Remedial Action Work Plan

Auburn Community Hotel Brownfield Site

City of Auburn
Cayuga County, New York

NYSDEC BROWNFIELD SITE # C706017

Prepared for
Auburn Community Hotel, LP

By

C&S Engineers, Inc.
499 Col. Eileen Collins Blvd.
Syracuse, New York 13212

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1.0 BACKGROUND

1.1 Introduction

This Remedial Action Work Plan details the proposed actions to address identified potential human exposures to soil and groundwater impacted by PAHs and inorganic parameters, and groundwater with VOCs in excess of Class GA groundwater Standards at the Auburn Community Hotel BCP site. The range of potential remedies was identified, and the feasibility of incorporating one or more of these technologies as part of the final remedy at the site was analyzed, in the July 2012 Remedial Investigation and Remedial Alternatives Analysis (RI/RAA) Report. The alternatives analysis followed the methodology set forth in Section 4 of the NYSDEC's *DER-10 Technical Guidance for Site Investigation and Remediation* and was based on site conditions and risks to human health or the environment, as identified and discussed in previous sections of the RI/RAA. Remedial alternatives were evaluated relative to the following criteria (with descriptions as provided in DER-10):

1. *Overall Protection of Public Health and the Environment.* This criterion is an evaluation of the remedy's ability to protect public health and the environment, assessing how risks posed through each existing or potential pathway of exposure are eliminated, reduced or controlled through removal, treatment, engineering controls or institutional controls.
2. *Compliance with Standards, Criteria, and Guidance (SCGs).* Compliance with SCGs addresses whether or not a remedy will meet applicable environmental laws, regulations, standards, and guidance.
3. *Long-term Effectiveness and Permanence.* This criterion evaluates the long-term effectiveness of the remedy after implementation.
4. *Reduction of Toxicity, Mobility or Volume with Treatment.* The remedy's ability to reduce the toxicity, mobility or volume of site contamination is evaluated.
5. *Short-term Effectiveness.* The potential short-term adverse impacts and risks of the remedy upon the community, the workers, and the environment during the construction and/or implementation are evaluated. This criterion also considers the time frame for the remedy, to ensure that the remedy is implemented in a reasonable time.

6. *Implementability.* The technical and administrative feasibility of implementing the remedy is evaluated. Technical feasibility includes the difficulties associated with the construction and the ability to monitor the effectiveness of the remedy. For administrative feasibility, the availability of the necessary personnel and material is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, etc.
7. *Cost*. Capital, operation, maintenance and monitoring costs are evaluated for the remedy.
8. *Community Acceptance.* The public's comments, concerns, and overall perception of the remedy, if any, are evaluated in a format that responds to all questions that are raised (i.e., responsiveness summary).
9. *Land Use.* As described in the September 2010 Brownfield Cleanup Application , the intended redevelopment of the site is the construction of a new hotel. Remedial alternatives should be compared as to the ability to attain remedial goals given that intended use.

1.2 Remedial Goal

The overall remedial goal for the site, as established in the RI/RAA Report, is to eliminate or mitigate significant threats to public health and the environment, given the intended use of the site as a new hotel that will be occupied on a regular basis by employees and on a transient basis by patrons/guests.

1.3 Remedial Action Objectives for Soil

The qualitative Human Health Exposure Analysis (HHEA) identified the following feasible exposure scenarios with respect to soils at the site:

- Future workers involved with installing or repairing subsurface utilities or structures which could potentially extend into impacted soil; or
- Future inhabitants of site structures who could be exposed to volatile vapors within the indoor environment.

Given those exposure scenarios, the Remedial Action Objective (RAO) with respect to site soils is to protect future on-site workers or patrons from contact with impacted soils or vapors.

1.4 Remedial Action Objectives for Groundwater

Due to the long-established utilization of public drinking water supplies in areas surrounding the site, the HHEA concluded that, although groundwater at the site contains low levels of volatile organic compounds at concentrations exceeding Class GA Groundwater Standards, the only feasible exposure scenarios were associated with:

- Workers involved with installing or repairing subsurface utilities or structures which could potentially extend to near or below the water table; or
- Inhabitants of site structures who could be exposed to volatile vapors within the indoor environment.

Therefore, one RAO with respect to site groundwater is to protect future on-site workers from contact with groundwater or vapors.

Although the HHEA concluded that there was no likely exposure scenario associated with withdrawal and use of groundwater at the site, it was determined that the site remedy would include measures to assure that site groundwater will not be withdrawn and used for any purpose, or measures to assure that the physical and mechanical characteristics of site structures are adequate to mitigate potential intrusion of soil vapors. Therefore, the RAOs for groundwater include:

- To assure that site groundwater will not be withdrawn and used for any reason.
- To assure that the physical and mechanical characteristics of site structures are adequate to mitigate potential intrusion of soil vapors into the indoor environment of site structures.

2.0 SELECTION OF APPROPRIATE REMEDIAL ACTIONS

2.1 Selection of a Remedial Alternative for Soil

Given the summary site characteristics and conditions, the following remedial technologies were identified as potentially applicable to soils impacted by PAHs or inorganic contaminants:

- Excavation and off-site disposal
- Institutional and/or engineering controls

The following subsections describe the above remedial technologies and assess the feasibility of each in addressing the impacted soils at the site.

2.1.1 Excavation and Off-Site Disposal

Technology Description

This technology consists of excavating impacted materials, transporting them off-site for disposal or treatment, and replacing the excavated materials with clean imported fill. For this technology to be effective, the following project components would be necessary:

- Non-impacted soils would be characterized, removed and stockpiled.
- Impacted soils would be excavated and segregated for disposal.
- A confirmation sampling program would be incorporated to confirm that remedial goals were achieved;
- Affected areas would need to be restored.

Feasibility Assessment

This technology could be successfully implemented: soils with impacts exceeding cleanup goals could be excavated and transported from the site for disposal, until verification samples from the limits of excavations met the cleanup goals. However, based on the spatially dispersed nature of the impacted materials, and on there being no simple method for field screening for SVOC or inorganic impacted soils, positively identifying areas to be excavated would require a comprehensive sampling and analytical screening program. Utilizing the average depth of seven feet for the seven RI samples exceeding "Restricted Commercial" soil cleanup standards for SVOC and inorganic parameters, and assuming 1,800 square feet average area associated with each sample (2.2 acre site with 53 soil sample locations), a minimum of 700 tons of soil would need to be excavated and disposed. Due to the dispersed nature of those impacted soils, capital costs on the order of $150-$200 per ton for non-hazardous contaminated soils might be expected, resulting in a minimum cost for this technology of $105,000 to $140,000. Even after that effort and expense, institutional and/or engineering controls would likely remain necessary and appropriate to meet the site RAOs. Therefore, given the prohibitive efforts and costs of implementing this technology, and the fact that successful implementation would not obviate the need for institutional and/or engineering controls, this technology was deemed not feasible for addressing impacts to soils at the site.

2.1.2 Institutional and Engineering Controls

Technology Description

An *institutional control* is a non-physical means of enforcing a restriction on the use of real property that is used in situations where conditions make the property suitable for some, but not all, potential uses of the property. The purpose of an institutional control, such as an environmental easement, may be to limit human or environmental exposure, restrict use, or provide notice of such restriction.

Engineering controls consist of physical barriers or methods employed to actively or passively contain, stabilize, or monitor contamination; restrict the movement of contamination to ensure the long-term effectiveness of a remedial program; or eliminate potential exposure pathways to contamination. Examples potentially applicable to the site would be low-permeability membranes applied below concrete building slabs or a positively pressured interior atmospheric system within a structure.

Feasibility Assessment

The analyses provided in the RI, the Qualitative HHEA and in the RAA indicated that the present condition of the site, with safeguards to mitigate identified exposure scenarios, is compatible with the intended use of the site as a commercial establishment. Over time, there is a possibility of a change in the use of the site, or upgrade to the site structures, either of which might require additional construction. Therefore, it would be feasible and appropriate to incorporate institutional controls to identify the general nature and locations of potential exposures to contaminated soils and to notify future site workers as to the site's limitations and to the nature of potential exposures.

2.2 Selection of a Remedial Action for Groundwater

The overall remedial goal with respect to groundwater is to mitigate human or environmental exposure to contaminants in the groundwater. The Qualitative HHEA evaluated use of the groundwater from the site as a potential human exposure pathway, and concluded that, given the availability of public drinking water, such use is unlikely. Technologies that were considered for mitigating exposure to contaminated groundwater were:

- In-situ or ex-situ groundwater treatment;
- Monitored natural attenuation; and
- Institutional and/or engineering controls.

The following subsections describe the above technologies and assess the feasibility of each in addressing groundwater impacts at the Auburn Community Hotel BCP site.

2.2.1 In-Situ or Ex-Situ Groundwater Treatment

Technology Description

This technology could consist of one of a large variety of treatment systems that are capable of treating groundwater either in place (e.g., reaction walls, injection of microbes or nutrients, air sparge) or after extraction of the groundwater (e.g., air stripping, granular activated carbon adsorption). In general, these technologies are applicable to sites where a distinct area of impacted groundwater (contaminant plume) is present. For in-situ technologies to be effective the hydrogeological characteristics and contaminant distribution data for the site should indicate that the contaminant plume coincides with the treatment area to an extent necessary for adequate treatment to occur; otherwise, a hydraulic control technology would need to be included to achieve that condition. For ex-situ technologies to be effective, the groundwater extraction field would need to assert an area of influence sufficient to remove and treat impacted groundwater from the entire plume. In-situ technologies tend to be capital intensive, but may be less expensive to operate and maintain compared to ex-situ technologies. Achieving remediation to stringent standards (such as Class GA Groundwater Standards) is often problematic for all of these technologies due to ongoing soil/groundwater contaminant partitioning and to practical difficulties and costs involved with addressing large areas of low-level groundwater contamination.

Feasibility Assessment

The summary site groundwater data do not identify a contaminant plume that would appear to be compatible with ex-situ or in-situ treatment technologies. To achieve hydraulic control over a site this size (e.g., extraction trench or curtain of extraction wells) and implement an appropriate treatment technology (e.g., multi-stage filtration, including bench scale and pilot testing) would cost on the order of $300,000. Maintenance, operating, and monitoring costs for a system such as this would cost a further $50,000 to $75,000 per year and be expected to operate for a decade or more. The low levels of both organic and inorganic contaminants present in the groundwater (as presented in RI Tables 5, 8, 14,16,and 17) would make the unit costs (dollars per pound of contaminants removed) inordinately high and could not be expected to significantly improve local or regional groundwater quality.

2.2.2 Monitored Natural Attenuation

Technology Description

Natural attenuation processes (biodegradation, dispersion, sorption, and volatilization) are active to some degree within any impacted groundwater system. In a situation where natural attenuation processes, compared with other remedial alternatives, can be expected to attain site remedial objectives within a reasonable time period, reliance on and monitoring of these processes can constitute an appropriate site remedy. In most cases, adoption of monitored natural attenuation as the site remedy follows a period of active remediation, such as a source area removal or treatment. Determining the appropriateness of monitored natural attenuation for a site requires, at a minimum:

- That the contaminant flow field be known to an acceptable degree of certainty;
- For VOCs, that a source of electron donors is present and that inorganic electron acceptors are not present in quantities that would interfere with biodegradation pathways;
- That the affects and interactions of attenuation processes have been considered and can be assessed periodically via monitoring; and
- That the potential for downgradient receptors to be exposed to contaminants can be assessed.

In most cases, site characterization data are used as a basis for determining whether monitored natural attenuation may be appropriate for a site. Performance monitoring will then be used to demonstrate the progress of natural attenuation of contaminants, as well as to confirm that, among other things:

- No impacts to downgradient receptors are occurring;
- No additional releases of contaminants have occurred;
- No potentially toxic transformation products have resulted from biodegradation; and
- No environmental conditions (hydrogeologic, geochemical, microbiological) have changed to the extent that the efficacy of the attenuation processes may be compromised.

Performance monitoring typically continues for a specified period (e.g., two years) after clean-up objectives have been achieved. Institutional mechanisms for maintaining the monitoring program should be established in the remedy decision or in other binding site documents.

Feasibility Assessment

The summary water quality investigations at this site have not identified characteristics that would indicate a high likelihood that natural attenuation is necessary or feasible for this site. Although low levels (7 ug/L) of tetrachloroethene were detected in shallow overburden groundwater at one location in the central portion of the site (MW-6) the co-existence of degradation compounds (vinyl chloride, dichloroethenes) was not observed, indicating that dechlorination pathways may not be active. With respect to natural attenuation of inorganic and SVOC parameters, attenuation via biodegradation and volatilization would not be operative for these parameters, and the dispersion/sorption pathways would tend to favor maintenance of these parameters within the soil.

The cost for implementing this technology over a ten year period is estimated to be approximately $200,000. Due to the extremely long period of time that would be required for significant natural attenuation to occur, monitored natural attenuation does not appear to be a feasible remedy for this site.

2.2.3 Institutional and Engineering Controls

Technology Description

Engineering controls to mitigate groundwater impacts include physical barriers to contain or restrict the movement of groundwater or soil vapor, such as slurry walls, sheet piling barriers, or building containment systems. Other types of engineering controls include access controls, provision of alternative water supplies via connection to public water supply, adding treatment technologies to existing public water supplies, or installing filtration devices on private water supplies.

An *institutional control* is a non-physical means of enforcing a restriction on the use of real property that is used in situations where conditions make the property suitable for some, but not all, potential uses of the property. The purpose of an institutional control, such as an environmental easement, may be to limit human or environmental exposure, restrict use, or provide notice of such restriction.

Feasibility Assessment

Sub-surface barrier type engineering controls were determined to not be applicable to this site as no distinct plume or elevated contaminant levels appear to be present. Installation of mechanical controls to create positive air pressures within the site buildings was determined to be a feasible alternative to assure volatile vapors, if present beneath the floor slab, do not enter the indoor environment. Groundwater treatment technologies were determined to be not feasible and the encompassing availability and use of a public water supply in the vicinity of the site remains a viable means to mitigate public exposure to contaminants in site groundwater.

To assure that withdrawal and use of groundwater from beneath the site does not occur, institution of site controls restricting such use was determined to be appropriate. It was also determined that inclusion and maintenance of positive pressure in the first floor of site buildings would mitigate intrusion of volatile vapors from the subsurface into the indoor environment. The costs for installing and maintaining those systems were estimated to be $50,000 to $100,000 over a ten year period.

2.3 The "No-Action" Alternative

Technology Description

NYSDEC guidance for assessing remedial alternatives requires that the "No Action" alternative be included in the assessment. Under this alternative, the consequences of doing nothing to address identified or potential risks posed by the presence of contamination at a site were assessed. This alternative may be the appropriate one if the risks present are not of sufficient significance, or if the effectiveness of other potential remedies cannot be established. For the Auburn Community Hotel BCP site, this alternative assumes that following completion of the RI/RAA process, no further actions would be undertaken with respect to mitigating potential risks posed by contaminants that remain at the site.

Feasibility Assessment

Summary site data indicate that impacts to site soils and groundwater are dispersed and at low concentrations. However, the "No-Action" alternative would not meet the remedial action objective of assuring that site groundwater will not be withdrawn and used for any reason, or to mitigate the potential effects of VOC migration from site groundwater to soil vapor and, potentially, to the interior environment in future site structures.

2.4 Comparative Assessment of Site Remedies

Tables 1 and 2 provide summaries of the comparative analyses of remedial alternatives for soil and groundwater, respectively. These tables assess each of the remedial technologies developed in the previous sections (including the "No Action" alternative) with respect to the nine criteria set forth in Section 1.1. The analyses in Tables 1 and 2 extend the comparison of alternatives to assess each with respect to both the intended use of the site as a commercial facility (Track 4 development) and a hypothetical Unrestricted Use (Track 1) development.

The technology assessments summarized in Tables 1 and 2 indicated that, for the intended use of the site (Track 4 development), and with the exception of the "No Action" alternative and monitored natural attenuation (for groundwater), each of the remedial technologies may be capable of achieving the remedial action objectives for the Auburn Community Hotel BCP site. The technologies differed in the difficulty and cost associated with the more aggressive potential remedies, and the time required to achieve remedial goals, in addressing dispersed and comparatively low levels of contaminated soils and groundwater. For the hypothetical Unrestricted Use (Track 1) development scenario, extensive application of those more aggressive and intrusive technologies would be required to attempt to attain site conditions appropriate for unrestricted use. However, it would remain likely that inclusion of less physically aggressive technologies (institutional controls) would be needed following implementation of aggressive remedial actions, irrespective of the redevelopment track pursued.

2.5 Conclusions Regarding Selection of Remedies

The analyses regarding potential exposure scenarios associated with the site soils and groundwater regimes indicate that the identified risks posed by those constituents do not pose an immediate threat to a receptor population, such that the adoption of aggressive remedial actions is warranted. Based on the low concentrations of contaminants at the site, and on the site's physical characteristics and intended use as a commercial facility, institutional and engineering controls to protect the future on-site receptor populations constitute a remedy that provides:

- Overall protection of human health and the environment; and
- A path to long-term beneficial re-use of the property as a commercial facility.

For the protection of future site occupants and workers, the controls to be instituted as structural requirements or deed restrictions would be applicable to any future owner or tenant, so that:

- No extraction or use of site groundwater will be permitted;
- Direct contact with subsurface site media will be limited and, when necessary, conducted in a manner protective of site workers and site patrons. Maintenance and monitoring of site cover will be included in a Site Management Plan and in Site Controls; and
- Vapor intrusion into site indoor environments will be demonstrably mitigated in a manner acceptable to the NYSDOH, and methods acceptable to the NYSDOH for managing and monitoring the mitigation system will be instituted. The selected technology (engineering and institutional controls) provides a cost-effective means to return this site to a productive capacity for the surrounding community as a commercial facility, with no technical restraints or short-term adverse impacts. Although this approach does not achieve all Commercial Use Soil Clean-up Objectives from 6 NYCRR 375-6 or Class GA Groundwater Standards from 6 NYCRR 713-6 within a limited time frame, due to the dispersed and low-level nature of the chemical constituents present at the site, this time frame would not be shortened appreciably by any of the more aggressive remedial technologies available.

3.0 REMEDIAL ACTION WORK PLAN

3.1 Remedial Action Work Plan Components

To implement the selected remedy, an Environmental Easement will be granted by the Site Owner to the NYSDEC, which will provide the basis for installing and maintaining the Institutional and Engineering Controls that have been determined to constitute the appropriate remedy for the site. A Site Management Plan (SMP) will be instituted to detail the methods to be used to avoid direct and indirect future human or environmental exposure to potential residually contaminated soil and groundwater located at the Site. The SMP will detail measures and procedures to be implemented by Auburn Community Hotel, LP and will remain in effect until such time as the NYSDEC and the property owner agree that measures are no longer required. It will be the responsibility of Auburn Community Hotel, LP to notify property lessees or operators and contractors of these measures and procedures prior to any on-site maintenance or construction activities. The SMP will be a “living” document. Data collected in the future, changes in site conditions, and/ or changes in methods or procedures will be incorporated as appendices to the document.

Table 1 - Comparative Summary of Remedial Alternatives for Soil

Technology	Land Use (Site Redevelopment Track)	Technology Comparison Criteria (see Section 1.1 for descriptions of these criteria)								
		Overall Protection of Public Health and the Environment	Compliance with SCGs	Long-term Effectiveness and Permanence	Reduction of Toxicity, Mobility, or Volume	Short-term Effectiveness	Implementability	Cost	Community Acceptance	Land Use
Excavation and Off-Site Disposal (see Section 2.1.1 for description)	Restricted Use (Track 4)	Could successfully address identified impacts if combined with a groundwater remedy and I and EC*	Could achieve Commercial Use SCOs for SVOCs and inorganics	Successful soil removal would constitute a permanent remedy for soil impacts	Impacted soils would be removed from the site - mobility reduced	Could be effective in a reasonable time period	Moderately difficult - excavation below water table - Large quantities of low-impacted materials would need to be characterized and removed	Very high capital cost (>$500,000) due to dispersed nature of impacts	Would likely be acceptable to community - may be opposed as not effective on acost basis	Could provide protection consistent with intended future use of property
	Unrestricted Use (Track 1)	Could successfully address identified impacts if combined with a groundwater remedy and I and EC*	Could achieve Unrestricted Use Soil Cleanup Objectives for all parameters	Successful soil removal would constitute a permanent remedy for soil impacts	Impacted soils would be removed from the site - mobility reduced	Could be effective in a reasonable time period				With gw remedy, could be effective-Track 1 use is not intended use
Institutional and/or Engineering Controls (I and EC) (see Section 2.1.2 for description)	Restricted Use (Track 4)	Could successfully address identified exposure scenarios if combined with a groundwater remedy	Would not affect ability to achieve Commercial Use SCOs - addresses exposure scenarios	These controls are effective at mitigating exposure scenarios over the long term	Would not provide reductions - addresses exposure scenarios only	Would be effective in a reasonable amount of time, for identified exposure scenarios	Relatively straightforward to implement and enforce	Moderate ($100,000) over a long (>10 year) term	Would be acceptable to community	Could provide protection consistent with intended future use of property
	Unrestricted Use (Track 1)	May not be an appropriate remedy for Track 1 Redevelopment	Would not achieve Unrestricted Use Soil Cleanup Objectives	These controls are not consistent with Track 1 redevelopments	Would not provide reductions - not consistent with Track 1	These controls may not be consistent with Track 1 redevelopments	Easy to implement - may not be consistent with Track 1 redevelopments	Moderate ($100,000) over a long (>10 year) term	May not be acceptable to community	These controls are not consistent with Track 1 redevelopments
No Action (see Section 2.3 for description)	Restricted Use (Track 4)	This technology would not address identified exposure scenarios	Would not achieve compliance with Commercial Use SCOs	Would not provide any long-term or permanent benefits	Would not provide any reductions	Would not be effective in a reasonable amount of time	Easy to implement - no actions	Lowest, no actions	May not be acceptable to community	Not protective human health given either intended use of property
	Unrestricted Use (Track 1)	This technology would not achieve required protection for this redevelopment track	Would not achieve Unrestricted Use Soil Cleanup Objectives	Would not provide any long-term or permanent benefits	Would not provide any reductions	Would not be effective in a reasonable amount of time	Easy to implement - no actions	Lowest, no actions	Would likely not be acceptable to community	

Note: * I and EC = Institutional and Engineering Controls

Table 2 - Comparative Summary of Remedial Alternatives for Groundwater

Technology	Land Use (Site Redevelopment Track)	Technology Comparison Criteria (see Section 1.1 for descriptions of these criteria)								
		Overall Protection of Public Health and the Environment	Compliance with SCGs	Long-term Effectiveness and Permanence	Reduction of Toxicity, Mobility, or Volume	Short-term Effectiveness	Implementability	Cost	Community Acceptance	Land Use
In-Situ or Ex-Situ Groundwater Treatment (see Section 2.2.1 for description)	Restricted Use (Track 4)	Could successfully address impacts over long term if combined with I and EC*	Could eventually achieve Class GA Groundwater Standards	Once gw standards are achieved, the condition would be expected to be	Technology would provide reduction of toxicity and volume	These technologies constitute a relatively long-term (a decade or more) remedy	Both in-situ and ex-situ technologies difficult to implement due to lack of a well-defined contaminant plume.	Very high ($800,000 to $1m) over a ten year treatment period	Would be acceptable to community	Would provide protection consistent with intended future
	Unrestricted Use (Track 1)	Could successfully address impacts if combined with a soil remedy and/or I and EC*	Could eventually achieve Class GA Groundwater Standards	Once gw standards are achieved, the condition would be expected to be permanent	Technology would provide reduction of toxicity and volume	These technologies constitute a relatively long-term (a decade or more) remedy		Very high ($800,000 to $1m) over a ten year treatment period	Would be acceptable to community	With soil remedy, could be effective, however, Track 1 is not intended use
Monitored Natural Attenuation (see Section 2.2.2 for description)	Restricted Use (Track 4)	Not likely to successfully address groundwater impacts	Not likely to achieve Class GA Groundwater Standards	Not likely to achieve Class GA Groundwater Standards	May provide reduction of toxicity and/or volume in long term	This technology would not be effective in a reasonable amount of time	Easy to implement and assess effectiveness	Moderate ($200,000) over a long (>10 year) term	Would be acceptable to community	Would be consistent, with institutional controls to limit use of gw during remediation
	Unrestricted Use (Track 1)	Not likely to successfully address groundwater impacts	Not likely to achieve Class GA Standards Track 1 use (not intended) would require I and/or EC	Not likely to achieve Class GA Groundwater Standards	May provide reduction of toxicity and/or volume in long term	This technology would not be effective in a reasonable amount of time	Easy to implement and assess effectiveness	Moderate ($200,000) over a long (>10 year) term	Would be acceptable to community	With institutional controls to limit use of gw during remediation, could be consistent-Track 1 use is not intended use
Institutional and/or Engineering Controls (I and EC) (see Section 2.2.3 for description)	Restricted Use (Track 4)	Could successfully address identified exposure scenarios for gw	Would not directly affect gw quality - addresses exposure scenarios	These controls are effective at mitigating gw exposure scenarios over the	ECs can reduce mobility -otherwise, addresses exposure scenarios only	Could be effective in a reasonable amount of time, for identified exposure scenarios	Straightforward to implement and enforce	Capital and O&M could vary from low to moderate ($50k to $100k	Would be acceptable to community	Would provide protection consistent with intended future
	Unrestricted Use (Track 1)	Could successfully address identified exposure scenarios for gw-may not be consistent with Track 1 redevelopment	Would not directly affect impacted gw - addresses exposure scenarios-may not be consistent with Track 1 redevelopment	Effective at mitigating gw exposure scenarios over the long term-may not be consistent with Track 1 redevelopment	ECs can reduce mobility -otherwise, addresses exposure scenarios only-not consistent with Track 1 redevelopment	Could be effective in a reasonable amount of time, for identified exposure scenarios- may not be consistent with Track 1 redevelopment	Straightforward to implement and enforce	Capital and O&M could vary from low to moderate ($50k to $100k over a 10 year period)	May be acceptable to community	Could provide protection for gw exposure scenarios - may not be consistent with Track 1 redevelopment
No Action (see Section 2.3 for description)	Restricted Use (Track 4)	This technology would not achieve required protection for this redevelopment track	Would not address gw quality or identifed exposure scenarios	Would not directly provide any long-term or permanent benefits	May be associated with long-term reduction	Would not be effective in a reasonable amount of time	Easy to implement - no actions	Low, no actions	Would likely not be acceptable to community	Not appropriate given intended use of property
	Unrestricted Use (Track 1)	This technology would not achieve required protection for this redevelopment track	Would not address gw quality or identifed exposure scenarios			Would not be effective in a reasonable amount of time	Easy to implement - no actions	Low, no actions	Would likely not be acceptable to community	Not appropriate for unrestricted use of property

Note: * I and EC = Institutional and/or Engineering Controls