1. PROJECT AREA DESCRIPTION AND PLANS FOR REVITALIZATION
1.a. Target Area and Brownfields
1.a.i. Background and Description of Target Area

The City of Los Angeles (LA) grew into an industrial center in the late 1800s when several railroads selected it as their western terminus. In 1892, oil was discovered in what is now Downtown LA, and later in other areas of the City. During World War II, LA was a center for production of aircraft and war supplies. The postwar growth boomed in LA by continuing aircraft-related industries, oil production and refining, attracting automotive assembly plants, furniture production, clothing manufacturing. By 1958, the LA Metropolitan Area ranked as the second largest manufacturing center in the US, with 16,910 manufacturing establishments and with nearly 725,000 total manufacturing employees. During the 1970s the larger industries gradually left and government introduced regulations regarding disposal of hazardous materials. The City was polluted from over 50 years of poor environmental practices and nonexistent land use guidance. The LA River has been a focus for manufacturing throughout LA’s history, in part due to access to the railroad and shipping infrastructure bordering the River. But this proximity served to make the LA River a focus for both point and non-point pollution, leaving a legacy of contaminated sediments and blighted riverfront properties.

The River Park site that will be the focus for the United States Environmental Protection Agency (USEPA) Cleanup grant encompassed a portion of one of the City’s largest brownfields, the former 42-acre Taylor Yard rail yard. Funding will be used to transform the grossly contaminated site into a combined public green space, recreational facility, and restored natural area. The Site is considered the most important component of the a much larger effort by the City and more than 60 partners to restore and transform the LA River into the City’s front door.

1.a.ii. Description of the Brownfield Site(s)

The River Park site is bounded on its west side by the Los Angeles River. Former facilities at the River Park site included railroad tracks, underground and aboveground storage tanks (USTs and ASTs), a service track area, and other miscellaneous railway operation support buildings. The River Park site was first developed and used as a railroad yard in the early 1930s. Historical aerial photographs indicate that the period from 1945 and 1952 was a time of peak activity in the development at Taylor Yard. The River Park site was cleared of all structures and has been vacant since 2011. A six-foot tall chain link fence with locking gates was constructed around the perimeter of the River Park site by the City May 2017 to secure it from public access until it was further assessed, remediated, and deemed safe for public access by the DTSC. The River Park site currently has no active or passive uses.

Materials previously used or stored at the River Park site included diesel fuel, Bunker C fuel oil, journal box lubrication oil, gasoline, other types of oils, greases, acids, alkaline cleaning soaps, water treatment chemicals, paints and thinners, pesticides and herbicides, compressed gases, lead, cleaning solvents, and chlorinated solvents. Since 1985, a series of soil, groundwater, and soil vapor investigations have been conducted at the Site. Results of several progressive phases of remedial investigation have identified the primary constituents of potential concern (COPC) in the River Park site soil as lead, arsenic, petroleum hydrocarbons (TPH), volatile organic compounds (VOCs), and semi-volatile organic compounds (SVOCs). Soil has within portions of the River Park site is impacted with benzene, tetrachloroethene (PCE), and vinyl chloride (VC). VOCs are also present in groundwater beneath the River Park site; however, groundwater
impacts are generally attributed to a regional VOC groundwater plume and VOC sources located upgradient of the River Park site. The western edge of the River Park site borders an approximate 1,500-foot segment of the LA River.

1.b. Revitalization of the Target Area

1.b.i. Redevelopment Strategy and Alignment with Revitalization Plans

The River Park site represents a portion of an approximately 42-acre area of the former Taylor Yard rail yard and lies adjacent to a soft bottomed portion of the Los Angeles River. The efforts by the City to acquire the River Park site and convert it to public use represent the culmination of more than 20-year effort by the City involving more than 60 partners.

The River Park site is a component of Project No. 165 of the City Council adopted Los Angeles River Revitalization Master Plan (CF 07-1342) and is also described in the U.S. Army Corps of Engineers (USACE) Los Angeles River Ecosystem Restoration (LARER) Integrated Feasibility Report (also known as the ARBOR or “Area with Restoration Benefits and Opportunities for Revitalization” Study). As a key opportunity area, development of the River Park site is identified as a cornerstone project of the LARER, a joint project of the City and the US Army Corps of Engineers (USACE) to restore the natural and hydrological processes of the LA River in an 11-mile section from Griffith Park to downtown Los Angeles (which includes the section of the River immediately adjacent to the River Park site). The restoration project will include restoring flow of the River within approximately the western 20-25% of the Site. The River Park site is situated in Reach 6 of the ARBOR Study and is adjacent to the soft bottomed portion of the Los Angeles River.

1.b.ii. Outcomes and Benefits of Redevelopment Strategy

The River Park site provides a unique opportunity to create a regional multi-benefit park, enhance habitat connectivity, develop wildlife habitat, provide recreation and interpretation, improve the water quality of the watershed, and promote access to the Los Angeles River. The project is considered by the City to be one of the most important components of the on-going collaborative efforts by the City, the State, and the USACE to restore the LA River.

1.c. Strategy for Leveraging Resources

1.c.i. Resources Needed for Site Reuse

The River Park site is a joint effort between the City of Los Angeles and the Mountains Recreation and Conservation Authority (MRCA). The MRCA was awarded a Proposition 1 grant to help redevelopment efforts in that area. USEPA funding will play a critical role in enabling the City to expeditiously complete initial cleanup needed to meet the industrial use standards, and thereby access the funding for development of the River Park site for the greenspace, habitat, and recreational uses.

1.c.ii. Use of Existing Infrastructure

As a result of its former use as a railyard, there is limited infrastructure within the boundaries of the River Park site that is suitable for reuse, and in fact all pavement and most existing underground utilities will need to be removed as part of site cleanup and to prevent abandoned utilities from serving as potential conduits for subsurface migration of contaminants. However, the project will serve a key role in enhancing use of existing infrastructure within the surrounding neighborhoods by providing key connections for the City’s bike and trail system. The River Park site will have a connection to the other side of the LA River via a new pedestrian
and bikeway bridge which is currently being constructed, and a separate pedestrian/bike bridge will be constructed across the rail lines bordering the eastern edge of the River Park site – providing further connections as well as improved access to Rio de Los Angeles State Park.

The project will also enable the City to incorporate green stormwater infrastructure into the design of the River Park site, which will serve as public amenities as well as a component of ongoing efforts to reduce the discharge of non-point contaminants to the Los Angeles River from existing storm sewers. The plans for stormwater management as part of River Park site development are still being evaluated, but the preliminary recommended plan is to manage all stormwater on site as well as dry flows plus wet weather flow from the City-UPRC Storm drain (which crosses the north end of the River Park site) and dry weather flow from the Eagle Rock Storm Drain which lies several hundred feet to the north. This plan envisions that on-site surface stormwater runoff will drain by gravity to “dry” creek and detention pond, which will be lined to prevent infiltration. Dry weather flow from the sewers averaging 4 cubic feet per second will be pumped by solar pumps into the “dry” creek to be constructed across the center of the River Park site, with treated runoff discharged to the LA River via an outfall structure located to the south on other adjoining portions of the Taylor Yard property.

2. COMMUNITY NEED AND COMMUNITY ENGAGEMENT
2.a. Community Need
2.a.i. The Community’s Need for Funding
An estimated 25,001 residents (U.S. Census Bureau, American Community Survey 5-Year Estimates for 2012-16) live within the eight census tracts that immediately surround the River Park site (Census Tracts [CT] 1852.03, 1853.10, 1853.20, 1864.01, 1864.02, 1864.04, 1872, and 1873). An estimated 86.5% of residents are minorities. The per capita income of $22,910 is 23% lower than that for residents in the US as a whole. The City as a whole faces on-going financial challenges in addressing the plethora of public welfare challenges associated with its large population of socially and economically disadvantaged residents, as well as the environmental challenges associated with the City’s until recent status as the second largest manufacturing center in the US. While land values are to some degree a positive factor in enabling the private market to redevelop some of the legacy brownfield sites, they add to the challenge to the City in trying to acquire brownfield sites and convert them to critical public uses essential to the City’s long-term viability.

2.a.ii. Threats to Sensitive Populations
2.a.ii (1) Health or Welfare of Sensitive Populations
As discussed in Section 2.a.1, an estimated 25,001 residents live within the eight census tracts that immediately surround the River Park site. An estimated 86.5% of residents are minorities. The per capita income of $22,910 is 23% lower than that for residents in the US as a whole. Approximately 36% of residents lack a high school degree (versus 13% for the US as a whole) and an estimated 20.9% of the residents lack health insurance (versus 11.7% for the US as a whole). Approximately 47.7% of households have housing costs that exceed 30% of their income (versus 29.7% for the US as a whole). The welfare challenges of lower incomes, lower educational levels, and lack health insurance contribute to health challenges as well as access by the residents to quality of life amenities. The River Park site has been an enormous blighting influence on the surrounding neighborhood, but will be transformed through the project into an amenity that will improve the quality of life in the surrounding neighborhoods, provide enhanced

Select acronyms: ABCA = Analysis of Brownfield Cleanup Alternatives; CA = California; City = City of Los Angeles; CB = census block; CO = community organization CRP = Community Relations Plan; CT = census tract; ESA = environmental site assessment; UPRC = Union Pacific Railroad Company; USEPA = United States Environmental Protection Agency
opportunities for active recreation resulting in health benefits, as well as provide a natural oasis that will contribute to improving the mental health of area residents.

2.a.ii (2) Greater Than Normal Incidence of Disease and Adverse Health Conditions

According to data from the American Community Survey (5-year averages, 2012-16), 81.6% of housing in the eight census tracts surrounding the River Park site, and 90.2% of housing within the tract that includes the Site, were constructed prior to 1980. Housing built prior to 1980 has a significant higher incidence of containing lead-based paint and asbestos containing materials used for construction or historical maintenance of the buildings. This increases the potential for residents, in particular sensitive populations, to inhale or ingest these hazardous substances as a result of their occupation of these older residences. This risk is exacerbated in neighborhoods where residents have lower incomes (and less funds available for maintenance of housing, or abatement of these materials). The risks associated with lead exposure are additive, and therefore the presence of extensive lead impacts at the Site represents an added risk for area residents who may already have been exposed to lead. Residents in this area of the City also have asthma rates that are higher 70.25% of the census tracts in California.

Cleanup of the River Park site through removal or capping of lead impacted soil will reduce the risk of further lead exposure for area residents. Capping and conversion to a grain space will reduce the potential for the River Park site to serve as a source for fugitive dust, reducing risks for residents with asthma. Elimination of the blight associated with the River Park site will enhance the attractiveness of the neighborhood, and the incentives for homeowners to invest in maintenance of their residents (further reducing lead and asbestos exposure risks).

2.a.ii (3) Economically Impoverished/Disproportionately Impacted Populations

Sensitive populations in the target area are at higher risk of being exposed to a variety of cumulative pollution sources. Environmental Justice (EJ) Indexes provide perspective on how the target area compares to the State and US based on both environmental and demographic indicators. The sensitive populations in the neighborhoods surrounding the River Park site are in the top 1% to 24% of at-risk communities in California for all EJ Indicators as shown in the following table. EJ Indicator values greater than 80th percentile are shown in bold font and values greater than the 90th percentile are shown in shaded cells.

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</table>

As previously discussed in Section 2.a.ii (2), 81.6% to 91.2% of the residences in the census tracts surrounding the River Park site were constructed pre-1980, which poses LBP and potential asbestos exposure risk to area residents. The Lead Paint Indicator indexes of up to 96% indicate significant risk of lead exposure.

2.b. Community Engagement
2.b.i. Community Involvement

Key local project partners and their roles are summarized below.

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<thead>
<tr>
<th>Partner Name</th>
<th>Point of Contact (name, email &amp; phone)</th>
<th>Specific Role in the Project</th>
</tr>
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<tbody>
<tr>
<td>Mountains Recreation &amp; Conservation Authority</td>
<td>Xx</td>
<td>Provide funding, support implementation</td>
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To be revised at a later date.

2.b.ii. Incorporating Community Input

The City has assembled two advisory stakeholder committees: the Technical Advisory Stakeholder Committee which is comprised mostly of government agency representatives who have had interest in the project, and a Community Leadership Committee which is comprised of community leaders who have shown interest in the project. In addition, the City held a public design meeting in January 2018 that had over 300 participants who were able to suggest features for the project, a public site tour, two community discussions, and has participated in neighborhood council meetings to discuss the project and updates on the project process. The City also conducted a public survey that concluded in March 2018. The results of this survey and community input from all of these meetings has been used to inform the design team of the project’s features.

3. TASK DESCRIPTIONS, COST ESTIMATES, AND MEASURING PROGRESS

3.a. Proposed Cleanup Plan

Key constituents identified in soil at the Site include lead, TPH, naphthalene, PCE, and benzo(a)pyrene, which exceed the residential screening levels (RSL’s) and/or commercial screening levels (CSL’s) for soil in one or more soil samples. The most significant contaminants are lead and total petroleum hydrocarbons (TPH) which exceed the RSL in samples collected from within approximately 40% of the River Park site, respectively, and which exceed the CSL in samples collected from within samples collected from within approximately 30% of the River Park site. Toxicity characteristic leaching procedure (TCLP) tests were performed on select samples and the results documented eight cells within which the concentrations for TCLP lead exceed the threshold value of 5 milligrams per liter (mg/L) above which the soil, if excavated, would be a characteristic hazardous waste.

Cleanup of the River Park site will include a combination of Alternatives 2, 3, 4, and 5 as detailed in the Analysis of Brownfields Cleanup Alternatives (ABCA). Alternative 2 (Excavation, Removal, and Off-Site Disposal of Contaminated Soil in Hotspot Areas) will be performed strategically to remove soil from areas having the greatest contamination levels either at or near the ground surface, or in areas where removal is necessary to achieve desired final site grades. Alternative 3 (Treatment, Excavation, Removal, and Off-Site Disposal of Contaminated Soil from Hotspot Areas) will be performed in select areas where soil would be characteristically hazardous for lead or other constituents if excavated. Treatment will result in significant cost savings for off-site disposal by enabling soil to be disposed as a non-hazardous solid waste as a municipal disposal facility rather than as a hazardous waste at a hazardous waste treatment and disposal facility. Alternative 4 (Capping of Contaminated Soil) will potentially be performed throughout the Site, except in areas of the Site where soil is documented to meet requirements applicable to planned use as a public greenspace and recreational area. Alternative 5 (Use of
Soil Vapor Mitigation Measures) will potentially be used as part of construction of anticipated nature center/river museum and any other buildings that are located in areas where high levels of one or more contaminants are present in soil vapor at concentrations at which they would be of potential concern for vapor intrusion.

The exact locations for use of each alternative remain to be determined and will be subject to further public input regarding plans for development of River Park site, the timing and amounts of various types of funding that are secured, DTSC approval, and other variables. It is anticipated that USEPA Cleanup Grant funding will be utilized primarily for hotspot removal, as this will occur in the initial stages of River Park site cleanup.

3.b. Description of Tasks and Activities

3.b (1) Project Implementation

Task 1 – Community Outreach ($0): Outreach for the project will be conducted in conjunction with outreach for the 42-acre Taylor Yard project as a whole, utilizing City staff and professional outreach consultants already under contract. No USEPA funds will be utilized to complete the community outreach task.

Task 2 – Site Remedial Contractor Work ($535,000): Task 2 includes remedial excavation, soil treatment, soil removal, off-site disposal, and cap construction to be performed by remedial contractors under the direction of the City.

Task 3 – Engineering Oversight and Reporting ($65,000): This task includes the following outputs: a) preparation of a final ABCA ($2,500); b) work by the environmental consultant in assisting the City with preparation of bid specification documents to ensure the remediation is conducted in accordance with the approved ABCA, the RAP, and all applicable procurement regulations including Davis-Bacon wage requirements ($7,500); c) engineering oversight, including field supervision and Davis Bacon compliance monitoring ($40,000); and d) preparation of a remedial action completion report ($15,000) upon completion of the remedial action in compliance with DTSC requirements. These activities will be conducted by a qualified environmental engineering consultant, competitively retained by the City in accordance with 2 CFR 200.317 through 200.326 and other applicable City procurement regulations.

The schedule for use of the USEPA grant will be developed in conjunction with the schedule for the Taylor Yard property as a whole. It is anticipated that design of remedial activities will occur during March 2019 through March 2020. Bidding and award of contracts will occur during March 2020 through September 2020. Remediation will occur during September 2020 through September 2021.

3.b (2) Task/Activity Lead

Administration of the grant and competition of reporting and other programmatic activities required for compliance with the USEPA Cooperative Agreement will be performed LASAN staff who are responsible for managing the Citywide Brownfields Program. No grant funding will be utilized for these activities.

3.b (3) Cost Share

The cost share for the project will be provided through general revenues.

3.c. Cost Estimates and Outputs

The project budget is summarized on Table 1 below.

Table 1. Budget Table:

Select acronyms: ABCA = Analysis of Brownfield Cleanup Alternatives; CA = California; City = City of Los Angeles; CB = census block; CO = community organization CRP = Community Relations Plan; CT = census tract; ESA = environmental site assessment; UPRC = Union Pacific Railroad Company; USEPA = United States Environmental Protection Agency
Application for U.S. EPA Brownfield Cleanup Grant
River Park, City of Los Angeles – FY2019

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<th>Line #</th>
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<th>Task 2: Site Remedial Contractor work</th>
<th>Task 3: Engineering Oversight and Reporting</th>
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All contractual services included on line 6 of the budget table will be procured in accordance with the requirements of 2 CFR 200.317 through 200.326. USEPA grant funds will not be used for administrative costs as defined in the Proposal Guidelines. No budget is being requested for salary or benefits for City employees. The City will use available funds from their general fund as the cost share component.

3.c (1) Cost Estimates
The detailed cost estimate is still in preparation as of 12/5/2018.

3.c (2) Outputs
The project outputs will include the final ABCA, final approved remedial action plans, community involvement plan, and a remedial documentation report.

3.d. Measuring Environmental Results
The City will develop a detailed implementation plan with specific milestones and tracking methods as part of the final ABCA and RAP development. However, tracking of results will be performed on a quarterly basis in accordance with USEPA reporting requirements. The short term results will include acres of land for which direct contact risks are eliminated (through removal of capping of contaminated soil), and the tons of contaminated soil that are removed from the Site and disposed of off-site.

4. PROGRAMMATIC CAPABILITY AND PAST PERFORMANCE
4.a. Programmatic Capability
4.a.i. Organizational Structure
The applicant for this grant is the City of Los Angeles Brownfields Program housed in the Department of Public Works, Bureau of Sanitation (LASAN). This grant will be administered and financially managed from within the LASAN by Nuna Tersibashian, Brownfields Program Manager, who has successfully managed several previous USEPA Brownfields grants. Ms. Tersibashian has an M.S. in Environmental Geology, a B.S. in geology, and over 15 years of experience as an environmental professional. She has been managing the City's Brownfields Program for the past 10 years. Her duties and responsibilities include: applying for and administering environmental grants for the City.
Brownfields Projects; performing coordination and outreach with Council Offices, Mayor's Office, agencies such as Cal EPA, developers, property owners, and other stakeholders and community organizations; oversee grant supported program activities; making recommendations in accordance with established environmental policy, and preparing brownfields related status and closeout reports and materials. Should this person leave the program, LASAN has other qualified staff who can be assigned to oversee USEPA grants. The City has procedures in place to assure funds are managed appropriately, and the Department's procedures are audited by the City Controller's office on a regular basis. The LASAN's Financial Management Division is a Grant Unit. The Grants unit monitors and manages the entire grant's financial activity.

While the City's Brownfield Program is managed by LASAN, the LASAN works closely with other City departments, such as Department of Recreation and Parks, Economic and Workforce Development, Housing and Community Investment and Planning Departments and the Mayor's Office, to strengthen community outreach efforts and assist with project prioritization. LASAN promotes sustainable development through programs such as the City's Green Business Certification program, the Sign up for a Free Street Tree program, Operation Healthy Streets and the Los Angeles Clean Cities Coalition. More information about these programs is available at the City's Department of Public Works, LASAN website.

Assessments will be performed by environmental engineering firms already under contract to the City's Department of Public Works, LASAN. These firms were selected through a competitive bidding process as required by the procurement provisions of the regulations at 2 CFR 200.317 through 200.326, as appropriate. LASAN has qualified engineers on staff that will select the most appropriate contractor and oversee the actual assessment work. These engineers oversee many such projects each year for the City.

4.a.ii. Acquiring Additional Resources

The City as a whole, as well as LASAN and the City’s Bureau of Engineering procure millions of dollars of professional engineering and environmental services on an annual basis, and the ability to acquire any additional expertise or resources necessary to implement the USEPA Cleanup Grant and to successfully complete the project.

4.b. Past Performance and Accomplishments

4.b.i. Currently Has or Previously Received an EPA Brownfields Grant

4.b.i (1) Accomplishments

BF - 99T55401 (Award date 9/18/2017) $300,000 community-wide assessment grant for three target areas including: LARiverWorks ARBOR Reach, the LA Promise Zone (PZ) and the South Los Angeles Transit Empowerment Zone (SLATE-Z). Tasks in the work plan have not started because the City is in the process of selecting a contractor to meet the terms of the EPA requirements.

BF-99T09601 (Award date 10/1/14). The second is a $400,000 area-wide assessment grant. $190,000 is remaining. Under the current area-wide assessment grant, the City has completed 12 Phase I ESAs and three Phase II ESAs. Three of the Phase I ESAs completed included properties located within the same city block the City is working with a Developer to rehabilitate as affordable housing. In addition to the Phase I and IIs, the City has completed an Area-Wide Inventory for the ARBOR Reach area. Under this area-wide inventory, over 600 properties were evaluated of which over 180 sites that may be eligible for assessment and cleanup planning using brownfields funding. The inventory includes information on land use, ownership, proximity to the river, and environmental records, presented in both Microsoft Excel and Arc GIS formats.
The database is a powerful tool for selecting and prioritizing sites based on criteria aligned with the goals of the LA River ARBOR project as well as catalyzing redevelopment.

Closed EPA Grants -The recent closeout grants are discussed below:

- Area-wide assessment for two communities (Wilmington and Pacoima) in Los Angeles. The City of Los Angeles has completed 27 Phase I ESAs for future affordable housing and parks development. Two Phase II ESAs have been completed for open space development on City-owned sites. All tasks in the work plan have been completed.
- One such site under LA River area wide assessment grant was the home of an abandoned residence and medical clinic with pesticide and lead contamination. Through the use of USEPA Brownfield funding, the site was eventually developed into the 111-unit Lorena Apartments providing affordable housing for local residents.
- Lula Washington Dance Theater, under an EPA Hazardous assessment grant, is an example of the impact Brownfield grants have on the surrounding community. A vacant site contaminated by years of automotive repair and storage was heavily contaminated with petroleum hydrocarbons. USEPA Brownfield grants were used to assess and cleanup the site and a very successful dance theater is currently operating there today.
- Albion Park project is an example of many city resources combining to improve a Brownfield site. The City acquired the 6-acre site in the LA River watershed to provide future amenities such as athletic fields, a community center, walking paths, picnic area, water quality features and open, natural areas. Demolition of on-site structures and remediation and abatement of all hazardous materials was accomplished through combining a number of funding resources including State of California proposition funding (Prop 0) and USEPA Brownfield grants.

4.b.ii (2) Compliance with Grant Requirements

The City has received ten USEPA Brownfields grants since 1997. During the past 19 years, all quarterly performance reports, technical reporting and ACRES reporting were acceptable and submitted on time. Terms and conditions of all grants were met. Outputs and outcomes were accurately reflected in ACRES at the time of this proposal submission.

The City has worked with many CBOs and through many City departments. Due to the complexity of working with these entities, the City has expended most of the funds allocated, and continues to reach out to the numerous community groups.
This document entitled ANALYSIS OF BROWNFIELD CLEANUP ALTERNATIVES – RIVER PARK was prepared by Stantec Consulting Services Inc. ("Stantec") for the account of City of Los Angeles Brownfields Program, City of Los Angeles Department of Public Works, Bureau of Sanitation (the "Client"). Any reliance on this document by any third party is strictly prohibited without the written consent of Stantec, which may be granted at Stantec’s sole discretion. The material in it reflects Stantec’s professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any third party use of this document is wholly the responsibility of such third party. Any reliance granted to a third party will require the use and acceptance of Stantec’s form of reliance letter.

Prepared by __________________________

(signature)

David B. Holmes, PG

Reviewed by __________________________

(signature)

Chris Gdak

Reviewed by __________________________

(signature)

Steven C. Brady CEG, CHG, ENV-SP
# Table of Contents

ABBREVIATIONS .......................................................................................................................... III

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<tr>
<td>ABCA</td>
<td>Analysis of Brownfield Cleanup Alternatives</td>
</tr>
<tr>
<td>AOPC</td>
<td>Areas of Potential Concern</td>
</tr>
<tr>
<td>ARBOR</td>
<td>Area with Restoration Benefits and Opportunities for Revitalization</td>
</tr>
<tr>
<td>bgs</td>
<td>Below Ground Surface</td>
</tr>
<tr>
<td>CDM</td>
<td>Camp Dresser &amp; McKee</td>
</tr>
<tr>
<td>CDPR</td>
<td>California Department of Parks and Recreation</td>
</tr>
<tr>
<td>1,2-DCA</td>
<td>1,2-dichloroethane</td>
</tr>
<tr>
<td>cis-1,2-DCE</td>
<td>cis-1,2-dichlorothene</td>
</tr>
<tr>
<td>CLRRA</td>
<td>California Land Reuse and Revitalization Act</td>
</tr>
<tr>
<td>COC</td>
<td>Contaminant of Concern</td>
</tr>
<tr>
<td>COPCs</td>
<td>Constituents of Potential Concern</td>
</tr>
<tr>
<td>CSL</td>
<td>Commercial Screening Level</td>
</tr>
<tr>
<td>DTSC</td>
<td>California Department of Toxic Substances Control</td>
</tr>
<tr>
<td>EC</td>
<td>Effectiveness Criterion</td>
</tr>
<tr>
<td>EPA</td>
<td>United States Environmental Protection Agency</td>
</tr>
<tr>
<td>ERT</td>
<td>Environmental Research and Technology</td>
</tr>
<tr>
<td>Ft/ft</td>
<td>Feet per foot</td>
</tr>
<tr>
<td>FY</td>
<td>Fiscal Year</td>
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<tr>
<td>Gpd/ft</td>
<td>Gallons per day per foot</td>
</tr>
<tr>
<td>HHRA</td>
<td>Human Health Risk Assessment</td>
</tr>
<tr>
<td>LARER</td>
<td>Los Angeles River Ecosystem Restoration</td>
</tr>
<tr>
<td>LASAN</td>
<td>City of Los Angeles Bureau of Sanitation</td>
</tr>
<tr>
<td>µg/m³</td>
<td>Micrograms per cubic meter</td>
</tr>
<tr>
<td>mg/L</td>
<td>Milligrams per liter</td>
</tr>
<tr>
<td>MRCA</td>
<td>Mountain Recreation and Conservation Authority</td>
</tr>
<tr>
<td>PCE</td>
<td>Tetrachloroethene</td>
</tr>
<tr>
<td>PMT</td>
<td>Project Management Team</td>
</tr>
<tr>
<td>PRGs</td>
<td>Preliminary remediation goals</td>
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<tr>
<td>RAP</td>
<td>Remedial Action Plan</td>
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<tr>
<td>RI</td>
<td>Remedial Investigation</td>
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<tr>
<td>RSL</td>
<td>Residential Screening Level</td>
</tr>
<tr>
<td>Stantec</td>
<td>Stantec Consulting Services Inc.</td>
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<tr>
<td>SVE</td>
<td>Soil Vapor Extraction</td>
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<tr>
<td>SVOC</td>
<td>Semi-volatile organic compounds</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
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<td>--------------</td>
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<tr>
<td>TCE</td>
<td>Trichloroethene</td>
</tr>
<tr>
<td>TPH</td>
<td>Total Petroleum Hydrocarbons</td>
</tr>
<tr>
<td>UCL</td>
<td>Upper confidence limit</td>
</tr>
<tr>
<td>UPRC</td>
<td>Union Pacific Railroad Company</td>
</tr>
<tr>
<td>USACE</td>
<td>United States Army Corps of Engineers</td>
</tr>
<tr>
<td>USEPA</td>
<td>United States Environmental Protection Agency</td>
</tr>
<tr>
<td>VC</td>
<td>vinyl chloride</td>
</tr>
<tr>
<td>VOC</td>
<td>Volatile Organic Compound</td>
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1.0 INTRODUCTION AND BACKGROUND

This Analysis of Brownfield Cleanup Alternatives (ABCA) has been prepared by Stantec Consulting Services Inc. (Stantec) for River Park (the “Site”) located the Taylor Yard development area in the City of Los Angeles (City). The ABCA was prepared in part to meet the requirements for submittal by the City of an application for a United States Environmental Protection Agency (USEPA) Brownfields Cleanup Grant as part of USEPA’s Fiscal Year (FY) 2019 Brownfields Grant Competition. The Site is bounded on the west by the Los Angeles River and was first developed and used as a railroad yard in the early 1930s.

Historical aerial photographs indicate that the period from 1945 and 1952 was a time of peak activity and development at the Site and the Taylor Yard property. Maintenance and fueling operations continued through 2006, when the yard was permanently closed. The former rail yard was largely cleared of above-ground structures and has been vacant since 2011. A six-foot tall chain link fence with locking gates was constructed around the perimeter of the Taylor Yard property including the Site by the City of Los Angeles Department of Recreation and Parks in May 2017 to secure it from the public until it was further assessed, remediated, and deemed safe for public access by the California Department of Toxic Substances Control (DTSC). The Site currently has no active or passive uses.

The purpose of this ABCA is to outline environmental cleanup alternatives for the Site and to inform selection of an alternative that will best advance the City’s goals for development of the Site and the Taylor Yard property as a whole. Six alternatives are evaluated based on their anticipated: 1) effectiveness, 2) implementability, and 3) cost.

In 2018, a consultant team led by WSP completed a Phase II remedial investigation (RI) of the Site and the Taylor Yard property as a whole. The Phase II RI was completed in accordance with two RI Work Plans dated March 2, 2018 (WSP, 2018a; 2018b), which were subject to review and approval by the DTSC. Sample collection and laboratory analysis for Phase II RI has been completed and a draft Phase II RI Report submitted to DTSC in December 2018 (WSP, 2018d). It is anticipated that a final Phase II RI Report will be completed and made available for public review during January 2019. Based on the Phase II RI findings, WSP will complete a draft remedial action plan (RAP) during the first quarter of 2019. The draft RAP will be subject to input from the community as well as review and approval by the DTSC. If EPA Cleanup Funding is awarded, an updated ABCA will be prepared in accordance with USEPA requirements and consistent with the final RAP approved by DTSC.
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1.1 SITE LOCATION

The River Park site is located in northeast Los Angeles, California, near the intersection of the Golden State Freeway (Interstate 5) and Glendale Freeway (State Route 2), and encompasses approximately 12.5 acres (Figure 2). The Los Angeles River (River) bounds the Site on the west.

Land use in the vicinity of the River Park site is highly urbanized. Current land use in the area is dominated by residential housing, light and heavy industrial use, manufacturing, and public lands. Approximately 730 acres of park lands and open spaces exist within a two-mile radius of the River Park development project area, including the Rio de Los Angeles State Park, which abuts the River Park development project area (California Department of Parks and Recreation [CDPR]; 2005).

The River Park site at which USEPA Brownfields Cleanup Grant funding will be utilized if awarded, is located at the north end of a 42-acre multi-parcel “Taylor Yard property” acquired by the City in 2017 and encompasses a former service track area associated with the former rail yard. This area also coincides with the location of a 12.5-acre multipurpose easement has been granted by the City to the Mountain Recreation and Conservation Authority (MRCA) for the purpose of habitat restoration, open space preservation and to provide future wildlife-oriented public use opportunities. The approximate boundaries for the River Park site are shown on Figure 2.

1.2 REGIONAL HYDROGEOLOGY

The following summary of the regional hydrogeology is adapted from the draft Phase II RI Report (WSP, 2018d). The Site is located at the northern edge of the Los Angeles coastal plain and underlain by up to 160 feet of unconsolidated alluvial sediments. These sediments include fluvial deposits associated with the Los Angeles River and stream terrace and alluvial fan deposits associated with smaller tributary drainage originating in the hills bordering the Glendale Narrows, as well as colluvium (United States Geological Survey [USGS], 2004). The alluvium associated with the Los Angeles River generally comprises sand and gravel dominated deposits, while the alluvium and colluvium derived from the surrounding hills often comprises silt and clay dominated deposits (USGS, 2004). Older (Pleistocene) poorly consolidated alluvium dominated by silt and clay are present in nearby outcrops to the northeast of the Site. The Miocene Puente Formation is the bedrock unit that underlies the alluvial sediments in the area. This formation consists predominantly of sandstones and mudstones (Lamar, 1970). The Elysian Park Anticline is the major structural feature near the Site. This anticline trends northwest-southeast and the anticlinal axis is located to the south of the Site. Folding and uplift associated with the Elysian Park Anticline occurred contemporaneously with deposition of sediments in the Glendale Narrows and the structure is currently active (Oskin and others, 2000). The Upper Elysian Park Thrust is a blind thrust fault that underlies the Elysian Park Anticline and runs on a subparallel axis. Oskin and others (2000) estimate a slip rate along the Upper Elysian Park Thrust of 0.8 to 2.2
millimeters/year, based on estimated contraction rates at the Elysian Park Anticline. The fault is capable of generating a nominal moment magnitude (Mw) 6.2 to 6.7 earthquake every 500 to 1300 years, based on the estimated slip rate (Oskin and others, 2000). The Elysian Park Hills lie to the west of the Site (Lamar, 1970). The presence of several small northwest trending faults is inferred to the east of the Site, proximal to the Mount Washington area (USGS, 2004).

### 1.3 HYDROGEOLOGY

The following summary of the hydrogeology is adapted from the draft Phase II RI Report (WSP, 2018d). The Site lies within the Los Angeles Forebay Sub-Basin of the Central Groundwater Water Basin (Forebay). More specifically, the Site is located within the Glendale Narrows portion of the Forebay; the Glendale Narrows is a region where the Los Angeles River dissects the surrounding low-lying hills. Fluvial deposits associated with the Los Angeles River, stream terrace and alluvial fan deposits, associated drainages originating in the hills bordering the Narrows, and colluvium are present within the Narrows from ground surface to depths of up to 160 feet. These soils comprise the aquifer within the Glendale Narrows.

Groundwater occurs under unconfined conditions within the Glendale Narrows. The water table occurs at an approximate depth of 30 feet at the Site and the aquifer reaches a maximum depth of approximately 160 feet, at the bedrock contact (Puente Formation). Bedrock also bounds the aquifer laterally at the steep valley walls of the Glendale Narrows. Groundwater flows unobstructed through the aquifer in the Glendale Narrows, linking the aquifers at the higher elevation San Fernando Basin with the aquifer in the lower coastal groundwater basin (Forebay). The unlined stretches of the Los Angeles River, such as the section of the River adjacent to the Site, have historically been groundwater discharge areas (USGS, 2004). Preliminary groundwater/surface water studies undertaken as part of studies for restoring the Los Angeles River conclude that in close proximity to the Los Angeles River, groundwater in the uppermost part of the aquifer discharges to the River, while deeper groundwater flows through the aquifer independent of the River following topography (Miller Brooks Environmental [MBE], 2002 and Laton, 2002).

### 1.4 SITE GEOLOGY

The following description of the geology of the Site is adapted from the draft Phase II RI report (WSP 2018d). Currently, the majority of the Site is covered by soil with some areas covered with asphalt and concrete. The Site is underlain by the following soils, as presented in order of increasing depth: fill, coarse-grained alluvium, and fine-grained alluvium. The fill is primarily composed of fine-grained silty sand with some gravel and debris. The fill layer extends from ground surface to as much as 15 feet below ground surface (bgs). The fill is generally dark colored, ranging from dark gray to dark olive brown. The fill typically contains structural debris. The coarse-grained alluvial unit consists of poorly graded sand with little to no silt or clay. This soil
unit begins as shallow as five feet bgs and extends to depths greater than 100 feet bgs (the maximum depth explored as part of environmental investigations conducted at the Site by WSP or others). The sand is typically fine to medium-grained and the color ranges from grayish brown to light yellowish brown.

Discontinuous silt layers, assigned to the fine-grained alluvium unit, are interbedded with the coarse-grained unit between depths of 15 and 30 feet bgs. The coarse-grained unit is interpreted as channel or point bar deposits associated with the Los Angeles River. The fine-grained alluvial unit comprises of silt and silty sand, and occurs in discontinuous layers within the coarse-grained alluvial deposits between depths of 15 and 30 feet bgs. The silt ranges in color from olive brown to dark-greenish gray and the silty sand lithologies are generally grayish brown. The silt is firm and has low plasticity. The occurrence of the fine-grained alluvial unit is limited to the northern portion of the multi-parcel Taylor Yard property, which includes the Site, and is believed to be associated with stream terrace deposits originating from drainages in the hills northeast of the Site and over-bank deposits associated with the Los Angeles River.

1.5 SITE HYDROGEOLOGY

The following description of the hydrogeology of the Site is adapted from the draft Phase II RI report (WSP 2018d). Based on groundwater monitoring conducted at former multi-parcel Taylor Yard property from 1994 to 2010, groundwater beneath the Site flows towards the southeast, parallel to the trend of the Glendale Narrows. The horizontal hydraulic gradient across the Site is approximately 0.003 feet per foot (ft/ft) (CDM, 2010). Based on the groundwater level measurements conducted at onsite multiport monitoring wells between 2003 and 2009, the vertical hydraulic gradient at the multi-parcel Taylor Yard property as a whole is generally upwardly directed at the time of groundwater elevation measurements, with occasional downward gradients during periods of heavy precipitation (CDM, 2009).

Over the past 20 years, the depth to groundwater at the Site has generally ranged between 30 to 40 feet bgs. The depth to groundwater is seasonally influenced, but is most heavily influenced by pumping operations at the Pollock Well Field, which is located approximately half a mile northwest of the Site. Groundwater levels tend to rise during the winter and spring, and decline throughout the rest of the year. Estimations of aquifer hydraulic parameters for the unconfined aquifer underlying Taylor Yard were documented in Environmental Research and Technology (ERT; 1987). Transmissivity was estimated to range from 50 to 350 gallons per day/foot (gpd/ft). Aquifer storativity was estimated to range from 0.12 to 0.16. Groundwater seepage velocity was estimated at 480 feet/year.
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1.6 SITE HISTORY

The River Park site historically was a portion of an approximate 244-acre former railroad property developed by the UPRC and its predecessors beginning in the early 1900s. The River Park site is part of the multi-parcel Taylor Yard property purchased from UPRC in 2017 that is bounded on the west by the Los Angeles River, and which was first developed for use as a rail yard in the early 1930s.

Historical aerial photographs indicate that the period from 1945 and 1952 was a time of peak activity and development at the Site. Maintenance and fueling operations continued through 2006, when the rail yard was permanently closed. During 2006 to 2011, the former rail yard was generally cleared of surface structures. The Site has been vacant since 2011. After acquisition by the City, a six-foot tall chain link fence with locking gates was constructed around the perimeter of the multi-parcel Taylor Yard property as a whole by the Department of Recreation and Parks in May 2017 to secure it from public access until it was further assessed, remediated, and deemed safe for public access by the DTSC.

1.7 PREVIOUS ENVIRONMENTAL CLEANUP ACTIVITIES

Since 1985, a series of soil, soil gas and groundwater investigations have been conducted at the multi-parcel Taylor Yard property which includes the Site. Results of several progressive phases of remedial investigation have identified constituents of potential concern (COPCs) in the Site soil to be lead, arsenic, total petroleum hydrocarbons (TPH), volatile organic compounds (VOCs), and semi-volatile organic compounds (SVOCs). VOCs are also present in groundwater beneath the River Park site and the Taylor Yard property as a whole; however, groundwater impacts are generally attributed to the regional VOC groundwater plume and VOC sources located upgradient of the Site. VOCs have also been detected in shallow soil gas in discrete areas of the Site.

In 2004, Camp Dresser & McKee (CDM) implemented a Focused RI to delineate the lateral and vertical extent of COPCs in soil at the Taylor Yard property as a whole, including the River Park site. These data were used in preparation of a Human Health Risk Assessment (HHRA). The HHRA evaluated the COPCs and determined a subset to be constituents of concern (COCs) for the development project area. COCs for soil included TPH total (C12 to C35+), antimony, arsenic, lead, benzo(a)pyrene equivalents, and tetrachloroethene (PCE). COCs for soil gas included benzene, 1,2-dichloroethane (1,2-DCA), cis-1,2-dichloroethene (cis 1,2-DCE), ethylbenzene, naphthalene, PCE, trichloroethene (TCE), and vinyl chloride (VC). The HHRA determined that the COCs at the Taylor Yard property as a whole including the River Park site posed an unacceptable risk to human health under appropriate exposure scenarios and pathways, and concluded that a feasibility study (FS) was warranted to address these risks. Data gaps were also identified as a result of the HHRA evaluation, which helped to delineate Areas of Potential
Concern (AOPCs) at the Taylor Yard property as a whole requiring further investigation. AOPCs were defined by CDM Smith in 2014 by comparing COC concentrations to site-specific preliminary remediation goals (PRGs) for industrial use and delineating areas of the Taylor Yard property where concentrations exceed these PRGs. In CDM Smith’s FS and RAP evaluations, AOPCs encompass areas at the River Park site and the Taylor Yard property as a whole where, if COCs could be removed or treated sufficiently, the resulting “site-wide” upper confidence limit (UCL) concentrations (UCL95) of the COCs would be reduced to below their industrial PRG.

1.8 SITE ASSESSMENT FINDINGS

In 2018, a consultant team led by WSP completed a Phase II RI of the River Park site and the Taylor Yard property as a whole. The Phase II RI was completed in accordance with two RI Work Plans dated March 2, 2018 (WSP, 2018a; 2018b), which were subject to review and approval by the DTSC. Sample collection and laboratory analysis for Phase II RI has been completed and a draft Phase II RI Report completed and submitted to DTSC in December 2018 (WSP, 2018d). It is anticipated that a final Phase II RI Report will be completed and made available for public review during January 2019. A detailed summary of the Phase II RI results will be incorporated into the final ABCA submitted as part of the City’s USEPA Brownfields Cleanup Grant application. As part of the Phase II RI, a 100-foot by 100-foot grid was established across the Taylor Yard property as a whole. The River Park site includes portions of 55 grid cells (C3 to C5, D3 to D12, E3 to E12, F3 to F12, G3 to G12, H5 to H12, and I9 to I12).

Soil gas samples were collected from nearly all cells. The three primary COCs for soil gas at the Site are benzene, PCE, and VC. Benzene concentrations exceeded the residential screening level (RSL) for soil gas of 97 micrograms per cubic meter (µg/m³) in six samples, and exceeded the commercial screening level (CSL) for soil gas of 420 µg/m³ in four of these samples. The concentration of PCE exceeded the RSL in one soil gas sample. VC exceeded the RSL in eight soil gas samples and the CSL in five samples. Overall, 11 of the 55 cells had one or more of these three VOCs at concentrations that exceed an RSL or CSL. Of potential significance to the remedial action requirements for the Site is that some of these exceedances occur in the vicinity of potential future locations for a nature center or river museum as identified on preliminary concept plans for redevelopment of the Site.

Key constituents identified in soil at the Site as part of the Phase II RI include lead, TPH, naphthalene, PCE, and benzo(a)pyrene, which exceed the RSL’s and/or CSL’s for soil in one or more soil samples. The most significant contaminants are lead and TPH which exceed the RSL in samples collected from within 22 and 24 of the 55 total cells, respectively, and which exceed the CSL in samples collected from within samples collected from within 17 and 18 cells of the 55 total cells, respectively. Toxicity characteristic leaching tests were performed on select samples and the results documented eight cells within which the concentrations for TCLP lead exceed the...
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threshold value of 5 milligrams per liter (mg/L) above which the soil, if excavated, would be a characteristic hazardous waste.

It should be noted that the summary of results provided above does not distinguish between samples collected at depth or at or near the ground surface, which will be a key factor in detailed evaluation of appropriate remedial action alternatives and requirements within specific areas of the Site.

Based on the Phase II RI findings, WSP will complete a draft RAP during the first quarter of 2019. The draft RAP will be subject to input from the community as well as review and approval by the DTSC. If EPA Cleanup Funding is awarded, an updated ABCA will be prepared in accordance with USEPA requirements and consistent with the final RAP approved by DTSC.

1.9 PROJECT GOALS AND SITE REUSE PLAN

The overall scope for development of River Park includes a phased remediation and phased development including potential interim uses which could align with the long-term goals to restore ecosystem values in and along an 11-mile corridor of the River from Griffith Park to Downtown Los Angeles.

The restoration of the Taylor Yard property as a whole has been identified as a cornerstone project in fulfilling the goals for restoration of the Los Angeles River ecosystem, and a joint effort by the City and the USACE to restore the natural and hydrological processes of the Los Angeles River in an 11-mile section from Griffith Park to downtown Los Angeles, and includes the section of the River immediately adjacent to the Site. It is considered the most ecologically progressive plan on the Los Angeles River to-date and the only plan that calls for concrete removal.

Redevelopment of the Taylor Yard property as a whole, including the River Park site, is the highest priority component of the Los Angeles River Revitalization Master Plan which is the City of Los Angeles’ plan to establish the Los Angeles River as the ‘front door’ to the City by establishing guidelines and projects that: (1) revitalize the River, (2) facilitate green river-adjacent neighborhoods, (3) capture community opportunities, and (4) create value for river-adjacent communities.

Redevelopment of the Taylor Yard property as a whole, including the River Park site, is set apart from other open space projects in scale and complexity. Many layers have been analyzed, from urban constraints and habitat, to natural systems like hydrology, to providing a base for inserting circulation and programs. After the City and a consulting design team led by WSP went through a process to determine project goals, and establishing the guidelines and direction of the project, a set of site design constraints and opportunities were developed based on the site’s constraints and opportunities. The constraints are fundamental to the design as they often guide
circulation and the location of programs. Constraints include soil health and remediation, utilities and associated right of ways, the potential for high speed rail, the new Taylor Yard Pedestrian Bridge laydown area, access to the Taylor Tard property as a whole, potential development, stormwater feature location, river hydrology and ARBOR setbacks, and project phasing.

The final use of the Site will be for a combination of public green space, passive and active public recreation, restored natural habitat, river access, and stormwater management features. All of the reuse concepts developed for the Site include a combination of water features (boathouse, kayak launch, river steps, demonstration wetlands, and expanded Los Angeles River channel), ecology features (native habitat, native plant nursery, habitat towers, and native meadow), and “experience” features (picnic areas, outdoor classrooms, nature center and/or river museum, greenhouse/café, and pedestrian bridge over the active rail corridor to connect the Site to the Rio de Los Angeles State Park). The detailed reuse plans for the Site are being prepared in conjunction with the FS/RAP, and will be incorporated into the final ABCA if the USEPA Brownfields Cleanup Grant is awarded to the City.
2.0 APPLICABLE REGULATIONS AND CLEANUP STANDARDS

2.1 CLEANUP OVERSIGHT RESPONSIBILITY

On January 16, 2018, a California Land Reuse and Revitalization Act (CLRRA) voluntary clean-up agreement was executed to guide the City remediation of the Taylor Yard property as a whole (including the River Park site) under the DTSC supervision. The Phase II RI was completed in accordance with work plans approved by DTSC (WSP, 2018a; 2018b). Cleanup will be conducted by environmental consulting firms to be retained by the City, and overseen by the DTSC. Development of the Taylor Yard property as a whole, including the Site, is being managed by a project management team (PMT) led by the City of Los Angeles Bureau of Engineering (BOE) and including representatives from the City Council (District No. 1) and the Mayor’s Office. Administration of the USEPA Cleanup Grant if awarded will be performed by the City of Los Angeles Bureau of Sanitation (LASAN) which manages the Citywide Brownfields Program, including the City’s active USEPA Brownfields Assessment Grant.

2.2 CLEANUP STANDARDS FOR MAJOR CONTAMINANTS

The evaluation of applicable cleanup standards will be completed WSP as part of the FS/RAP development during the first quarter of 2019. All final cleanup standards for the Site will be subject to review and approval by DTSC. Cleanup standards will be developed in accordance with the planned future permanent use of the Site for greenspace, public recreation and restored natural habitat.

2.3 LAWS AND REGULATIONS APPLICABLE TO THE CLEANUP

Cleanup at the Site is subject to an array of federal, state and local regulations. The most important requirements relate to CLRRA voluntary clean-up agreement executed between the City and the DTSC to guide the City remediation of the Taylor Yard property as a whole under the DTSC supervision. Additional details regarding regulations and permits applicable to cleanup will be provided in the updated ABCA to be submitted with the USEPA Brownfields Cleanup Grant application.
3.0 EVALUATION OF CLEANUP ALTERNATIVES

3.1 CLEANUP ALTERNATIVES CONSIDERED

Seven remedial action alternatives were considered for use at the Site, as briefly summarized below.

3.1.1 Alternative 1 - No Action

No action (e.g., not remediating soil or soil gas at the Site) is the baseline against which all other alternatives will be measured.

3.1.2 Alternative 2 – Excavation, Removal, and Off-Site Disposal of Contaminated Soil from Hotspot Areas

This alternative would consist of excavation, removal, and off-site disposal of contaminated soil from hotspot areas. Considerations in implementing this alternative will include:

- The location, extent, and depth of the “hotspot” excavation areas.
- The final grading plans for the Site, and whether any or all of the excavated areas would need to be backfilled with clean imported fill materials.
- Whether soil from the hotspot areas, following excavation, would need to be managed as a characteristically hazardous waste.
- The feasibility and potential benefits from fully removing contaminated soil from individual hotspot areas.
- Plans for future construction, in particular buildings, where special measures may be required in backfilling of excavation, to minimize settlement and potential geotechnical issues.
- The locations for underground utility lines that would limit use of this alternative in some areas.

A key consideration in use of this alternative is the overall grading plans for the Site, in particular, the plans for restoring portions of the Site adjoining the Los Angeles River, which could result in the need to remove thousands of cubic yards of materials. In this circumstance, it may be cost effective to complete a more comprehensive removal of hot spot areas. Another key issue at
the Site is the presence of areas where TCLP lead concentrations in soil are greater than the 5 mg/L hazardous waste threshold value.

The Site is ideal in many respects for use of this alternative in that it is a large site with no buildings which is relatively physically isolated from residential areas, and therefore could accommodate large staging and temporary stockpile areas, with minimal disruption to area residents or the need for sheet piling or other costly measures to prevent excavations from undermining neighboring the structures. Another favorable factor is that excavated soil could potentially be removed from the Site via rail, resulting in both cost savings (for transport to landfill) and avoidance of the negatives associated with moving large volumes of soil via dump trucks.

3.1.3 Alternative 3 – Treatment, Excavation, Removal and Off-Site Disposal of Contaminated Soil from Hotspot Areas

Alternative 3 is a variation of Alternative 2, with the difference that soil from select hotspot areas would be subject to some form or treatment either before or after excavation, but prior to transporting off-site for disposal. Treatment of soil prior to off-site disposal is primarily of use in situations where the soil, if untreated, will require disposal as a characteristic hazardous waste. Treatment through various methods can result in the soil no longer being characteristically hazardous, and acceptable for disposal as a non-hazardous solid waste.

It is anticipated that this alternative is potentially most applicable to areas of the Site containing soil that is characteristically hazardous for lead.

Specific rules apply to on-site treatment of soil that is characteristically hazardous, with options typically consisting of treatment in-situ (through injection of additives or below-grade mixing of additives), treatment in containers, or treatment on specially constructed treatment cells. Existing concrete slabs at the Site may present opportunities for cost effective construction of treatment pads, but this would depend on the condition of the concrete and the extent to which it is free of obstructions or cracks.

3.1.4 Alternative 4 – Capping of Contaminated Soil

Alternative 4 would consist of construction of a cap over areas of impacted soil to prevent either direct contact to contaminated soil by potential users of River Park, and/or to prevent infiltration of surface water runoff through areas of contaminated soil where leaching to groundwater is a concern. The cap would be constructed either of: (a) imported fill materials brought from an off-site location and documented to be free of contamination (or impacted at levels that are acceptable for direct human contact and all future planned site uses), (b) materials documented from non-impacted areas at the Site, or (c) new concrete or asphalt pavement.

Considerations in implementing this alternative will include:
The extent of areas in which leaching of contaminants by infiltration of surface water runoff would be a concern (which would require the cap to be designed in a manner to minimize infiltration) versus areas where only preventing future direct human contact is a concern.

The potential availability (or lack thereof) of clean materials on-site that can be used to construct the cap.

The potentially availability of large volumes of low or no-cost clean fill materials from highway construction or other projects occurring in the Site vicinity requiring substantial cuts or excavation of materials from locations with minimal or no contamination issues.

The planned locations for parking lot, paved paths, new building slabs, or other concrete or asphalt pavement in areas where it could serve as a long-term engineered barrier.

The final grading plan, and the volume of soil that needs to be removed or brought to the Site to achieve the desired grade, and the extent to which construction of a cap may add to the challenges of meeting the grade (if plans require the removal of significant quantities of soil).

Whether the areas requiring a cap are located within a floodplain.

Whether the materials used to construct the cap are compatible with future site plans in terms of natural areas and landscaping.

Given the >100-year industrial history of the Site, in combination with the presence of contamination at some locations to depths of 60 feet or more, use of a site-wide cap provides the advantage of ensuring that future users of the Park will be protected from both documented areas of contamination, and any small hotspot areas that are missed during the RI process. However, the timing for construction of the cap would need to consider the overall phasing for development of River Park to minimize the need to disturb or excavate through the cap as part of future development phases. It is possible that an interim cap may be desirable in some areas of the Site if necessary to help achieve an overall project goal of achieving early public access to portions of the Site.

3.1.5 Alternative 5 – Use of Soil Vapor Mitigation Systems

This alternative would apply to planned locations for buildings or enclosed spaces that will be subject to use by Park visitors, staff, or others and where there is a potential risk for contaminated vapors to enter the building and preferentially accumulate in the indoor air. The final plans for the Site have not yet been developed. However, two of the concept plans presented to the public in 2018 included construction of a nature center or combined nature center/river...
museum at the Site, in close proximity to an area where vinyl chloride was measured in one or more soil gas samples at concentrations that exceed the commercial soil gas screening level of 160 µg/m³. Soil vapor mitigation measures for buildings typically include use of a vapor barrier in constructing the slab and for outer walls extending below grade, and possibly installation of a passive or active subslab venting system. A key consideration is whether the building included a basement or is of slab-on-grade construction.

Frequently, vapor mitigation systems for small buildings can be cost effectively constructed if incorporated into the building design and construction plans. Therefore, it can make sense to incorporate vapor mitigation measures into the future buildings at the Site to be prepared for the broadest range of contingencies related to contaminated soil vapor at the Site, as well as to address potential perceptions of health risks by the public (whether justified or not by Site environmental data).

3.1.6 Alternative 6 – Soil Vapor Extraction

This alternative would consist of installation and operation of a soil vapor extraction (SVE) system for the purpose of reducing VOC concentrations in select subsurface hotspot areas, where these present a threat of continuing releases to groundwater or other migration pathways. SVE is most effective on contaminants with higher Henry’s Law constants, in particular certain chlorinated solvents and petroleum hydrocarbons. However, although multiple areas at the Site have documented significant concentrations of benzene, PCE, and VC in soil vapor samples, almost no significant concentrations of benzene, PCE, or VC (or other VOCs) were documented in soil samples collected at the Site as part of the Phase II RI.

3.1.7 Alternative 7 – Use of a Combination of Two or More Remedial Methods

This alternative consists of use of a combination of two or more the remedial methods described for Alternatives 2 through 6. Various methods would be targeted to address the specific reuse plans or types of contaminants present in different portions of the Site.

3.2 EFFECTIVENESS, IMPLEMENTABILITY, AND COSTS FOR CLEANUP ALTERNATIVES

To assist in the selection of a remedial action alternative for the Site, this section presents an evaluation of the effectiveness, implementability, and preliminary estimated cost for each cleanup alternative.

3.2.1 Effectiveness

The effectiveness of the various remedial alternatives was evaluated in terms of their ability to:
1. achieve to meet industrial use standards within the 5-year time frame specified in the MRCA easement agreement [Effectiveness Criterion [EC] #1].
2. protect future users of River Park from risks associated with exposure to contaminated soil or contaminated soil vapors (EC #2).
3. prevent off-site movement of contamination in either groundwater, stormwater runoff or soil vapor (EC#3).
4. facilitate desired reuse of the site for greenspace, recreational, and restored natural habitat uses (EC #4), and
5. accommodate future on-site management of all stormwater runoff (EC #5).

3.2.1.1 Alternative 1 – No Action

The “no action” alternative would be ineffective at achieving any of the five effectiveness criteria listed in Section 3.2.1.

3.2.1.2 Alternative 2 – Excavation, Removal, and Off-Site Disposal of Contaminated Soil from Hotspot Areas

Excavation, removal, and off-site disposal of contaminated soil from hotspot areas would be effective in achieving all five of the effectiveness criteria listed in Section 3.2.1.

3.2.1.3 Alternative 3 – Treatment, Excavation, Removal, and Off-Site Disposal of Contaminated Soil from Hotspot Areas

Treatment, excavation, removal, and off-site disposal of soil would be effective in achieving all five of the effectiveness criteria listed in Section 3.2.1. However, this alternative would presumably be utilized in combination with one or more other alternatives, and focused specifically on hotspot areas where there would be benefits from treating soil prior to excavation.

3.2.1.4 Alternative 4 – Capping of Contaminated Soil

Capping of contaminated soil would be effective in protecting future users of River Park from direct contact with contaminated soil (EC #2). It could also be effective in meeting industrial use standards within a 5-year time frame (EC #1), and in preventing contaminating soil from being transporting off-site via stormwater runoff (EC #3 - partial). However, capping alone may not be effective in enabling the Site to be developed for the restored natural habitat uses (EC #4), and may not be effective for enabling stormwater to be managed on site (EC #5).
3.2.1.5 Alternative 5 – Use of Soil Vapor Mitigation Systems

Use of soil vapor mitigation systems would be effective primarily in partially meeting EC #2 (by protecting future park users or staff from exposure to contaminated soil vapors). Use of soil vapor mitigation systems alone would not be effective in achieving other effectiveness criteria.

3.2.1.6 Alternative 6 – Soil Vapor Extraction

Use of soil vapor extraction could be of use in protecting future park users from contaminated soil vapors (EC #2), and potentially in helping to prevent potential off-site movement of contaminants (EC #3). It would be of limited effectiveness in addressing other effectiveness criteria.

3.2.1.7 Alternative 7 – Use of a Combination of Two or More Remedial Methods

Use of a combination of two or more remedial methods would be an effective strategy for achieving all five effectiveness criteria. It is anticipated that the most effective approach would be a combination of Alternative 2 (Excavation, Removal, and Off-Site Disposal of Contaminated Soil from Hotspot Areas) and Alternative 4 (Capping of Impacted Soil). Excavation would be strategically focused on areas where the most highly impacted soil is present, or where removal would facilitate habitat restoration plans. Alternative 3 (Treatment, Excavation, Removal, and Off-Site Disposal of Contaminated Soil from Hotspot Areas) would be focused on areas where excavation of soil is desirable for achieving project goals, but treatment will reduce contaminant concentrations as necessary for the soil to be non-hazardous. Alternative 5 (Use of Soil Vapor Mitigation Systems) would be implemented if buildings are constructed at the Site as part of final development plans.

3.2.2 Implementability

The implementability of the seven remedial alternatives is evaluated below.

3.2.2.1 Alternative 1 – No Action

No action is the most implementable alternative since it involves no activities.

3.2.2.2 Alternative 2 – Excavation, Removal, and Off-Site Disposal of Contaminated Soil from Hotspot Areas

Alternative 2 is moderately difficult to implement. Coordination (e.g., dust suppression and monitoring) during cleanup activities and short-term disturbance to the community (e.g., trucks transporting contaminated soils and backfill) are anticipated. In addition, soil in portions of the Site will be characteristically hazardous for lead, if excavated, resulting in the need to carefully
define areas where soil is hazardous, and to segregate this soil from non-hazardous soil generated from other areas.

The Site is ideal in many respects for use of this alternative in that it is a large site with no buildings which is relatively physically isolated from residential areas, and therefore could accommodate large staging and temporary stockpile areas, with minimal disruption to area residents or the need for sheet piling or other costly measures to prevent excavations from undermining neighboring the structures. Another favorable factor is that excavated soil could potentially be removed from the Site via rail, resulting in both cost savings (for transport to landfill) and avoidance of the negatives associated with moving large volumes of soil via dump trucks.

3.2.2.3 Alternative 3 – Treatment, Excavation, Removal, and Off-Site Disposal of Contaminated Soil from Hotspot Areas

Alternative 3 is similar to Alternative 2 in its implementability, but with the added complexity of treating select hotspot areas to reduce the soil’s toxicity of lead or other contaminants. However, rendering the soil non-hazardous will simplify the coordination needed for transport and off-site disposal, as well as eliminate some reporting requirements.

3.2.2.4 Alternative 4 – Capping of Contaminated Soil

Capping is relatively easy to implement, although ongoing monitoring and maintenance of the cap will require periodic coordination and reporting.

3.2.2.5 Alternative 5 – Use of Soil Vapor Mitigation Systems

Use of soil vapor mitigation systems for future buildings at the Site would require coordination with the architects, bidders, and construction managers. However, given the moderate vapor intrusion concerns in the currently anticipated potential building locations, relatively standard and off-the-shelf mitigation systems would likely be adequate. These systems are relatively simple to install and maintain.

3.2.2.6 Alternative 6 – Soil Vapor Extraction

Use of SVE would be relatively complex to implement, as it could require installation of SVE wells at multiple locations, connected to a central treatment system. Operation of the SVE could complicate other components of Park development, and be complicated by the large size of the Site, lack of security personnel, and need for power supply.
3.2.2.7 Alternative 7 – Use of a Combination of Two or More Remedial Methods

Use of a combination of two or more remedial methods is considered to be the most implementable method other than Alternative 1 (no action). A combined approach provides an essential implementation advantage in that it can most easily be adapted to meet the needs of each area at the Site, as well as integrated with a phased approach that will be used for both cleanup and park development. Removal of soil (either through Alternative 2 or 3) requires some upfront coordination but is most of the most widely used and least technologically complex remedial methods. Treatment prior to disposal (Alternative 3) to address soil that is characteristically hazardous for lead is also a relatively simple remedial option requiring mixing of dry chemicals with soil. Capping (Alternative 4) is also a commonly used and readily implementable remedial methods.

3.2.3 Cost

Cost estimates for remedial alternative are still be developed, and will be included in the updated ABCA to be submitted with the USEPA Brownfields Cleanup Grant application.

3.2.3.1 Alternative 1 – No Action

There is no direct cost associated with this alternative. However, it carries an enormous opportunity cost given the importance of the Site to the plans for restoration of the Los Angeles River. None of the plans for the River or for providing an exceptional new public greenspace, recreational amenity, and restored habitat area could be achieved if no action is taken to clean up the Site.

3.2.3.2 Alternative 2 – Excavation, Remedial, and Off-Site Disposal of Contaminated Soil from Hotspot Areas

A detailed cost for Alternative 2 is not yet available.

3.2.3.3 Alternative 3 – Treatment, Excavation, Removal, and Off-Site Disposal of Contaminated Soil from Hotspot Areas

A detailed cost for Alternative 3 is not yet available.

3.2.3.4 Alternative 4 – Capping of Contaminated Soil

A detailed cost for Alternative 4 is not yet available.
3.2.3.5 Alternative 5 – Use of Soil Vapor Mitigation Systems

A detailed cost for Alternative 5 is not yet available.

3.2.3.6 Alternative 6 – Soil Vapor Extraction

A detailed cost for Alternative 6 is not yet available.

3.2.3.7 Alternative 7 – Use of a Combination of Two or More Remedial Methods

A detailed cost for Alternative 7 is not yet available.

3.3 RECOMMENDED REMEDIAL ACTION ALTERNATIVE

The recommended cleanup alternative is Alternative 7 (Use of a Combination of Two or More Remedial Methods). Alternative 1 (No Action) cannot be recommended as it would support none of the City’s goals for the Site. Although it would have the lowest direct cost, it would have the highest indirect or opportunity costs as it would result in none of the exceptional opportunities associated with the Site coming to fruition.

The recommended alternative would include a combination of Alternatives 2, 3, 4, and 5. Alternative 2 (Excavation, Removal, and Off-Site Disposal of Contaminated Soil in Hotspot Areas) would be performed strategically to remove soil from areas having the greatest contamination levels either at or near the ground surface, or in areas where removal is necessary to achieve desired final site grades. Alternative 3 (Treatment, Excavation, Removal, and Off-Site Disposal of Contaminated Soil from Hotspot Areas) would be performed in select areas where soil would be characteristically hazardous for lead or other constituents if excavated. Treatment would result in significant cost savings for off-site disposal by enabling soil to be disposed as a non-hazardous solid waste as a municipal disposal facility rather than as a hazardous waste at a hazardous waste treatment and disposal facility. Alternative 4 (Capping of Contaminated Soil) would potentially be performed throughout the Site, except in areas of the Site where soil is documented to meet requirements applicable to planned use as a public greenspace and recreational area. Alternative 5 (Use of Soil Vapor Mitigation Measures) would potentially be used as part of construction of anticipated nature center/river museum and any other buildings that are located in areas where high levels of one or more contaminants are present in soil vapor at concentrations at which they would be of potential concern for vapor intrusion.

The exact locations for use of each alternative remain to be determined and will be subject to further public input regarding plans for development of River Park, the timing and amounts of various types of funding that are secured, DTSC approval, and other variables. It is anticipated that USEPA Cleanup Grant funding will be utilized primarily for hotspot removal, as this will occur in the initial stages of Site cleanup.

Stantec
REFERENCES
December 5, 2018

4.0 REFERENCES


REFERENCES
December 5, 2018

NOTE: THIS FIGURE WAS ADAPTED BY STANTEC FROM FIGURE 1 IN THE DRAFT PHASE II RI REPORT FOR USE IN THE ABCA.

Parcel G2 and River Park development project area boundary