excavate/Haul /Place	CY	$ 25.00	54,000	$ 1,350,000	
Analytical testing (non-virgin source)	LS	$ 632.00	18	$ 12,000	
			Sub-Total	**$ 5,008,100**	
Decon (Construct/Operate/Decommision)				$ 7,500	
Contractor's Health & Safety Costs				$ 150,000	Add 3% to Subtotal
Total Construction Cost:				$ 5,165,600	
Engineering & Contingency (includes C.A.M.P.)				$ 1,550,000	Add 30% to Const. Cost
NYSDEC Oversight Costs				$ -	
			TOTAL:	**$ 6,720,000**	

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ATTACHMENT 1

ESTIMATED OFF-SITE NON-HAZARDOUS WASTE DISPOSAL COST
SWMU S-6

Corrective Measures Study
Tecumseh Redevelopment, Inc.
Lackawanna, New York

Item Description	Unit	Unit Cost	Quantity	Total Cost	Comments
Contaminated Soil Excavation/Removal/Disposal					
Excavate/Haul Contaminated Material	CY	$ 15.00	66,250	$ 994,000	
Analytical testing	LS	$ 525.00	2	$ 1,100	
Soils Disposal (Hazardous)	Ton	$ 90.00		$ -	
Soils Disposal (Non-Haz)	Ton	$ 35.00	99,375	$ 3,479,000	1.5 Ton/CY
Backfill Excavate/Haul /Place	CY	$ 25.00	66,250	$ 1,657,000	
Analytical testing (non-virgin source)	LS	$ 632.00	20	$ 13,000	
			Sub-Total	**$ 6,144,100**	
Decon (Construct/Operate/Decommision)				$ 7,500	
Contractor's Health & Safety Costs				$ 184,000	Add 3% to Subtotal
Total Construction Cost:				$ 6,335,600	
Engineering & Contingency (includes C.A.M.P.)				$ 1,901,000	Add 30% to Const. Cost
NYSDEC Oversight Costs				$ -	
			TOTAL:	**$ 8,240,000**	

ATTACHMENT 1

ESTIMATED OFF-SITE NON-HAZARDOUS WASTE DISPOSAL COST
SWMUs S-7 / S-20

Corrective Measures Study
Tecumseh Redevelopment, Inc.
Lackawanna, New York

Item Description	Unit	Unit Cost	Quantity	Total Cost	Comments
Contaminated Soil Excavation/Removal/Disposal					
Excavate/Haul Contaminated Material	CY	$ 15.00	282,500	$ 4,238,000	
Analytical testing	LS	$ 525.00	2	$ 1,100	
Soils Disposal (Hazardous)	Ton	$ 90.00		$ -	
Soils Disposal (Non-Haz)	Ton	$ 35.00	423,750	$ 14,832,000	1.5 Ton/CY
Backfill Excavate/Haul /Place	CY	$ 25.00	282,500	$ 7,063,000	
Analytical testing (non-virgin source)	LS	$ 632.00	18	$ 12,000	
			Sub-Total	**$ 26,146,100**	
Decon (Construct/Operate/Decommision)				$ 7,500	
Contractor's Health & Safety Costs				$ 784,000	Add 3% to Subtotal
Total Construction Cost:				$ 26,937,600	
Engineering & Contingency (includes C.A.M.P.)				$ 8,081,000	Add 30% to Const. Cost
NYSDEC Oversight Costs				$ -	
			TOTAL:	**$ 35,020,000**	

ATTACHMENT 1

ESTIMATED OFF-SITE NON-HAZARDOUS WASTE DISPOSAL COST
SWMU S-27

Corrective Measures Study
Tecumseh Redevelopment, Inc.
Lackawanna, New York

Item Description	Unit	Unit Cost	Quantity	Total Cost	Comments
Contaminated Soil Excavation/Removal/Disposal					
Excavate/Haul Contaminated Material	CY	$ 15.00	24,000	$ 360,000	
Analytical testing	LS	$ 525.00	2	$ 1,100	
Soils Disposal (Hazardous)	Ton	$ 90.00		$ -	
Soils Disposal (Non-Haz)	Ton	$ 35.00	36,000	$ 1,260,000	1.5 Ton/CY
Backfill Excavate/Haul /Place	CY	$ 25.00	24,000	$ 600,000	
Analytical testing (non-virgin source)	LS	$ 632.00	20	$ 13,000	
			Sub-Total	**$ 2,234,100**	
Decon (Construct/Operate/Decommision)				$ 7,500	
Contractor's Health & Safety Costs				$ 67,000	Add 3% to Subtotal
Total Construction Cost:				$ 2,308,600	
Engineering & Contingency (includes C.A.M.P.)				$ 693,000	Add 30% to Const. Cost
NYSDEC Oversight Costs				$ -	
			TOTAL:	**$ 3,000,000**	

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ATTACHMENT 1

ESTIMATED OFF-SITE NON-HAZARDOUS WASTE DISPOSAL COST
SWMU S-21

Corrective Measures Study
Tecumseh Redevelopment, Inc.
Lackawanna, New York

Item Description	Unit	Unit Cost	Quantity	Total Cost	Comments
Contaminated Soil Excavation/Removal/Disposal					
Excavate/Haul Contaminated Material	CY	$ 15.00	150	$ 3,000	
Analytical testing	LS	$ 525.00	1	$ 600	
Soils Disposal (Hazardous)	Ton	$ 90.00		$ -	
Soils Disposal (Non-Haz)	Ton	$ 35.00	225	$ 8,000	1.5 Ton/CY
Backfill Excavate/Haul /Place	CY	$ 25.00	150	$ 4,000	
Analytical testing (non-virgin source)	LS	$ 632.00	18	$ 12,000	
			Sub-Total	**$ 27,600**	
Decon (Construct/Operate/Decommision)				$ 7,500	
Contractor's Health & Safety Costs				$ 1,000	Add 3% to Subtotal
Total Construction Cost:				$ 36,100	
Engineering & Contingency (includes C.A.M.P.)				$ 11,000	Add 30% to Const. Cost
NYSDEC Oversight Costs				$ -	
			TOTAL:	**$ 50,000**	

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ATTACHMENT 1

ESTIMATED OFF-SITE NON-HAZARDOUS WASTE DISPOSAL COST
SWMU S-12

Corrective Measures Study
Tecumseh Redevelopment, Inc.
Lackawanna, New York

Item Description	Unit	Unit Cost	Quantity	Total Cost	Comments
Contaminated Soil Excavation/Removal/Disposal					
Excavate/Haul Contaminated Material	CY	$ 15.00	500	$ 8,000	
Analytical testing	LS	$ 525.00	2	$ 1,100	
Soils Disposal (Hazardous)	Ton	$ 90.00		$ -	
Soils Disposal (Non-Haz)	Ton	$ 35.00	750	$ 27,000	1.5 Ton/CY
Backfill Excavate/Haul /Place	CY	$ 25.00	500	$ 13,000	
Analytical testing (non-virgin source)	LS	$ 632.00	2	$ 2,000	
			Sub-Total	**$ 51,100**	
Decon (Construct/Operate/Decommision)				$ 7,500	
Contractor's Health & Safety Costs				$ 2,000	Add 3% to Subtotal
Total Construction Cost:				$ 60,600	
Engineering & Contingency (includes C.A.M.P.)				$ 18,000	Add 30% to Const. Cost
NYSDEC Oversight Costs				$ -	
			TOTAL:	**$ 80,000**	

ATTACHMENT 1

ESTIMATED OFF-SITE NON-HAZARDOUS WASTE DISPOSAL COST
SWMU S-14

Corrective Measures Study
Tecumseh Redevelopment, Inc.
Lackawanna, New York

Item Description	Unit	Unit Cost	Quantity	Total Cost	Comments
Contaminated Soil Excavation/Removal/Disposal					
Excavate/Haul Contaminated Material	CY	$ 15.00	57,000	$ 855,000	
Analytical testing	LS	$ 525.00	2	$ 1,100	
Soils Disposal (Hazardous)	Ton	$ 90.00		$ -	
Soils Disposal (Non-Haz)	Ton	$ 35.00	85,500	$ 2,993,000	1.5 Ton/CY
Backfill Excavate/Haul /Place	CY	$ 25.00	57,000	$ 1,425,000	
Analytical testing (non-virgin source)	LS	$ 632.00	18	$ 12,000	
			Sub-Total	**$ 5,286,100**	
Decon (Construct/Operate/Decommision)				$ 7,500	
Contractor's Health & Safety Costs				$ 159,000	Add 3% to Subtotal
Total Construction Cost:				$ 5,452,600	
Engineering & Contingency (includes C.A.M.P.)				$ 1,636,000	Add 30% to Const. Cost
NYSDEC Oversight Costs				$ -	
			TOTAL:	**$ 7,090,000**	

TurnKey Environmental Restoration, LLC

ATTACHMENT 1

ESTIMATED OFF-SITE NON-HAZARDOUS WASTE DISPOSAL COST
SWMU S-15

Corrective Measures Study
Tecumseh Redevelopment, Inc.
Lackawanna, New York

Item Description	Unit	Unit Cost	Quantity	Total Cost	Comments
Contaminated Soil Excavation/Removal/Disposal					
Excavate/Haul Contaminated Material	CY	$ 15.00	1,000	$ 15,000	
Analytical testing	LS	$ 525.00	1	$ 600	
Soils Disposal (Hazardous)	Ton	$ 90.00		$ -	
Soils Disposal (Non-Haz)	Ton	$ 35.00	1,500	$ 53,000	1.5 Ton/CY
Backfill Excavate/Haul /Place	CY	$ 25.00	1,000	$ 25,000	
Analytical testing (non-virgin source)	LS	$ 632.00	4	$ 3,000	
			Sub-Total	**$ 96,600**	
Decon (Construct/Operate/Decommision)				$ 7,500	
Contractor's Health & Safety Costs				$ 3,000	Add 3% to Subtotal
Total Construction Cost:				$ 107,100	
Engineering & Contingency (includes C.A.M.P.)				$ 32,000	Add 30% to Const. Cost
NYSDEC Oversight Costs				$ -	
			TOTAL:	**$ 140,000**	

TurnKey Environmental Restoration, LLC

ATTACHMENT 1

ESTIMATED OFF-SITE NON-HAZARDOUS WASTE DISPOSAL COST
SWMU S-17

Corrective Measures Study
Tecumseh Redevelopment, Inc.
Lackawanna, New York

Item Description	Unit	Unit Cost	Quantity	Total Cost	Comments
Contaminated Soil Excavation/Removal/Disposal					
Excavate/Haul Contaminated Material	CY	$ 15.00	450	$ 7,000	
Analytical testing	LS	$ 525.00	1	$ 600	
Soils Disposal (Hazardous)	Ton	$ 90.00		$ -	
Soils Disposal (Non-Haz)	Ton	$ 35.00	675	$ 24,000	1.5 Ton/CY
Backfill Excavate/Haul /Place	CY	$ 25.00	450	$ 12,000	
Analytical testing (non-virgin source)	LS	$ 632.00	2	$ 2,000	
			Sub-Total	**$ 45,600**	
Decon (Construct/Operate/Decommision)				$ 7,500	
Contractor's Health & Safety Costs				$ 1,000	Add 3% to Subtotal
Total Construction Cost:				$ 54,100	
Engineering & Contingency (includes C.A.M.P.)				$ 16,000	Add 30% to Const. Cost
NYSDEC Oversight Costs				$ -	
			TOTAL:	**$ 70,000**	

TurnKey Environmental Restoration, LLC

ATTACHMENT 1

ESTIMATED OFF-SITE NON-HAZARDOUS WASTE DISPOSAL COST
SWMU S-28

Corrective Measures Study
Tecumseh Redevelopment, Inc.
Lackawanna, New York

Item Description	Unit	Unit Cost	Quantity	Total Cost	Comments
Contaminated Soil Excavation/Removal/Disposal					
Excavate/Haul Contaminated Material	CY	$ 15.00	1,200	$ 18,000	
Analytical testing	LS	$ 525.00	1	$ 600	
Soils Disposal (Hazardous)	Ton	$ 90.00		$ -	
Soils Disposal (Non-Haz)	Ton	$ 35.00	1,800	$ 63,000	1.5 Ton/CY
Backfill Excavate/Haul /Place	CY	$ 25.00	1,200	$ 30,000	
Analytical testing (non-virgin source)	LS	$ 632.00	5	$ 4,000	
			Sub-Total	**$ 115,600**	
Decon (Construct/Operate/Decommision)				$ 7,500	
Contractor's Health & Safety Costs				$ 3,000	Add 3% to Subtotal
Total Construction Cost:				$ 126,100	
Engineering & Contingency (includes C.A.M.P.)				$ 38,000	Add 30% to Const. Cost
NYSDEC Oversight Costs				$ -	
			TOTAL:	**$ 160,000**	

ATTACHMENT 1

ESTIMATED OFF-SITE NON-HAZARDOUS WASTE DISPOSAL COST
SWRT / NWRT

Corrective Measures Study
Tecumseh Redevelopment, Inc.
Lackawanna, New York

Item Description	Unit	Unit Cost	Quantity	Total Cost	Comments
Contaminated Soil Excavation/Removal/Disposal					
Excavate/Haul Contaminated Material	CY	$ 15.00	1,000	$ 15,000	
Analytical testing	LS	$ 525.00	2	$ 1,100	
Soils Disposal (Hazardous)	Ton	$ 90.00		$ -	
Soils Disposal (Non-Haz)	Ton	$ 35.00	1,500	$ 53,000	1.5 Ton/CY
Backfill Excavate/Haul /Place	CY	$ 25.00	1,000	$ 25,000	
Analytical testing (non-virgin source)	LS	$ 632.00	18	$ 12,000	
			Sub-Total	**$ 106,100**	
Decon (Construct/Operate/Decommision)				$ 7,500	
Contractor's Health & Safety Costs				$ 3,000	Add 3% to Subtotal
Total Construction Cost:				$ 116,600	
Engineering & Contingency (includes C.A.M.P.)				$ 35,000	Add 30% to Const. Cost
NYSDEC Oversight Costs				$ -	
			TOTAL:	**$ 150,000**	

ATTACHMENT 1

ESTIMATED OFF-SITE NON-HAZARDOUS WASTE DISPOSAL COST
TANK FARM (SWMUs P-8, P-74, & P-75)

Corrective Measures Study
Tecumseh Redevelopment, Inc.
Lackawanna, New York

Item Description	Unit	Unit Cost	Quantity	Total Cost	Comments
Contaminated Soil Excavation/Removal/Disposal					
Excavate/Haul Contaminated Material	CY	$ 15.00	74,000	$ 1,110,000	
Analytical testing	LS	$ 525.00	2	$ 1,100	
Soils Disposal (Hazardous)	Ton	$ 90.00		$ -	
Soils Disposal (Non-Haz)	Ton	$ 35.00	111,000	$ 3,885,000	1.5 Ton/CY
Backfill Excavate/Haul /Place	CY	$ 25.00	74,000	$ 1,850,000	
Analytical testing (non-virgin source)	LS	$ 632.00	22	$ 14,000	
			Sub-Total	**$ 6,860,100**	
Decon (Construct/Operate/Decommision)				$ 7,500	
Contractor's Health & Safety Costs				$ 206,000	Add 3% to Subtotal
Total Construction Cost:				$ 7,073,600	
Engineering & Contingency (includes C.A.M.P.)				$ 2,122,000	Add 30% to Const. Cost
NYSDEC Oversight Costs				$ -	
			TOTAL:	**$ 9,200,000**	

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ESTIMATED OFF-SITE HAZARDOUS WASTE DISPOSAL COST
SWMU S-13

Corrective Measures Study
Tecumseh Redevelopment, Inc.
Lackawanna, New York

Item Description	Unit	Unit Cost	Quantity	Total Cost	Comments
Contaminated Soil Excavation/Removal/Disposal					
Excavate Contaminated Material	CY	$ 15.00	5,600	$ 84,000	
Transport Contaminated Materials	CY	$ 50.00	5,600	$ 280,000	
Analytical testing	LS	$ 525.00	2	$ 1,100	
Soils Disposal (Hazardous)	Ton	$ 90.00	8,400	$ 756,000	1.5 Ton/CY
Backfill Excavate/Haul /Place	CY	$ 25.00	5,600	$ 140,000	
Analytical testing (non-virgin source)	LS	$ 632.00	8	$ 5,100	
			Sub-Total	**$ 1,266,200**	
Decon (Construct/Operate/Decommision)				$ 7,500	
Contractor's Health & Safety Costs				$ 38,000	Add 3% to Subtotal
Total Construction Cost:				$ 1,311,700	
Engineering & Contingency (includes C.A.M.P.)				$ 394,000	Add 30% to Const. Cost
NYSDEC Oversight Costs				$ -	
			TOTAL:	**$ 1,710,000**	

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ESTIMATED OFF-SITE HAZARDOUS WASTE DISPOSAL COST
SWMU S-16

Corrective Measures Study
Tecumseh Redevelopment, Inc.
Lackawanna, New York

Item Description	Unit	Unit Cost	Quantity	Total Cost	Comments
Contaminated Soil Excavation/Removal/Disposal					
Excavate Contaminated Material	CY	$ 15.00	6,000	$ 90,000	
Transport Contaminated Materials	CY	$ 50.00	6,000	$ 300,000	
Analytical testing	LS	$ 525.00	2	$ 1,100	
Soils Disposal (Hazardous)	Ton	$ 90.00	9,000	$ 810,000	1.5 Ton/CY
Backfill Excavate/Haul /Place	CY	$ 25.00	6,000	$ 150,000	
Analytical testing (non-virgin source)	LS	$ 632.00	8	$ 5,100	
			Sub-Total	**$ 1,356,200**	
Decon (Construct/Operate/Decommision)				$ 7,500	
Contractor's Health & Safety Costs				$ 41,000	Add 3% to Subtotal
Total Construction Cost:				$ 1,404,700	
Engineering & Contingency (includes C.A.M.P.)				$ 421,000	Add 30% to Const. Cost
NYSDEC Oversight Costs				$ -	
			TOTAL:	**$ 1,830,000**	

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ESTIMATED OFF-SITE HAZARDOUS WASTE DISPOSAL COST
SWMU S-18

Corrective Measures Study
Tecumseh Redevelopment, Inc.
Lackawanna, New York

Item Description	Unit	Unit Cost	Quantity	Total Cost	Comments
Contaminated Soil Excavation/Removal/Disposal					
Excavate Contaminated Material	CY	$ 15.00	2,500	$ 38,000	
Transport Contaminated materials	CY	$ 50.00	2,500	$ 125,000	
Analytical testing	LS	$ 525.00	2	$ 1,100	
Soils Disposal (Hazardous)	Ton	$ 90.00	3,750	$ 338,000	1.5 Ton/CY
Backfill Excavate/Haul /Place	CY	$ 25.00	2,500	$ 63,000	
Analytical testing (non-virgin source)	LS	$ 632.00	6	$ 3,800	
			Sub-Total	**$ 568,900**	
Decon (Construct/Operate/Decommision)				$ 7,500	
Contractor's Health & Safety Costs				$ 17,000	Add 3% to Subtotal
Total Construction Cost:				$ 593,400	
Engineering & Contingency (includes C.A.M.P.)				$ 178,000	Add 30% to Const. Cost
NYSDEC Oversight Costs				$ -	
			TOTAL:	**$ 770,000**	

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ESTIMATED OFF-SITE HAZARDOUS WASTE DISPOSAL COST
SWMU S-23

Corrective Measures Study
Tecumseh Redevelopment, Inc.
Lackawanna, New York

Item Description	Unit	Unit Cost	Quantity	Total Cost	Comments
Contaminated Soil Excavation/Removal/Disposal					
Excavate Contaminated Material	CY	$ 15.00	14,000	$ 210,000	
Transport Contaminated Materials	CY	$ 50.00	14,000	$ 700,000	
Analytical testing	LS	$ 525.00	2	$ 1,100	
Soils Disposal (Hazardous)	Ton	$ 90.00	21,000	$ 1,890,000	1.5 Ton/CY
Backfill Excavate/Haul /Place	CY	$ 25.00	14,000	$ 350,000	
Analytical testing (non-virgin source)	LS	$ 632.00	12	$ 7,600	
			Sub-Total	**$ 3,158,700**	
Decon (Construct/Operate/Decommision)				$ 7,500	
Contractor's Health & Safety Costs				$ 95,000	Add 3% to Subtotal
Total Construction Cost:				$ 3,261,200	
Engineering & Contingency (includes C.A.M.P.)				$ 978,000	Add 30% to Const. Cost
NYSDEC Oversight Costs				$ -	
			TOTAL:	**$ 4,240,000**	

TurnKey Environmental Restoration, LLC

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ESTIMATED OFF-SITE HAZARDOUS WASTE DISPOSAL COST
SWMU P-7

Corrective Measures Study
Tecumseh Redevelopment, Inc.
Lackawanna, New York

Item Description	Unit	Unit Cost	Quantity	Total Cost	Comments
Contaminated Soil Excavation/Removal/Disposal					
Excavate Contaminated Material	CY	$ 15.00	90	$ 2,000	
Transport Contaminated Materials	CY	$ 50.00	90	$ 5,000	
Analytical testing	LS	$ 525.00	1	$ 600	
Soils Disposal (Hazardous)	Ton	$ 90.00	135	$ 13,000	1.5 Ton/CY
Backfill Excavate/Haul /Place	CY	$ 25.00	90	$ 3,000	
Analytical testing (non-virgin source)	LS	$ 632.00	1	$ 700	
			Sub-Total	**$ 24,300**	
Decon (Construct/Operate/Decommision)				$ 7,500	
Contractor's Health & Safety Costs				$ 1,000	Add 3% to Subtotal
Total Construction Cost:				$ 32,800	
Engineering & Contingency (includes C.A.M.P.)				$ 10,000	Add 30% to Const. Cost
NYSDEC Oversight Costs				$ -	
			TOTAL:	**$ 40,000**	

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ATTACHMENT 1

ESTIMATED OFF-SITE HAZARDOUS WASTE DISPOSAL COST
SWMU P-9

Corrective Measures Study
Tecumseh Redevelopment, Inc.
Lackawanna, New York

Item Description	Unit	Unit Cost	Quantity	Total Cost	Comments
Contaminated Soil Excavation/Removal/Disposal					
Excavate Contaminated Material	CY	$ 15.00	1,000	$ 15,000	
Transport Contaminated Materials	CY	$ 50.00	1,000	$ 50,000	
Analytical testing	LS	$ 525.00	2	$ 1,100	
Soils Disposal (Hazardous)	Ton	$ 90.00	1,500	$ 135,000	1.5 Ton/CY
Backfill Excavate/Haul /Place	CY	$ 25.00	1,000	$ 25,000	
Analytical testing (non-virgin source)	LS	$ 632.00	4	$ 2,600	
			Sub-Total	**$ 228,700**	
Decon (Construct/Operate/Decommision)				$ 7,500	
Contractor's Health & Safety Costs				$ 7,000	Add 3% to Subtotal
Total Construction Cost:				$ 243,200	
Engineering & Contingency (includes C.A.M.P.)				$ 73,000	Add 30% to Const. Cost
NYSDEC Oversight Costs				$ -	
			TOTAL:	**$ 320,000**	

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ESTIMATED OFF-SITE HAZARDOUS WASTE DISPOSAL COST
SWMU P-11

Corrective Measures Study
Tecumseh Redevelopment, Inc.
Lackawanna, New York

Item Description	Unit	Unit Cost	Quantity	Total Cost	Comments
Contaminated Soil Excavation/Removal/Disposal					
Excavate Contaminated Material	CY	$ 15.00	20	$ 1,000	
Transport Contaminated Materials	CY	$ 50.00	20	$ 1,000	
Analytical testing	LS	$ 525.00	1	$ 600	
Soils Disposal (Hazardous)	Ton	$ 90.00	30	$ 3,000	1.5 Ton/CY
Backfill Excavate/Haul /Place	CY	$ 25.00	20	$ 1,000	
Analytical testing[4] (non-virgin source)	LS	$ 632.00	1	$ 700	
			Sub-Total	**$ 7,300**	
Decon (Construct/Operate/Decommision)				$ 7,500	
Contractor's Health & Safety Costs				$ 200	Add 3% to Subtotal
Total Construction Cost:				$ 15,000	
Engineering & Contingency (includes C.A.M.P.)				$ 5,000	Add 30% to Const. Cost
NYSDEC Oversight Costs				$ -	
			TOTAL:	**$ 20,000**	

ATTACHMENT 1

ESTIMATED OFF-SITE HAZARDOUS WASTE DISPOSAL COST
SWMU P-18

Corrective Measures Study
Tecumseh Redevelopment, Inc.
Lackawanna, New York

Item Description	Unit	Unit Cost	Quantity	Total Cost	Comments
Contaminated Soil Excavation/Removal/Disposal					
Excavate Contaminated Material	CY	$ 15.00	5,400	$ 81,000	
Transport Contaminated Materials	CY	$ 50.00	5,400	$ 270,000	
Analytical testing	LS	$ 525.00	2	$ 1,100	
Soils Disposal (Hazardous)	Ton	$ 90.00	8,100	$ 729,000	1.5 Ton/CY
Backfill Excavate/Haul /Place	CY	$ 25.00	5,400	$ 135,000	
Analytical testing (non-virgin source)	LS	$ 632.00	6	$ 3,800	
			Sub-Total	**$ 1,219,900**	
Decon (Construct/Operate/Decommision)				$ 7,500	
Contractor's Health & Safety Costs				$ 37,000	Add 3% to Subtotal
Total Construction Cost:				$ 1,264,400	
Engineering & Contingency (includes C.A.M.P.)				$ 379,000	Add 30% to Const. Cost
NYSDEC Oversight Costs				$ -	
			TOTAL:	**$ 1,640,000**	

TurnKey Environmental Restoration, LLC

ATTACHMENT 1

ESTIMATED OFF-SITE HAZARDOUS WASTE DISPOSAL COST
BENZOL AREA

Corrective Measures Study
Tecumseh Redevelopment, Inc.
Lackawanna, New York

Item Description	Unit	Unit Cost	Quantity	Total Cost	Comments
Contaminated Soil Excavation/Removal/Disposal					
Excavate Contaminated Material	CY	$ 15.00	10,000	$ 150,000	
Transport Contaminated Materials	CY	$ 50.00	10,000	$ 500,000	
Analytical testing	LS	$ 525.00	4	$ 2,100	
Soils Disposal (Hazardous)	Ton	$ 90.00	15,000	$ 1,350,000	1.5 Ton/CY
Backfill Excavate/Haul /Place	CY	$ 25.00	10,000	$ 250,000	
Analytical testing (non-virgin source)	LS	$ 632.00	4	$ 2,600	
			Sub-Total	**$ 2,254,700**	
Decon (Construct/Operate/Decommision)				$ 7,500	
Contractor's Health & Safety Costs				$ 68,000	Add 3% to Subtotal
Total Construction Cost:				$ 2,330,200	
Engineering & Contingency (includes C.A.M.P.)				$ 699,000	Add 30% to Const. Cost
NYSDEC Oversight Costs				$ -	
			TOTAL:	**$ 3,030,000**	

Hot spot removal

ATTACHMENT 2

LAND USE EVALUATION

ATTACHMENT 2
LAND USE EVALUATION

NYSDEC's Part 375 regulations require that the reasonableness of the anticipated future land be factored into the evaluation of remedial alternatives. The regulations identify 16 criteria that must be considered. These criteria and the resultant outcome for the Tecumseh Redevelopment Site are presented below.

1. *Current use and historical and/or recent development patterns:* The Tecumseh Redevelopment Site is located in an industrial area in the City of Lackawanna. The Site was formerly used to house Bethlehem Steel Company's integrated steel making operations. Steel-making operations were discontinued by the end of 1983, and, by the mid-1990s, most of the steel-making facilities had been demolished. The approximately 489-acres Site is comprised mostly of vacant land, but includes some active railroad spurs and other structures. **Accordingly, industrial/commercial use Site redevelopment would be consistent with historic site use.**

2. *Applicable zoning laws and maps:* The Site is currently zoned industrial and is located in an area of the City zoned primarily as industrial and commercial. **Use in an industrial/commercial capacity is therefore consistent with current zoning.**

3. *Brownfield opportunity areas as designated set forth in GML 970-r:* The Brownfield Opportunity Areas Program provides municipalities and community based organizations with assistance, to complete revitalization plans and implementation strategies for areas or communities affected by the presence of brownfield sites, and site assessments for strategic sites. Although the Tecumseh Redevelopment Site does not lie within a BOA, a BOA application has been filed for the area by the City of Lackawanna. As such, the Site is in a location where environmental impacts are ubiquitous. **Reuse in a restricted capacity is expected in areas where background conditions preclude achieving unrestricted use soil cleanup objectives**.

4. *Applicable comprehensive community master plans, local waterfront revitalization plans as provided for in EL article 42, or any other applicable land use plan formally adopted by a municipality:* A Master Redevelopment Plan has been developed for the entire 1,100-acre Tecumseh Redevelopment Site, which is the subject of a Memorandum of Understanding signed by Erie County, the City of Lackawanna, and Tecumseh Redevelopment. **Redevelopment of the Site in a commercial/industrial capacity is consistent with the Master Redevelopment Plan.**

ATTACHMENT 2
LAND USE EVALUATION

5. *Proximity to real property currently used for residential use, and to urban, commercial, industrial, agricultural, and recreational areas:* The Site is surrounded by vacant land and industrial properties. Land use east of the Site across Route 5 includes vacant land, commercial, industrial, and residential properties. **Nearby and adjacent property is primarily used in a non-residential capacity, both for industrial and commercial purposes. Maintaining use of the Site in an industrial/commercial capacity is consistent with surrounding property.**

6. *Any written and oral comments submitted by members of the public on the proposed use as part of the activities performed pursuant to the citizen participation plan:* **No comments have been received from the public relevant to Site use concerns.**

7. *Environmental justice concerns, which include the extent to which the proposed use may reasonably be expected to cause or increase a disproportionate burden on the community in which the site is located, including low-income minority communities, or to result in a disproportionate concentration of commercial or industrial uses in what has historically been a mixed use or residential community:* **Nearby and adjacent properties are actively used in a non-residential capacity, both for industrial and commercial purposes. Maintaining use of the Site in an industrial capacity does not pose environmental justice issues.**

8. *Federal or State land use designations:* The property is designated Urban Land (U2) by the Soil Conservation Service. Urban land typically contains ubiquitous contaminants. **Reuse in a restricted capacity is typical in areas where background conditions preclude achieving unrestricted use soil cleanup objectives.**

9. *Population growth patterns and projections:* The population of the City of Lackawanna in 2000 was 19,064 (2000 Census). The 2004 population estimate for the City of Lackawanna is 18,394 (a decline of 3.5%). A declining population indicates a surplus housing market**. Reuse of the Site in a non-residential capacity does not materially affect opportunities for residential growth.**

10. *Accessibility to existing infrastructure:* The main local roadways that provide access to the Site are NYS Route 5/Hamburg Turnpike and Fuhrmann Boulevard. Utilities (sewer, water, electric, natural gas, and communication) present along Route 5 previously serviced the Site when it was an active industrial facility**. Existing infrastructure supports reuse in a commercial/industrial capacity**.

ATTACHMENT 2
LAND USE EVALUATION

11. *Proximity of the site to important cultural resources, including federal or State historic or heritage sites or Native American religious sites*: **No such resources or sites are known to be present on or near the property.**

12. *Natural resources, including proximity of the site to important federal, State or local natural resources, including waterways, wildlife refuges, wetlands, or critical habitats of endangered or threatened species:* The Erie County Internet Mapping System shows that State wetlands do not exist on the Site. Federal wetlands are present along the shore of Lake Erie, Smokes Creek, and the Gateway Metroport Ship Canal. There are no threatened or endangered species, nor important plant habitats on the Site. **The absence of significant ecological resources on or adjacent to the Site indicates that cleanup to restricted use conditions will not pose an ecological threat.**

13. *Potential vulnerability of groundwater to contamination that might emanate from the site, including proximity to wellhead protection and groundwater recharge areas and other areas identified by the Department and the State's comprehensive groundwater remediation and protection program established set forth in ECL article 15 title 31:* Groundwater at the Site is assigned Class "GA" by 6NYCRR Part 701.15. A total of 164 monitoring wells were installed within six distinct hydrogeologic units across the Site including 114 fill unit wells, 33 sand unit wells, 8 miscellaneous unit wells (2 peat, 3 clayey silt, 1 clay, 1 till, and 1 clayey silt and till), and 9 bedrock wells. Seven wells have since been abandoned or destroyed (2 fill, 4 sand, and 1 miscellaneous/clay). Recharge at the Site is from rainfall and snowmelt, most of which evaporates or infiltrates to the subsurface. Any Site runoff is eventually intercepted by one of the surrounding surface water bodies (i.e., Smokes Creek, the Ship Canal, the Buffalo Outer Harbor, or Lake Erie). Groundwater quality during the CMS will be further assessed on an area-by-area basis. No potable wells were identified on the Site. **Groundwater quality and recharge areas will be further investigated in the CMS and incorporated into a site-wide Long-Term Groundwater Monitoring (LTGWM) program.**

14. *Proximity to flood plains:* The Erie County Internet Mapping System indicates that the 100-year floodplain is located on the southern portion of the Site bordering Smokes Creek and on the northern portion of the Site. **Site remediation will incorporate protection of surface water.**

15. Geography and geology: The flat-lying Site is located within the Erie-Ontario lake plain physiographic province, which is typified by little topographic relief and gentle slope toward Lake Erie, except in the immediate vicinity of major drainage ways. The Site is

ATTACHMENT 2
LAND USE EVALUATION

overlain with man-made deposits particularly near the Lake and thinning toward the east. Although pockets of peat material exist, the natural surficial geology of the Site underlying this fill unit is composed primarily of lake sediments consisting of blanket sands and beach ridges that are predominantly underlain by Lacustrine silts and clays and/or glacial till. The Lacustrine clays and silts are underlain by shale or limestone bedrock. **Geography and geology are consistent with commercial/industrial re-use.**

16. *Current institutional controls applicable to the site:* There is an existing deed restriction that prohibits the use of groundwater on the property and limits redevelopment to industrial, office and other uses not involving prolonged occupancy by persons under the age of 18. **The planned commercial/industrial redevelopment is consistent with the existing institutional controls.**

Based on the above analysis, reuse of the site in a commercial/industrial capacity is consistent with past and current development and zoning on and around the Site, and does not pose additional environmental or human health risk.