

Exhibit A

Nature and Extent of Contamination

This section describes the findings of the Remedial Investigation for all environmental media that were evaluated. As described in Section 6.1, samples were collected from various environmental media to characterize the nature and extent of contamination.

For each medium, a table summarizes the findings of the investigation. The tables present the range of contamination found at the site in the media and compares the data with the applicable SCGs for the site. The contaminants are arranged into two categories: volatile organic compounds (VOCs), and in-organics (metals). For comparison purposes, the SCGs are provided for each medium that allows for unrestricted use. For soil, if applicable, the Restricted Use SCGs identified in Section 6.1.1 are also presented.

Waste/Source Areas

As described in the RI report, waste and source materials were identified at the site and are impacting groundwater, soil, and soil vapor on and off-site.

Wastes are defined in 6 NYCRR Part 375-1.2(aw) and include solid, industrial and/or hazardous wastes. Source Areas are defined in 6 NYCRR Part 375(au). Source areas are areas of concern at a site where substantial quantities of contaminants are found which can migrate and release significant levels of contaminants to another environmental medium.

Existing wastes/source areas identified at the site include:

- Former UST Area – Elevated VOC concentrations were detected in soil samples collected in locations under and west of the former USTs.

Seven test pits were excavated from four to five feet deep across the site (Figure 3). Photoionization Detector (PID) measurements from soil collected from TP-3 ranged from 52 parts per million (ppm) at approximately two feet below grade to 4,000 ppm at approximately four feet below grade. The remaining four test pits revealed the presence of fill materials with significantly lower PID measurements. No sampling was conducted as a part of the test pit program.

Twenty soil probes, ten test borings and five monitoring well borings were completed across the project site, and 24 soil probes were advanced on adjoining properties during the first four sampling events (Figure 3). The visual and PID screening of the retrieved soil samples indicate the presence of contaminated soils beneath the central, eastern, south and south-central portions of the project site and on adjoining sites. The screening of the wet/saturated retrieved soil samples indicates the presence of contaminated groundwater in the above referenced areas. Based on PID measurements, the most significantly impacted soils are located in the eastern (SP-4) and south-central (MW-5) portions of the site. Additionally, the highest PID measurements in the wet/saturated soils are located in the central (SP-8) and the south-central (SP-18) portions of the site.

Although eleven (11) different TCL VOCs were detected in the on-site subsurface soil samples, only PCE was detected at concentrations that exceeded the SCOs. The highest PCE concentrations were detected at MW-5 and TB-5, 8,000 ppm and 160 ppm respectively (Figure 4), exceeding the SCO of 1.3 ppm for restricted use

protection of groundwater. MW-5 was placed in the area of the former USTs, and SP-4 was placed proximal to the former location of the wash tubs. Additionally, it should be noted the total concentrations of Tentatively Identified Compounds (TICs) is greater than 500 ppm in SP-9.

Based on elevated PID readings and visual/olfactory evidence of contamination, two samples were submitted for TCLP analysis at MW-5 and SP-4 (Table 6). PCE was detected in the sample collected from MW-5 at a concentration of 45 mg/L (TCLP), which is more than 64 times greater than the NYCRR Part 370 hazardous waste limit of 0.7 mg/L. The leachable concentration of PCE in the sample collected from SP-4 was 2.7 mg/L, nearly four times greater than the NYCRR Part 370 hazardous waste limit of 0.7 mg/L. These TCLP concentrations indicate that the impacted soils in these sample locations would be defined as a hazardous waste. The total PCE concentrations in the sample collected from SP-4 was similar to those detected in other samples collected at the project site, indicating that these other soils would likely also be defined as a hazardous waste. It is noted that all other RCRA characteristic analyses were within the regulatory values.

SVOCs, pesticides, herbicides, and metals were either not detected or were not detected at concentrations above the regulatory values in any of the soil/fill samples (Table 4).

Seven different TCL VOCs were detected in the off-site subsurface samples (Table 3). However, none of the compounds were detected at a concentration that exceeded its SCG. The results indicate that the soil contamination is limited to the project site.

Arsenic and iron were detected at concentrations that exceeded the SCGs in the four on-site soil samples analyzed for TAL metals Table 5. Similar levels of iron are also often encountered at similar concentrations in urban settings and/or in fill materials. However, arsenic was detected in SP-13 and SP-15 at concentrations of 109 ppm and 85.7 ppm, respectively, exceeding the protection of groundwater SCGs of 16 ppm and natural Eastern USA background values (3-12 ppm).

Certain waste/source areas identified at the site were addressed by the IRM(s) described in Section 6.2. The remaining waste/source area(s) identified during the RI will be addressed in the remedy selection process.

Groundwater

On-Site Groundwater

Seven different TCL VOCs were detected in all but one of seven on-site groundwater samples at concentrations that exceeded NYSDEC Class GA Groundwater Standard or Guidance Value (Tables 7 and 8). PCE concentrations ranged from 7 to 1,000,000 ppm, with the most significantly elevated concentrations detected in the groundwater sample from MW-5, in the vicinity of the former USTs (Figure 5). The PCE concentrations in the remaining on-site locations were also significantly above the NYSDEC Class GA Groundwater Standard or Guidance Value of 5 ppm, but none approached the levels in MW-5. The other VOCs detected at concentrations above the SCGs include: 1,1,2,2-tetrachloroethane; 1,1-dichloroethene (1,1-DCE); vinyl chloride; cis-1,2-dichloroethene; isopropylbenzene; and TCE.

The results indicate that the groundwater beneath the central and eastern portions of the project site has been significantly impacted by the VOC contamination present in the subsurface soil/fill at the project site. The results also indicate that the groundwater beneath the south-central portion of the site (MW-5 location) is the most severely impacted. This area is immediately down gradient of the former USTs and also adjacent to the southern property line of the project site. The southward groundwater flow direction and presence of high

concentrations of contaminants along the southern property boundary indicated the likelihood of down gradient impacts.

Off-Site Groundwater

Five different TCL VOCs were detected in at least one of the 21 off-site groundwater/surface water samples at concentrations that exceeded SCGs (Table 7).

PCE was present in 15 of the 21 samples at concentrations above the SCG, with concentrations ranging from 6 to 9,200 ppm. These concentrations were highest near the project site and decreased significantly with distance from the project site. The other VOCs detected at concentrations above the SCGs included 1,1,1-trichloroethane, cis-1,2-DCE, vinyl chloride and TCE.

The results indicate that the groundwater contaminant plume has migrated off-site to the south of the project site, impacting the Swanson and former Pelican properties (Figure 5). The SP-26 results indicate that the contaminant plume slightly extends beyond the northerly boundary of the site toward the adjacent Pal Joey’s restaurant, albeit at relatively low concentrations.

Table #1 - Groundwater

Detected Constituents	Concentration Range Detected (ppb) ^a	SCG ^b (ppb)	Frequency Exceeding SCG
VOCs			
1,1,2,2-Tetrachloroethane	ND - 7	5	1 of 10
Tetrachloroethene	ND – 1,000,000	5	26 of 33
Trichloroethene	ND – 4,800	5	21 of 33
1,1-Dichloroethene	ND - 27	5	1 of 33
cis-1,2-Dichloroethene	ND – 1,100	5	15 of 33
Vinyl chloride	ND - 120	2	4 of 33
	ND -	5	
Inorganics			
Iron	5,140 – 22,300	300	5 of 5
Lead	8.9 – 25.5	25	1 of 5
Manganese	453 – 5,690	300	5 of 5
Sodium	35,200 – 112,000	20,000	5 of 5
Thallium	ND – 3.2	0.5	1 of 5

a - ppb: parts per billion, which is equivalent to micrograms per liter, ppm, in water.

b- SCG: Standard Criteria or Guidance - Ambient Water Quality Standards and Guidance Values (TOGs 1.1.1), 6 NYCRR Part 703, Surface water and Groundwater Quality Standards, and Part 5 of the New York State Sanitary Code (10 NYCRR Part 5).

Based on the findings of the RI, the past disposal of hazardous waste has resulted in the contamination of groundwater. The site contaminants that are considered to be the primary contaminants of concern which will drive the remediation of groundwater to be addressed by the remedy selection process are: tetrachloroethene (PCE); trichloroethene (TCE); 1,1-dichloroethene (1,1-DCE); cis-1,2-dichloroethene; vinyl chloride.

Soil

A total of 59 soil borings were installed on and off-site. Forty soil samples were collected from 32 of the soil borings. Sample depths ranged from ground surface to 15-feet below ground surface (bgs).

Of the 40 soil samples collected, four samples were analyzed for full Target Compound List (TCL)/Target Analyte List (TAL). Thirty-five samples were analyzed for TCL VOCs only; with the exception of one sample. This sample was analyzed for TCL VOCs as well as TCLP VOCs. Finally, one sample was analyzed for TCLP SVOCs, PCBs, pesticides, herbicides, and inorganics (metals), as well as reactivity, corrosivity, and ignitability.

Of the 40 soil samples collected on-site (Table 1), one or more of the SCGs were exceeded in seven samples. Three soil samples, MW-5, SP-4, and TB-5 exceeded the SCG for PCE (Table 3). Four soil samples, SP-3, SP-11, SP – 13, and SP-15 exceeded SCGs for one or more inorganic parameters (Table 5).

Table #2 - Soil

Detected Constituents	Concentration Range Detected (ppm) ^a	Unrestricted SCG ^b (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use SCG ^c (ppm)	Frequency Exceeding Restricted SCG Protection of Groundwater
VOCs					
Tetrachloroethene	ND – 8,000,000	1,300	15 of 31	1,300	15 of 31
Trichloroethene	ND – 2,800	470	17 of 31	470	17 of 31
cis-1,2-Dichloroethene	ND – 5,600	250	9 of 19	250	9 of 19
Toluene	ND – 1,400	700	6 of 19	700	6 of 19
Inorganics					
Arsenic	85-109	13	2 of 4	16	2 of 2

a - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;

b - SCG: Part 375-6.8(a), Unrestricted Soil Cleanup Objectives.

c - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Public Health for protection of groundwater Use, unless otherwise noted.

d - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Groundwater.

Based on the findings of the Remedial Investigation, the past disposal of hazardous waste has resulted in the contamination of soil. The site contaminants identified in soil which are considered to be the primary contaminants of concern, to be addressed by the remedy selection process are tetrachloroethene (PCE), trichloroethene (TCE), and arsenic.

Surface Water

No site-related surface water contamination of concern was identified during the RI. Therefore, no remedial alternatives need to be evaluated for surface water.

Sediments

No site-related sediment contamination of concern was identified during the RI. Therefore, no remedial alternatives need to be evaluated for sediment.

Soil Vapor

The evaluation of the potential for soil vapor intrusion resulting from the presence of site related soil or groundwater contamination was evaluated by the sampling of soil vapor, sub-slab soil vapor under structures, and indoor air inside structures. At this site, due to the presence of buildings in the impacted area, a full suite of samples were collected to evaluate whether soil vapor intrusion was occurring.

A passive soil gas survey was completed at the site to identify potential source areas of volatile organic compound contamination. Fourteen locations were included in the survey and the results indicate the presence of PCE and TCE at elevated concentrations.

Soil vapor samples were collected at an off-site adjacent building structure to the north of the site in order to determine potential impacts to indoor air quality from contaminants originating from the site (Table 9). Sub-slab, basement ambient, and outdoor ambient air samples were collected and analyzed for VOCs. Results of the indoor air quality sampling indicated an elevated concentration of PCE in the basement ambient air sample in excess of its respective SCG.

Based on the findings of the Remedial Investigation, the disposal of hazardous waste has resulted in the contamination of soil vapor. The site contaminants that are considered to be the primary contaminants of concern which will drive the remediation of soil vapor to be addressed by the remedy selection process are, tetrachloroethene (PCE) and trichloroethene (TCE).

Exhibit B

Description of Remedial Alternatives

The following alternatives were considered based on the remedial action objectives (see Section 6.5) to address the contaminated media identified at the site as described in Exhibit A.

Alternative A: No Action

The No Further Action Alternative recognizes the off-site vapor mitigation system completed by the IRM described in Section 6.2; and the 2001 County emergency removal action to remove various abandoned

chemicals/solvents, two 500 gallon Underground Storage Tanks (UST's), and excavated soil/fill described in Section 3. This alternative is evaluated as a procedural requirement as a basis for comparison, leaves the site in its present condition, and does not provide any additional protection of the environment.

Alternative B: Limited Excavation and In-Situ Soil/Ground Water Treatment

This alternative includes the limited excavation and off-site disposal of the most contaminated subsurface soil/fill in the vicinity of MW-5 (to the top of groundwater table at a minimum) in addition to the arsenic contaminated area, and backfill with clean fill. The remaining VOC contaminated soil/fill would be treated in-situ using chemical oxidation.

In-situ chemical oxidation of the groundwater plume would consist of a series of injections throughout the contaminated groundwater plume.

Upon development, a sub-slab depressurization system (SSDS) will be installed in the Swanson Building and the existing sump in the building , upon obtaining all required permits/approvals, connected directly to the sanitary sewer.

This alternative includes institutional controls, in the form of an environmental easement and a site management plan, necessary to protect public health and the environment from any contamination identified at the site.

<i>Present Worth:</i>	\$1,653,000
<i>Capital Cost:</i>	\$1,612,000
<i>Annual Costs:</i>	\$5,300

Alternative C: Vadose Soil Excavation, and In-Situ Groundwater Treatment

This alternative includes the removal and off-site disposal of the VOC contaminated subsurface soil/fill down to the top of the groundwater table (unsaturated soil removal, 4-6 feet bgs), and backfill with clean fill. In addition, the arsenic contaminated soil area will be excavated to meet the SCO.

In-situ remediation of the contaminated groundwater plume would consist of both a chemical oxidant (MW-5 Area) and HRC elsewhere throughout the on-site and off-site VOC plume. In-situ chemical oxidation of the groundwater plume would consist of a series of injections throughout the contaminated groundwater plume.

Upon development, a sub-slab depressurization system (SSDS) will be installed in the Swanson Building. The existing sump in the building, upon obtaining all required permits/approvals, would be connected directly to the sanitary sewer.

This alternative includes institutional controls, in the form of an environmental easement and a site management plan, necessary to protect public health and the environment from any contamination identified at the site.

<i>Present Worth:</i>	\$1,287,000
<i>Capital Cost:</i>	\$1,264,000
<i>Annual Costs:</i>	\$5,300

Alternative D: Complete Excavation and Ex-Situ Ground Water Treatment By Air Stripping

This alternative involves the complete excavation and disposal of the contaminated soil/fill down to native soil and/or clay (13 feet bgs) and backfilling with clean fill.

Treatment of the contaminated groundwater plume will consist of an ex-situ pump and treat system using an air stripper. This system includes additional groundwater collection trenches to intercept the groundwater flow, drain it by gravity to a sump chamber at the lowest point of the site, and pump to the treatment unit prior to direct discharge to the municipal sanitary sewer. Trenches placed along the Swanson Building to collect off-site contaminated groundwater underneath the building in also included.

A remedial design is required to determine the treatment unit and discharge requirements.

This alternative includes institutional controls, in the form of an environmental easement and a site management plan, necessary to protect public health and the environment from any contamination identified at the site.

Present Worth: \$2,070,000
Capital Cost: \$2,030,000
Annual Costs: \$30,000

Alternative E: Complete Excavation and In-Situ Ground Water Treatment

This alternative involves the complete excavation and disposal of the contaminated soil/fill down to native soil and/or clay (13 fbgs) and backfilling with clean fill. In-situ remediation of the contaminated groundwater plume would consist of both a chemical oxidant in the most significantly impacted area (MW-5 Area, 480 sf) and HRC elsewhere throughout the VOC plume which extends south through the Swanson site and onto the Pelican site (total plume estimated at 25,000 sq. ft.). In-situ remediation of the contaminated groundwater plume would consist of 500 HRC injections to be placed one per 50 sf over the contaminated groundwater plume.

This alternative includes institutional controls, in the form of an environmental easement and a site management plan, necessary to protect public health and the environment from any contamination identified at the site.

Present Worth: \$2,241,100
Capital Cost: \$2,200,200
Annual Costs: \$5,300

A restoration to per-disposal or unrestricted conditions alternative was not provided in the RI/AAR. However, it is possible Alternative E could achieve all of the SCGs discussed in Section 6.1.1 and Exhibit A and soil meet the unrestricted soil clean objectives listed in Part 375-6.8(a).

Exhibit C

Remedial Alternative Costs

Remedial Alternative	Capital Cost (\$)	Annual Costs (\$)	Total Present Worth (\$)
Alternative A – No Further Action	0	0	0
Alternative B – Limited Excavation,	\$1,612,000	\$5,300	\$1,653,000

In-situ Soil/Groundwater			
Alternative C – Vadose Soil Excavation, In-situ Groundwater,	\$1,264,000	\$5,300	\$1,287,000
Alternative D – Complete Excavation, Ex-situ Groundwater	\$2,030,000	\$30,000	\$2,070,000
Alternative E – Complete Excavation, In-situ Groundwater	\$2,200,200	\$5,300	\$2,241,100

Exhibit D

SUMMARY OF THE PROPOSED REMEDY

The Department is proposing Alternative C, Vadose Soil Excavation of Contaminated Soil/Fill, and In-Situ Soil/Groundwater Treatment as the remedy for this site. Alternative C would achieve the remediation goals for the site by the excavation and off-site disposal of hazardous soil/fill occurring in the vadose zone. The remaining contaminated soil/fill will be treated in-situ using chemical oxidation.

Upon development, a sub-slab depressurization system (SSDS) will be installed in the Swanson Building. The existing sump in the building , upon obtaining all required permits/approvals, would be connected directly to the sanitary sewer.

The entire contaminated groundwater plume on and off-site is to be treated in-situ with injection of Hydrogen Releasing Compound (HRC) into the saturated zone. A chemical oxidant will be used in the most significantly impacted area near MW-5 to rapidly reduce the concentration of PCE. Annual groundwater monitoring/reporting for a period of 5 years will be conducted to measure the effectiveness of the treatment program. A review of the groundwater remedy will be conducted after 5 years of operation. The elements of this remedy are described in Section 7. The limits of the proposed remedy are shown in Figure 5.

Basis for Selection

The proposed remedy is based on the results of the RI and the evaluation of alternatives. The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375. A detailed discussion of the evaluation criteria and comparative analysis is included in the AA report.

The selected Alternative C is significantly different than Alternative D recommended by the FS. Alternative C recommends excavation of contaminated soil/fill in the vadose zone and utilizes in-situ rather than ex-situ soil/groundwater treatment.

When reviewing other alternatives, both Alternative D and E include complete excavation of soil fill down to native soil and/or the clay layer, adding stability issues associated with excavation to 13 feet bgs along the adjacent Swanson building. However, Alternative D proposes the installation of an ex-situ pump and treat groundwater system. Alternative E proposes treatment of the entire on and off-site contaminated groundwater plume with in-situ chemical oxidation. In contrast to conventional pump and treat techniques, in-situ chemical treatment of the groundwater is thought to provide a faster and more complete contaminate removal and/or destruction process. However, the costs evaluation in the AA Report associated with Alternative D (Complete Excavation, Pump and Treat, and in-situ chemical treatment) is less than Alternative E (Complete Excavation

and in-situ chemical treatment).

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

1. Protection of Human Health and the Environment. This criterion is an overall evaluation of each alternative's ability to protect public health and the environment.

The proposed remedy, Alternative C, would satisfy this criterion by removing the contaminated soils in the vadose zone and properly disposing off-site, addressing the source of groundwater contamination, the most significant threat to public health and the environment. The entire on and off-site contaminated groundwater plume will be remediated in-situ (i.e., Swanson and Pelican Sites to the south). Alternative C accomplishes this goal without the added risks/costs of additional soil excavation and disposal to native soil (13 feet bgs), backfilling with clean fill, site machinery and trucking, dealing with volumes of groundwater during excavation, and the engineering issues (stability) of excavation along the adjacent Swanson building.

Alternative A (No Action) does not provide sufficient protection to public health and the environment and will not be evaluated further.

Alternative B, would satisfy this criterion by only removing the most contaminated soils in the MW-5 area to the top of the groundwater table (unsaturated soils) and properly disposing off-site, addressing the main source of groundwater contamination, the most significant threat to public health and the environment. The remaining contaminated soils/fill will be treated in situ using chemical oxidation. The entire on and off-site contaminated groundwater plume will be remediated in-situ (i.e., Swanson parcel and Pelican Site to the south).

Alternative D, complete removal of contaminated soils and properly disposing off-site, would also satisfy this criterion but to a lesser degree and/or with lower certainty due to the questionable effectiveness and length of time required to meet remediation goals using a pump and treat groundwater treatment system. It's also not clear if Alternative D would treat the entire contaminant plume extending onto the Pelican site to the south.

Alternative E would satisfy this criterion by complete removal of the contaminated soils to native clay (approximately 13 feet) and properly disposing off-site, addressing the source of groundwater contamination, the most significant threat to public health and the environment. The entire on and off-site contaminated groundwater plume will be remediated in-situ (i.e., Swanson parcel and Pelican Site to the south).

2. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether a remedy will meet environmental laws, regulations, and other standards and criteria. In addition, this criterion includes the consideration of guidance which the Department has determined to be applicable on a case-specific basis.

Alternatives C complies with SCGs to the extent practicable by excavation of contaminated soils and treatment of the entire on and off-site contaminant plume. Alternative C thereby addresses source areas of contamination, and also creates the conditions necessary to restore groundwater quality to pre-disposal conditions and/or the extent practicable.

Alternatives B, D, and E also comply with this criterion.

The next six "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

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

Long-term effectiveness is best accomplished by all the Alternatives B, C, D, and E, involving varying degrees of excavation of the contaminated overburden soils and treatment of the entire contaminated groundwater plume.

Alternative C accomplishes this goal without the added risks/costs of additional soil excavation and disposal, backfilling with clean fill, site machinery and trucking, dealing with volumes of groundwater during excavation, and the engineering issues (stability) of excavation along the adjacent Swanson.

Alternative D proposes ex-situ pump and treat groundwater technology, which adds yearly operations and maintenance cost and additional remediation time depending on effectiveness of the collection system (i.e., extracting contaminants desorbed in soil and air stripping).

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

Alternatives B, C, D, and E, excavation and off-site disposal of contaminated soil, and groundwater treatment reduces the toxicity, mobility and volume of on-site waste by transferring the material to an approved off-site location.

Although free-phase product was not observed during the investigation, the elevated groundwater concentrations indicate that free-phase product may exist. If present, this product may rest on the clay layer observed in some of the deeper borings. Alternative D and E both include complete excavation of the contaminated soil to native soils and/or the clay layer, allowing removal of possible free phase product resting on the clay layer.

However, Alternative D relies on an ex-situ pump and treat system with questions regarding its effectiveness, the length of time needed to complete remediation goals, and limited treatment of the entire contaminated groundwater plume (i.e., Swanson parcel but not the Pelican Site).

Alternative E would permanently reduce the toxicity, mobility and volume of contaminants by complete excavation of on-site contaminated soil, coupled with in-situ chemical treatment of the entire contaminated groundwater plume.

Alternatives B and C rely on in-situ soil/groundwater remediation to accomplish these goals.

5. Short-term Impacts and Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

Alternatives B, D and E have short-term construction impacts, requiring engineering controls including handling the volumes of contaminated excavation groundwater, and stability issues of excavating along the adjacent Swanson building.

Alternative D, requiring a groundwater pump and treat system, would have short-term and yet to be determined long-term impacts to the environment due to the increase in green house emissions, noise, exhaust, and odor concerns to the neighborhood. These impacts are difficult to impossible to control by engineering means, and directly related to the duration of the activity, which in this case is in question. A pump and treat system could extend 5, 10, 20, 30 years before achieving the remediation goals. These impacts must also be evaluated especially considering the close proximity of a commercial business on the adjoining property to the north (Pal Joey's,) and also numerous commercial businesses in close proximity to the west.

Alternatives B relies on in situ chemical oxidation of the remaining soil/fill (outside MW-5) in the vadose zone, requiring added time and questionable results. Alternative C excavates contaminated soils as much as practically possible in the vadose zone, thus the length of time needed to achieve the remedial objectives will be minimized.

Alternatives B and C are less intrusive to the environment/neighborhood and are the simplest alternatives to implement.

6. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction of the remedy and the ability to monitor its effectiveness. For administrative feasibility, the availability of the necessary personnel and materials is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, institutional controls, and so forth.

Alternatives B and C are the most technically and administrative feasible alternative to implement as contaminated soils are excavated to the extent practical and the entire groundwater plume is treated in-situ. Upon development, this alternative and after obtaining all required permits/approvals, the existing sump in the building would be connected directly to the sanitary sewer.

Contaminated soil excavation is limited to the vadose zone. This removes the soil stability issue of soil excavation along the northern length of the adjacent Swanson building to native soil (13 feet bgs).

Alternative D would require the design of an effective pump and treat system, and possible permits due to noise, odor concerns, and treated groundwater discharged to the sanitary sewer.

7. Cost-Effectiveness. Capital costs and annual operation, maintenance, and monitoring costs are estimated for each alternative and compared on a present worth basis. Although cost-effectiveness is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the other criteria, it can be used as the basis for the final decision.

Alternative D proposes ex-situ pump and treat groundwater technology, adding yearly operations and maintenance costs, additional time depending its effectiveness (i.e., extracting contaminants desorbed in soil and air stripping). The capital investment for a typical ex-situ plant has been estimated to be between three and

seven times higher than for the *in-situ* systems. Whereas the *in-situ* methods had virtually no operating costs, the *ex-situ* costs each year have been estimated to be nearly as high as the initial capital costs.

8. Land Use. When cleanup to pre-disposal conditions is determined to be infeasible, the Department may consider the current, intended, and reasonable anticipated future land use of the site and its surroundings in the selection of the soil remedy.

This current zoning and anticipated future use for this site is commercial. Alternatives B, C, D, and E, removal of contaminated soils and remediation of the entire contaminated groundwater plume (on and off-site), would allow this site to meet commercial use restrictions.

The final criterion, Community Acceptance, is considered a "modifying criterion" and is taken into account after evaluating those above. It is evaluated after public comments on the Proposed Remedial Action Plan have been received.

9. Community Acceptance. Concerns of the community regarding the investigation, the evaluation of alternatives, and the PRAP are evaluated. A responsiveness summary will be prepared that describes public comments received and the manner in which the Department will address the concerns raised. Since the selected remedy differs significantly from the proposed remedy, notices to the public will be issued describing the differences and reasons for the changes.

Alternative C is being proposed because, as described above, it satisfies the threshold criteria and provides the best balance of the balancing criterion.