

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION 5

IN THE MATTER OF:
Beck's Lake Site
City of South Bend
St. Joseph County, Indiana

Respondents:

Honeywell International Inc.
City of South Bend

AMENDMENT 2 TO
ADMINISTRATIVE SETTLEMENT
AGREEMENT AND ORDER ON
CONSENT FOR FOCUSED REMEDIAL
INVESTIGATION/FEASIBILITY
STUDY

U.S. EPA Region 5
CERCLA Docket No. V-W-16-C-000

Proceeding Under Sections 104, 107 and
122 of the Comprehensive Environmental
Response, Compensation, and Liability
Act, as amended, 42 U.S.C. §§ 9604, 9607
and 9622.

AMENDMENT 2 TO ADMINISTRATIVE
SETTLEMENT AGREEMENT AND
ORDER ON CONSENT FOR FOCUSED
REMEDIAL
INVESTIGATION/FEASIBILITY STUDY
OF THE LASALLE PARK AREA OF THE BECK'S LAKE SITE

BACKGROUND

1. The United States Environmental Protection Agency ("EPA"), Honeywell International Inc. and the City of South Bend, ("Respondents"), entered into an Administrative Settlement Agreement and Order on Consent, EPA Docket No. V-W-16-C-000, dated October 2, 2016 ("Settlement Agreement"). The Settlement Agreement provides for the performance of a Focused Remedial Investigation and Feasibility Study ("Focused RI/FS") of the LaSalle Park Area ("LPA") within the Beck's Lake National Priorities List Site located in South Bend, Indiana ("Site") and the reimbursement of response costs incurred by EPA in connection with the Focused RI/FS. The Focused RI/FS was limited to the LPA and did not address any area beyond the boundary of the LPA where hazardous substances associated with the Site may have come to be located.
2. Amendment 1 to the Settlement Agreement, effective July 11, 2017, contained provisions including a Soil Management Plan Addendum (July 2017 SMP Addendum) to enable the City of South Bend to expedite the renovation and expansion of the Charles Black Recreation Center, an existing structure at the LPA.
3. Section 122(e)(6) of CERCLA, 42 U.S.C. § 9622(e)(6), provides in relevant part, that after a potentially responsible party (PRP) respondent has initiated a remedial investigation/feasibility study under an agreement with EPA, no PRP may undertake any remedial action at the facility unless such remedial action has been authorized by EPA. In accordance with: the Settlement Agreement, Paragraph 10; Appendix A to the Settlement Agreement, Section I in the Statement of Work for the LPA of the Beck's Lake Site (hereinafter referred to as the "LPA Statement of Work"); and CERCLA Section 122 (e) (6), any work disturbing, excavating or exposing subsurface soils conducted at the Site must be expressly approved by EPA.
4. Section 104(a) of CERCLA, 42 U.S.C. § 9604(a)(1) provides, in relevant part, that a responsible party may perform the remedial investigation or feasibility study if the EPA determines the person conducting the work is qualified and if the responsible party agrees to reimburse the Superfund Trust Fund for any cost incurred by EPA in connection with the oversight of such work.

SECOND AMENDMENT TO SETTLEMENT AGREEMENT

1. On August 7, 2018, the City of South Bend submitted to EPA a Soil Management Plan Addendum (dated August 6, 2018) for the LPA (August 2018 SMP Addendum) which is incorporated into this Amendment 2 as Exhibit A. The August 2018 SMP Addendum is an addition to the July 2017 SMP Addendum that the Respondents prepared to enable the City of South Bend to expedite work at the Charles Black Recreation Center. The August 2018 SMP Addendum includes plans to improve LaSalle Park with the installation of a water irrigation system and drinking water fountains, replacement of play equipment and a pavilion, and the performance several other landscaping activities at the LPA (as depicted in the August 2018 SMP Addendum, Figure 1, Areas of Future Soil Disturbance Work). Although none of these park improvement activities are Work required by the Settlement Agreement, these activities will cause exposure to and excavation of soil and potential Waste Material (as defined by the Settlement Agreement, paragraph 8.w.) within the LPA (as depicted in the August 2018 SMP Addendum, Figures 2, 3 and 4). Therefore, pursuant to the Settlement Agreement, paragraph 53.c., the LPA Statement of Work Task 1, Paragraph 1.2.2.2 Focused LPA Work Plan/Field Sampling Plan also will include the projects described in the August 2018 SMP Addendum. All such Work described shall be subject to EPA review and approval, including all Work necessary to support the installation of the water irrigation system and drinking water fountains, the replacement of play equipment and a pavilion, and performing the other landscaping activities at the LPA, including any excavation or exposure to subsurface soils and management and disposal of such soils or Waste Materials. EPA and the Indiana Department of Environmental Management's approval is limited only to the projects listed on Pages 3-4, Part 1-6, of the August 2018 SMP addendum. Any future projects not included in the August 2018 SMP Addendum will need explicit approval by EPA.

2. Respondents acknowledge and agree that EPA has not selected the final cleanup remedy for the LaSalle Park Area of the Beck's Lake Site and therefore, in the future, EPA may require further response actions in the LPA in addition to any activities required to accommodate the Respondents' request to: install the water irrigation system and drinking water fountains, replace play equipment and a pavilion, and conduct several other landscaping activities. EPA's approval of or authorization of work pursuant to the August 2018 SMP Addendum is not a defense to a future demand by the EPA that Respondents satisfy any additional requirements of a ROD issued for the LPA.

3. The Focused RI/FS requires Respondents to conduct groundwater investigation sampling north of the boundaries of the LPA. For the avoidance of doubt, the Section IV. (Definitions) 11 h. of Future Response Costs includes such costs incurred by the United States in connection with the Focused RI/FS groundwater sampling investigation beyond the boundaries of the LPA.

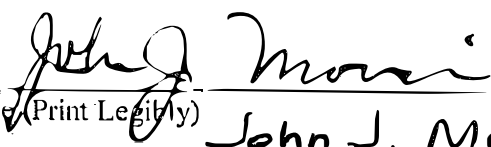
4. EPA's approval of management activities and Work Plans described in the August 2018 SMP Addendum is limited to soil management activities at the LPA of the Beck's Lake Site. All other aspects of the LaSalle Park improvement activities described in the August 2018 SMP are not on-site activities needed to perform the RI/FS which are referenced in the Settlement Agreement, Section XII (Compliance with Other laws) Paragraph 73. EPA's approval of soil management activities and Work Plans described in August 2018 SMP Addendum does not alter Respondents' responsibility to comply with all other federal, state or other local laws, and obtain and comply with all permits and approvals.

Attachment A Soil Management Plan Addendum dated August 6, 2018

In the Matter of Beck's Lake Site
Amendment 2 to ASAOC for
Focused Remedial Investigation/Feasibility Study

Agreed this 24th day of September, 2018.

For Respondent: **HONEYWELL INTERNATIONAL INC.**

By: 
Name (Print Legibly) John J. Morris
Title: Global Remediation Dir.

In the Matter of Beck's Lake Site
Amendment 2 to ASAO for
Focused Remedial Investigation/Feasibility Study

Agreed this 24th day of September, 2018.

For Respondent: **CITY OF SOUTH BEND, INDIANA**

By: Stephen A. Studee
Name (Print Legibly) Stephen A. Studee

Title: Attorney-in-Fact for the City of South Bend

In the Matter of Beck's Lake Site
Amendment 2 to ASAOC for
Focused Remedial Investigation/Feasibility Study

It is so ORDERED AND AGREED this 2nd day of October, 2018

BY: 
DOUG BALLOTTI
Acting Director, Superfund Division
U.S. Environmental Protection Agency Region 5

EFFECTIVE DATE: OCT 02 2018

Exhibit A

Soil Management Plan Addendum (dated August 6, 2018)

SOIL MANAGEMENT PLAN ADDENDUM – BECK’S LAKE NPL / LASALLE PARK AREA

This document is an addendum to the existing Soil Management Plan (SMP) that was approved by the U.S. Environmental Protection Agency (EPA) on August 21, 2017 for the construction activities at the Charles Black Recreation Center (CBRC). A copy of the SMP for the CBRC construction is included as Attachment A. The existing SMP has been implemented by the Respondents to manage soils disturbed during construction at the CBRC which began in October 2017 and will continue until construction completion in early fall 2018. The area covered under the existing SMP includes an approximate six-acre area located in the southwest corner of the LaSalle Park property (i.e., remedial investigation sampling grid cells 14, 15, 21, 22, 26, and 27 presented in attached Figure 1) referred to as the Expedited Area (EA).

The anticipated construction activities at the CBRC resulting in soil disturbance and incorporated in the existing SMP included grading, installation of footings, extension of utilities, tree planting and landscaping, and installation of irrigation lines. It was not anticipated that soil would be disturbed at depths exceeding four feet below ground surface (bgs). However, installation of new water and sewer lines required excavation to depths of approximately 8 feet bgs.

In the existing SMP, potential exposure routes for human receptors to chemicals of concern (COCs) in soil included inadvertent ingestion (e.g., hand-to-mouth activities associated with smoking or eating), dermal contact, and inhalation. The baseline human health risk assessment (BHHRA) included in the EA Remedial Investigation (EA-RI) documented only inhalation exposure to manganese and to a lesser extent, arsenic, as chemicals which may pose a human health risk during the proposed construction and future use of the expanded CBRC. The inhalation exposure route in the EA-RI BHHRA was defined for construction workers when soil is most likely to generate airborne particulates during periods of earth work related to the CBRC construction. Per the SMP, the inhalation exposure route is monitored to prevent unintended exposure during the construction activities. Engineering controls such as wetting to minimize dust generation and appropriate breathing protection could be employed to prevent exposure. The original SMP established a dust target level of 1.5 mg/m³ to be protective of construction workers and the public to exposure of manganese and arsenic.

As part of this SMP Addendum, the area for which the existing SMP applies will be enlarged to include the entire property boundary of the LaSalle Park Area (LPA) and includes sampling grid cells 1 through 32, the sledding hill and Beck’s Lake; refer to Figure 1. As such, the COCs and site-specific dust action levels required revision.

The COCs for the full LPA were identified based on potential human health risks quantified and discussed in the BHHRA section of the EPA approved RI Report (August 11, 2017). Only aluminum, arsenic, cadmium, and manganese were found in surface and subsurface soils at concentrations which could be a potential human health risk by inhalation during potential future soil disturbance activities at the site.

Total chromium was considered a COC for incidental ingestion, dermal contact, and inhalation. However total chromium was evaluated as hexavalent chromium in the BHHRA. Recent chromium data collected within fill outside of the boundary of the LPA by the EPA, as part of the Agency for Toxic Substances and Disease Registry (ATSDR) investigation of nearby residential properties, concluded that concentrations of hexavalent chromium were not detected within the total chromium component. Therefore, hexavalent chromium is considered to comprise only a small portion of the total chromium concentrations. The other chromium species in total chromium, trivalent chromium, is much less toxic than hexavalent chromium. If total chromium is evaluated as trivalent chromium, it would not have been selected as a COC within the risk assessment. Therefore, since recent data suggests that total chromium is likely to be predominantly trivalent chromium (not hexavalent), total chromium is not considered a COC in this addendum.

Lead is present at elevated concentrations in subsurface soil at the Site, and, in limited instances, at elevated concentrations in surface soils. Some of these elevated concentrations are in or near areas of proposed construction activities. To mitigate potential exposures to other chemicals that have been identified as COCs, the SMP requires PPE (including coveralls, gloves, and safety glasses) to limit direct contact exposures, and monitoring and, if necessary, mitigation of respirable dust to limit inhalation exposures. These measures will also be protective for potential exposure to soil containing elevated lead concentrations. The construction activities covered in the SMP are planned to be short (i.e., on the order of weeks) in contrast to more typical construction worker exposure duration assumptions. Further, soil that is excavated or disturbed at the Site will be managed by first stockpiling and covering it, then characterizing it, and finally disposing of it off-site. Then these areas will be covered with a demarcation layer (e.g., snow fencing or coloured geotextile) and backfilled with imported clean fill sand and topsoil. As such, any soil disturbances will not result in the potential for increased future exposure to contamination at the Site.

Analytical results of select analytes for surface soil sampling activities are presented on Figure 2. Analytical results of select analytes for subsurface soil sampling activities are presented on Figure 3. Analytical results for select analytes for groundwater sampling activities are presented on Figure 4.

Since the construction workers will be utilizing Level D personal protective equipment (hard hat, steel-toed boots, etc.), the exposure pathway associated with this SMP Addendum is limited to inhalation. Dust emissions will be monitored visually and with a real-time handheld monitor at least twice per day - once in the morning and a second time in the afternoon during active soil disturbance. The monitoring instrument will be a DustTrak II Aerosol Monitor, or equivalent. The DustTrak II can measure dust over a range of 0.001 to 150 milligrams per cubic meter (mg/m^3).

The American Conference of Governmental Industrial Hygienists (ACGIH) suggests that airborne concentrations of nuisance dusts or “particulates not otherwise classified” should be kept below $3 \text{ mg}/\text{m}^3$, respirable particles, and $10 \text{ mg}/\text{m}^3$, inhalable particles, (TLVs and BEIs. Threshold Limit Values for Chemical Substances and Physical Agents, Biological Exposure Indices, Appendix B. 2012). Using the ACGIH respirable particles criteria in conjunction with Occupational Safety and Health Administration (OSHA) permissible exposure limits (PELs) and maximum observed soil COC concentrations, site-specific dust exposure action levels during construction activities have been established. For work to a maximum depth of 5 feet bgs, the site-specific dust exposure action level was determined to be $1.3 \text{ mg}/\text{m}^3$. For work extending below a depth of 5 feet bgs to a maximum depth of 15 feet bgs, the site-specific dust exposure level was determined to be $1.0 \text{ mg}/\text{m}^3$. The site-specific

dust exposure action levels will be used to maintain dust levels well below the potential dust exposure limit calculations for the mixture of COCs (aluminium, arsenic, cadmium, and manganese). A dust exposure calculation worksheet is included as Attachment B. If the Construction Project Manager or the Project Coordinator determines the dust levels are too high or are measured at or above the 1.0 mg/m³ or 1.3 mg/m³ thresholds, as appropriate, the contractor will be responsible for employing dust control measures.

Groundwater is not anticipated to be encountered during any of the planned construction/maintenance activities. Although construction activities are not anticipated to encounter groundwater, the only construction worker groundwater COC identified in the BHHRA section of the RI was the inhalation of volatile cyanide, which was evaluated assuming the conservative toxicity values for hydrogen cyanide. The maximum modelled concentration of cyanide as hydrogen cyanide in excavation air within the BHHRA was 0.176 mg/m³, and the occupational health standard recommended by OSHA is 5.2 mg/m³. Therefore, any excavation impacting groundwater is unlikely to cause concentrations within excavation trench air above occupational health standards.

In addition to the current construction activities associated with the CBRC expansion, the following known construction/maintenance activities are planned across the LaSalle Park property:

- 1) Installation of an irrigation system for the soccer fields located across the northern and central portions of the park. The water supply line will be set below the frost line (i.e., 36 inches bgs). The water supply line could be installed concurrent with the installation of the water line for the planned drinking water fountains described in bullet item 5. The main feed lines will be set at a depth of 18 inches bgs and the sprinkler feed lines will be set at a depth of 12 inches bgs. All irrigation lines will be “blown-out” each fall to prevent the build-up of ice within the irrigation system piping network. The irrigation piping will be constructed of Schedule 40 polyvinyl chloride (PVC). The irrigation system layout is indicated on Figure 1. Following EPA/IDEM approval, installation of the irrigation system is planned to begin in June 2018.
- 2) An old slide, which is currently unsafe, needs to be removed from the park. The new slide will be located north of the CBRC within the EA. The removal will result in extraction of 12-inch footers and filling in the resultant holes with clean fill. The installation of the new slide will involve the installation of new footers set at a maximum depth of 16 inches bgs. The location of the slide removal/replacement is indicated on Figure 1.
- 3) A pavilion, located at the northwest corner of the park, will be removed due to its dilapidated condition. This activity will result in the removal of 26-inch and 8-inch deep footers and filling in the resultant holes with clean fill. The location of the pavilion removal is indicated on Figure 1.
- 4) A new pavilion is planned to be installed west of the tennis courts within the EA. During new pavilion construction, base preparation will result in sod and soil removal to a depth of 8 inches across a 24 foot by 24-foot area. Multiple footers will be auger-drilled to a depth of 24 inches bgs. In addition, 200 feet of electrical conduit will need to be installed to a depth of 24 inches bgs to supply electric power to the new pavilion. The location of the new pavilion and grill area is indicated on Figure 1.

- 5) Two drinking water fountains are planned to be installed with one located at the south end of the westernmost soccer field and one located adjacent to the new pavilion. The source of water will be from the City of South Bend municipal water supply. Footers for each of the water fountains will be hand dug to a depth of 12 inches bgs. The water supply lines to the fountains will be constructed of Schedule 40 PVC and will be set at a depth of 36 inches bgs. The supply lines to the fountains will be “blown-out” each fall to prevent the build-up of ice within the fountain system piping network. The location of the two proposed drinking water fountains are indicated on Figure 1.
- 6) Several landscaping activities are planned across the park including planting of shrubs and flowers (hand digging 12 to 16 inches bgs), tree stump grinding (20 inches bgs), and tree installations (24 inches bgs).

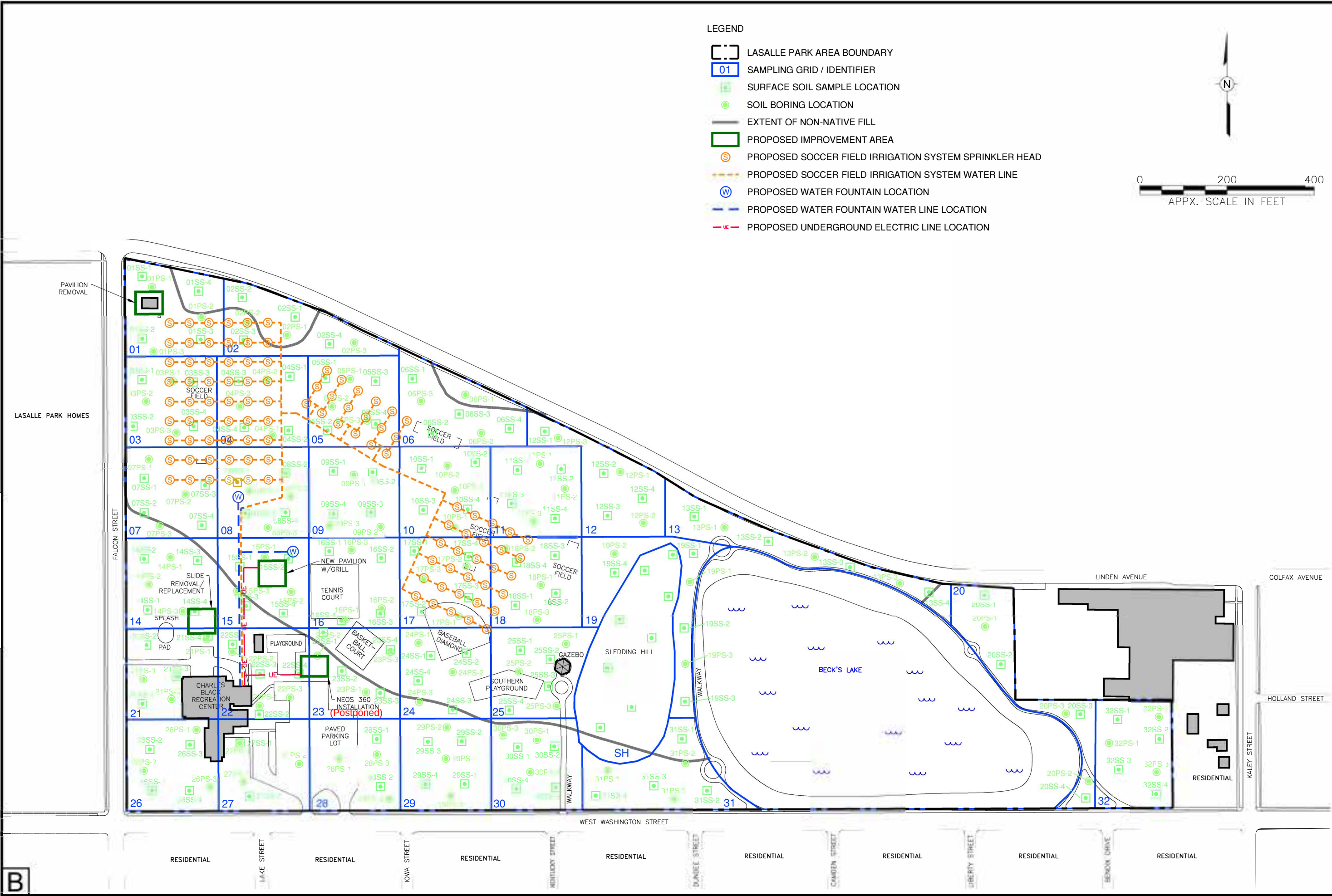
Construction methods that minimize soil disturbance will be utilized where practicable, including directional drilling, vibratory plowing or similar methods. Since directional boring of the water line will result in the piping being in contact with potentially contaminated soil, the water supply lines for the drinking fountains will be installed via trenching. A coloured geotextile will be placed to line the trench as a demarcation layer. Clean fill will be placed within the demarcation layer and around the piping to reduce the potential for contaminant permeation into the water lines. Clean fill will be installed to ensure a minimum separation of 4-inches between the pipe and the geotextile. Any soil brought to the surface via any of the planned soil disturbance activities described herein will be temporarily staged (placed onto and subsequently covered with plastic sheeting) pending offsite disposal arrangements as previously described in the SMP. The remaining backfill to grade will consist of clean fill sand and topsoil (verified by analytical testing at a frequency of one sample per 500 cubic yards). In addition, all piping will be pressure tested prior to backfilling to insure the integrity of the connections and piping systems. A 6- inch to 8-inch diameter gravel bed will be placed to a depth of approximately 1 ft bgs adjacent to water fountains to allow unused water from the fountains to drain to the subsurface.

No construction or maintenance work involving surface or subsurface soil disturbance will be conducted within the LaSalle Park property boundaries without a minimum 48-hour notice given to the Project Coordinator of the planned activity. This allows arrangements to be made for onsite monitoring associated with the SMP implementation. This SMP Addendum encompasses the planned activities outlined herein. Any future soil disturbance work, not described herein, will require subsequent addendums to the SMP which must be approved by EPA and IDEM prior to implementation.

FIGURE 1

Areas of Future Soil Disturbance Work

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- LEGEND
- LASALLE PARK AREA BOUNDARY
 - 01 SAMPLING GRID / IDENTIFIER
 - SURFACE SOIL SAMPLE LOCATION
 - SOIL BORING LOCATION
 - EXTENT OF NON-NATIVE FILL
 - PROPOSED IMPROVEMENT AREA
 - PROPOSED SOCCER FIELD IRRIGATION SYSTEM SPRINKLER HEAD
 - PROPOSED SOCCER FIELD IRRIGATION SYSTEM WATER LINE
 - PROPOSED WATER FOUNTAIN LOCATION
 - PROPOSED WATER FOUNTAIN WATER LINE LOCATION
 - PROPOSED UNDERGROUND ELECTRIC LINE LOCATION

Drawn By: CRB 5/29/18

Checked: RJT

Approved: RTB

DWG Name: 3141068-017

BECK'S LAKE LASALLE PARK AREA

SOUTH BEND, INDIANA

PREPARED FOR

CITY OF SOUTH BEND AND

HONEYWELL INTERNATIONAL INC.

FIGURE 1

AREAS OF FUTURE

SOIL DISTURBANCE WORK

WSP USA Inc.

54520 NORTHERN AVENUE

SOUTH BEND, IN 46635

TEL: +1 574.267.2282

FIGURE 2

Select Surface Soil Sample Results

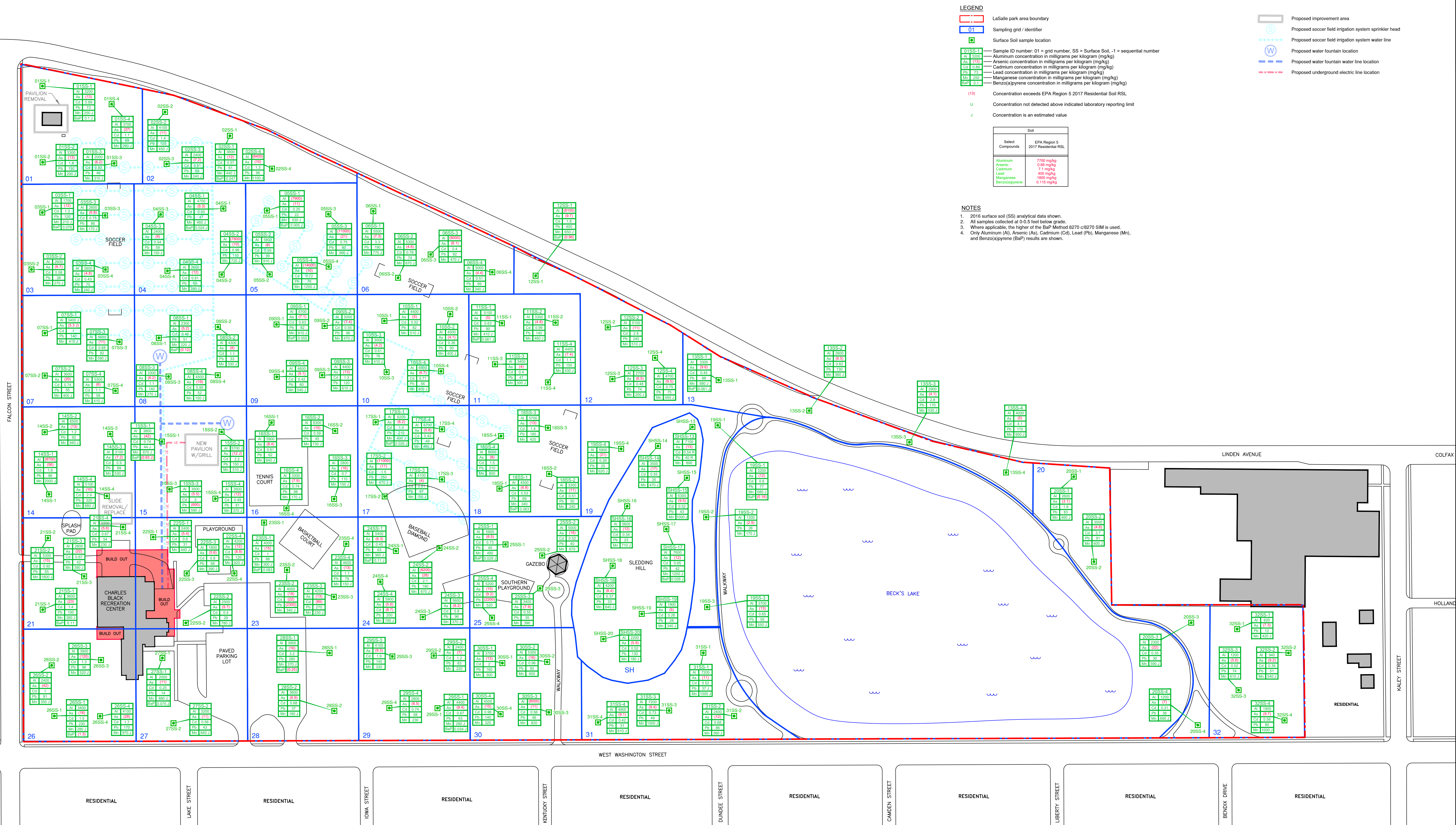


FIGURE 2

SELECT SURFACE SOIL
SAMPLE RESULTSBECK'S LAKE LaSALLE PARK AREA
SOUTH BEND, INDIANAPREPARED FOR
CITY OF SOUTH BEND AND
HONEYWELL INTERNATIONAL INC.

Drawn By: CRB 6/13/18

Checked:

Approved:

DWG Name: 31411068-019

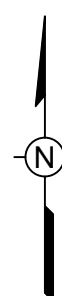
SCALE IN FEET
0 80 160WSP USA Inc.
54520 NORTHERN AVENUE
UNIT A
SOUTH BEND, INDIANA 46635
TEL: +1 574.287.2282

FIGURE 3

Select Subsurface Soil Sample Results

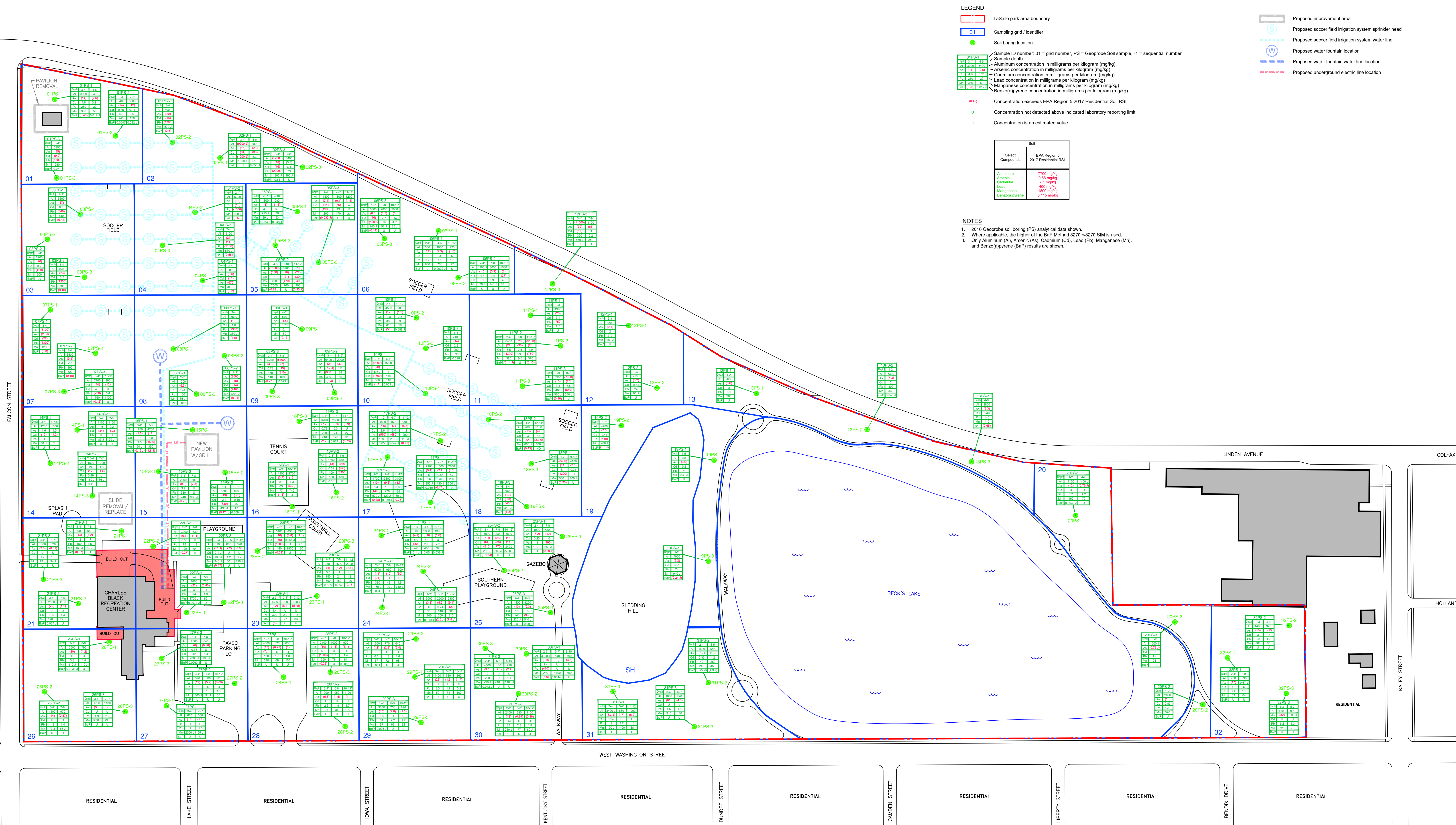


FIGURE 3

SELECT SUBSURFACE SOIL
SAMPLE RESULTSBECK'S LAKE LaSALLE PARK AREA
SOUTH BEND, INDIANAPREPARED FOR
CITY OF SOUTH BEND AND
HONEYWELL INTERNATIONAL INC.

Drawn By: CRB 6/13/18

Checked:

Approved:

DWG Name: 31411068-020

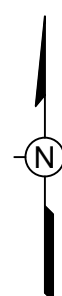
SCALE IN FEET
0 80 160WSP USA Inc.
54520 NORTHERN AVENUE
UNIT A
SOUTH BEND, INDIANA 46635
TEL: +1 574.287.2282

FIGURE 4

Select Groundwater Sample Results

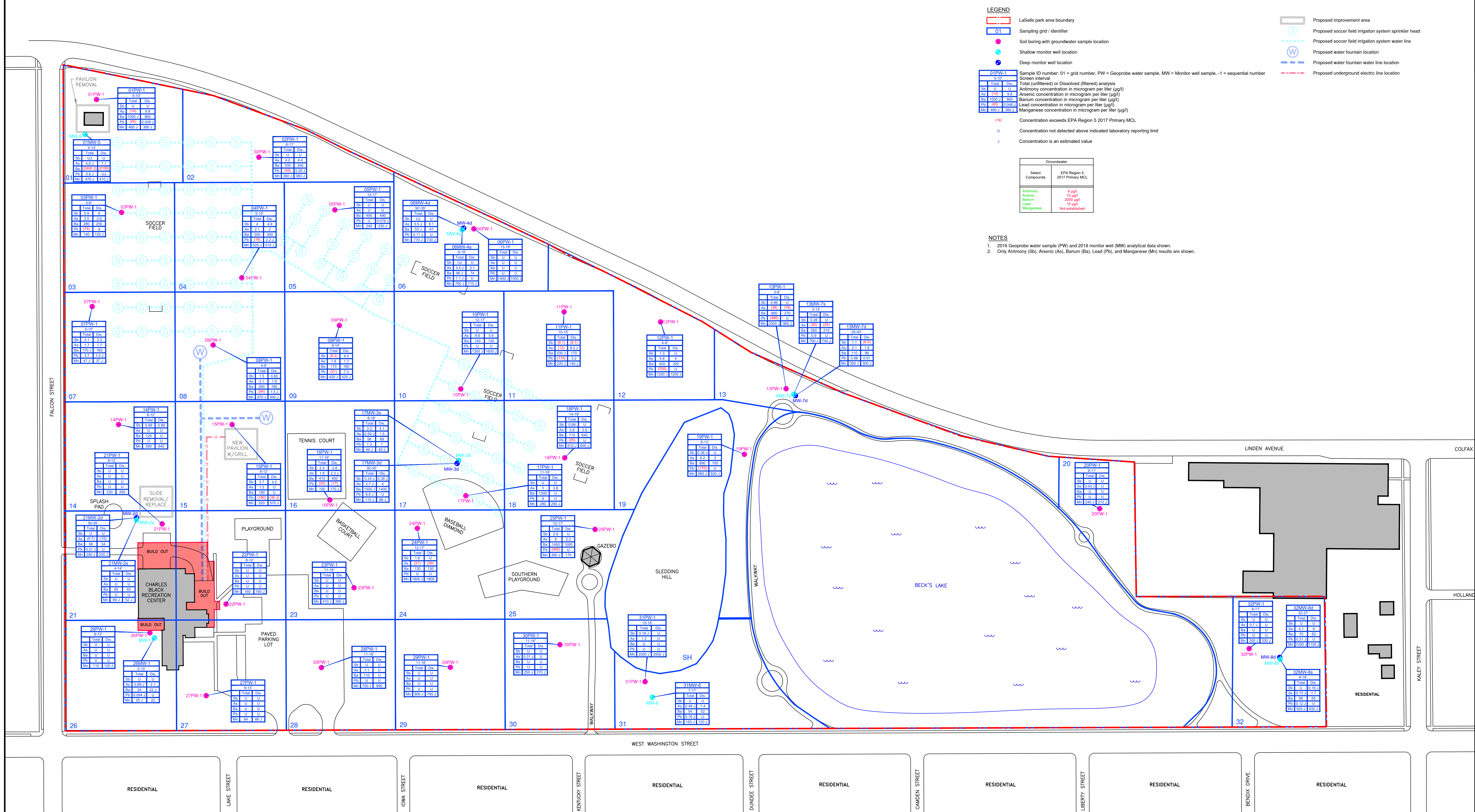


FIGURE 4

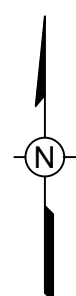
SELECT GROUNDWATER
SAMPLE RESULTSBECK'S LAKE LaSALLE PARK AREA
SOUTH BEND, INDIANAPREPARED FOR
CITY OF SOUTH BEND AND
HONEYWELL INTERNATIONAL INC.

Drawn By: CRB 6/13/18

Checked:

Approved:

DWG Name: 31411068-021

SCALE IN FEET
0 80 160WSP USA Inc.
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ATTACHMENT A

Soil Management Plan for the CBRC Expansion

SOIL MANAGEMENT PLAN

LASALLE PARK AREA,
BECK'S LAKE NPL
SOUTH BEND, INDIANA





SOIL MANAGEMENT PLAN

LASALLE PARK AREA, BECK'S LAKE NPL SOUTH BEND, INDIANA

PROJECT NO.: 186103-3735
DATE: AUGUST 2017

WSP USA

WSP.COM



Our ref.: 186103-3735

U.S. Environmental Protection Agency, Region 5, Superfund Division

77 W. Jackson Boulevard (SR-6J)
Chicago, IL 60604-3507

Ms. Jenny Davison:

Enclosed please find the Soil Management Plan for construction activities at the Charles Black Recreation Center at the LaSalle Park in South Bend, Indiana.

Kind regards,

A handwritten signature in blue ink, reading 'R. Joseph Trojan'.

R. Joseph Trojan
Project Coordinator

rjt/bl
Encl.

CC :

Jessica Fliss, Indiana Department of Environmental Management
Stephen Studer, Krieg Devault
Kerry Dziubek, Arnold & Porter Kaye Scholer LLP
Chuck Geadelmann, Honeywell International Inc.
Steve Murray, Amec Foster Wheeler

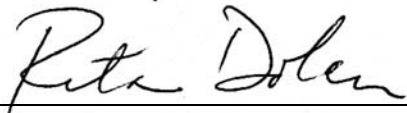
SIGNATURES

PREPARED BY

A handwritten signature in black ink, appearing to read "Brad Leick", written over a horizontal line.

Brad Leick, P.E.
Technical Associate

REVIEWED BY

A handwritten signature in black ink, appearing to read "Rita Dolan", written over a horizontal line.

Rita Dolan, P.E.
Senior Environmental Manager



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FIGURES

FIGURE 1	AREA MAP
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FIGURE 3	SELECT SURFACE SOIL RESULTS
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APPENDIX

A	SMP ACKNOWLEDGEMENT FORM
B	DUST EXPOSURE LIMIT CALCULATIONS

1 INTRODUCTION

1.1 PURPOSE AND OBJECTIVES

WSP USA (WSP) has prepared this Soil Management Plan (SMP) on behalf of the City of South Bend and Honeywell International Inc. (the Respondents) for the expansion of the Charles Black Recreation Center (CBRC) in the LaSalle Park Area (LPA) of the Beck's Lake National Priorities List (NPL) Site in South Bend, Indiana (Site). The CBRC is within an investigation area called the Expedited Area (EA), which is not a formally recognized operating unit, but was created solely for the purposes of expediting the investigation of potential impacts to soil, groundwater and vapor in the immediate vicinity of the CBRC. The results of the EA investigation were submitted to the U.S. Environmental Protection Agency, Region 5, (EPA) as a draft Remediation Investigation (RI) Report (DRAFT Focused LaSalle Park Area Remedial Investigation Report - Expedited Area, March 27, 2017 [EA-RI], Amec Foster Wheeler Environment & Infrastructure, Inc., 2017). The Draft EA-RI report will be incorporated into the Final RI Report for the LPA.

As described in the EA-RI, this SMP does not include groundwater or vapor risk mitigation as these exposure pathways do not present a risk to construction workers or to the general public during site activities (EA-RI). Footings for the construction of the CBRC are not anticipated to exceed four to five feet below ground surface (bgs). Recent site groundwater elevations at the EA have been measured at approximately eight to nine feet bgs. As described in the EA-RI, soil vapor samples collected within the EA did not contain volatile organic compound (VOC) levels above the calculated screening levels for soil vapor.

The purpose of this SMP is to provide information, procedures, and requirements for management of potentially affected soil and debris that may be encountered, disturbed, or excavated as part of construction related to the expansion of the CBRC. The overall objective of the SMP is to provide processes and procedures necessary to protect human health during the disturbance of land related to the expansion of the CBRC. Specific objectives of the SMP include:

- Inform contractors and subcontractors of the potential presence of residually-impacted environmental media in the EA and the proposed build out area (Figure 1);
- Provide risk mitigation measures during construction and excavation activities to eliminate or control direct contact and inhalation exposure pathways for disturbed soils;
- Provide plans and procedures for management of excavation spoils during construction and excavation activities;

Contractors and subcontractors subject to this SMP are responsible for environmental health and safety during execution of their work, and the health and safety of their employees during all activities performed for this project. In addition, each individual worker is responsible for his or her own health and safety and for adherence to associated health and safety plans.

2 BACKGROUND

The NPL Site is located in the southwest portion of the City of South Bend, Indiana (Figure 1) and includes LaSalle Park, a 40-acre municipal park which features the CBRC and Beck's Lake. The NPL Site was originally a swampy area and may have once been the headwaters of the Kankakee River (USEPA, 2015). It is believed that approximately 15 acres of the NPL Site was used as an open style dump that allegedly accepted household waste, construction debris and industrial wastes (Bendix, 1984).

The EA occupies six acres in the southwest corner of LaSalle Park (Figure 2). The EA is primarily developed land that includes the CBRC and the main parking area for LaSalle Park. Where it is not developed, the EA is grass and tree covered. The CBRC features a gymnasium, community room, kitchen, computer lab, weight room and game room and offers community programming and services to children and seniors. The CBRC is a slab-on-grade building with a footprint of approximately 16,000 square feet. The City of South Bend plans to expand the footprint of the CBRC by approximately 17,000 square feet in 2017 (Figure 2). The City of South Bend intends to hire a contractor to implement the construction of the CBRC expansion.

In order to expedite construction of this community development project, investigation activities proposed near the CBRC were completed during the initial phases of the LaSalle Park Area Remedial Investigation.

Chemicals of potential concern (COPCs) were identified based on potential human health risks quantified and discussed in the baseline human health risk assessment (BHHRA) section of the EA-RI Report, and include 14 metals, five semi-volatile organic compounds (SVOCs), and cyanide in surface soil, subsurface soil and groundwater. Of the COPCs identified, only arsenic and manganese were found in surface and subsurface soil at concentrations which suggest a potential human health risk related to the CBRC buildout. The exposure route and receptor identified in the BHHRA is the inhalation pathway for the construction worker. No chemicals were identified in groundwater or soil vapor at concentrations that pose a human health risk under the planned CBRC build out exposure scenarios. Figures 3, 4, and 5 present soil and groundwater sample results collected in the EA during the RI.

3 RISK MITIGATION MEASURES

3.1 APPLICABILITY

This SMP is being implemented by the Respondents to manage soils disturbed during build out construction of the CBRC. It is anticipated that surficial soils will be disturbed during build out grading and during installation of footings for the addition to the CBRC. It is not anticipated that any soil will be disturbed below four to five feet of the existing ground surface. Other construction related activities that may disturb soils during the build out of the CBRC include tree planting and landscaping, installation of irrigation lines, and extension of site utilities.

Potential exposure routes for human receptors to potential COPCs in soil include inadvertent ingestion (e.g., hand-to-mouth activities associated with smoking or eating), dermal contact, and inhalation. The BHHRA in the EA-RI only documents inhalation exposure to manganese and to a lesser extent, arsenic, as chemicals which may pose a human health risk related to the proposed build out and future use of the expanded CBRC. The exposure route, as outlined in the conceptual site model and the BHHRA in the RI, is defined for construction workers when soil is most likely to generate airborne particulates during periods of earth work related to the CBRC build out. This exposure route, however, can be readily monitored to ensure unintended exposure during the activities does not occur. Engineering controls such as wetting to minimize dust generation, dust monitoring, and appropriate breathing protection can be employed to prevent exposure.

3.2 SOIL MANAGEMENT STANDARDS

The soil management standards applicable to the construction of the CBRC are summarized in the baseline human health risk assessment (BHHRA) in the EA-RI. The BHHRA was performed using the EPA Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) guidance for risk assessment and the Indiana Department of Environmental Management (IDEM) guidance, including, but not limited to the USEPA risk assessment guidance and directives summarized in Appendix I of the EA-RI. Only arsenic and manganese were found in soil at concentrations that pose a potential human health risk related to the CBRC expansion (EA-RI). The exposure route of greatest concern is the inhalation (i.e., dust) pathway for the construction worker. The planned future use of the property does not include residential use.

3.3 ORGANIZATION STRUCTURE AND RESPONSIBILITIES

The following personnel at the Site will have responsibility for implementation of this SMP.

3.3.1 CONSTRUCTION PROJECT MANAGER

The Construction Project Manager will regularly interact with the Beck's Lake NPL Site Project Coordinator (WSP Project Coordinator). The responsibilities of the Construction Project Manager include, but are not limited to, overall management of construction activities, including coordination between construction management contractors and utility companies, management of the site construction administrative activities, following the WSP Project Coordinator's guidance for proper implementation of the SMP, and assistance with waste characterization for offsite disposal of excavation spoils generated from the CBRC build out.

3.3.2 CONTRACTOR'S SAFETY OFFICER

The responsibilities of the Contractor's Safety Officer(s) include, but are not limited to, the health and safety of the contractor's employees, the implementation of soil exposure control measures, and reporting to the Construction Project Manager. The responsibility for approving contractor Health & Safety plans rests with contractor management.

3.3.3 SITE WORKERS

The responsibilities of the Site Workers include, but are not limited to, performance of all work in a safe manner, adherence to the contractors' health and safety plan (HASP), and adherence to the soil exposure control measures.

3.3.4 WSP PROJECT COORDINATOR

The WSP Project Coordinator (or designee) will serve as the environmental consultant on site. The responsibilities of the WSP Project Coordinator include but are not limited to:

- Providing guidance to the Construction Project Manager during the construction build out regarding implementation of the SMP.
- Providing environmental monitoring/screening during construction, as required.
- Providing assistance with preparing a waste profile(s) for the accepting landfill(s) for excavation spoils.
- Oversight and documentation during the construction build out to verify proper implementation of the SMP, including the engineering controls.

3.4 MINIMUM MEASURES

The following minimum measures are intended to reduce the potential for exposure to impacted soils at the build out area during construction and construction-related activities. The minimum measures include proper hygiene to prevent accidental ingestion of soil,

personal protective equipment to limit direct skin and eye contact, and implementing dust control procedures.

3.4.1 HYGIENE

Proper hygiene should be followed by construction workers to reduce the accidental ingestion of site soils. Personal hygiene practices include following proper smoking, eating, and drinking procedures, and decontamination of personal protective equipment and tools prior to leaving the construction area. Smoking, eating, and drinking should occur only in specific areas designated for each activity. Proper hygiene includes limiting contact of hands to the face or mouth, washing hands prior to eating or drinking during breaks and at the end of the day, and field cleaning of clothes and boots at the end of the day.

Contractors and sub-contractors should provide and maintain with adequate supplies, at no cost to the worker, gloves, hand wipes, waterless cleaning soap (or similar), and access to hand washing stations.

3.4.2 PERSONAL PROTECTIVE EQUIPMENT

Personal protective equipment (PPE) should be worn at all times. It is the responsibility of the Contractor's Safety Officer to ensure PPE is adequate for the job and is properly worn. PPE worn for work during soil excavation and transportation activities shall be modified Level D and include steel-toed boots, safety glasses, and a hard hat. Additional PPE may be required by individual contractors.

The use of dust masks is not anticipated to be required; however, if dust control measures identified in Section 3.4.3 do not fully limit dust generation, dust masks and/or air monitoring may be employed.

3.4.3 DUST CONTROL

Dust control is the primary method of mitigating dust emissions from the construction area. Soil will be wetted as necessary to maintain dust formation below action levels. The general contractor and WSP Project Coordinator will be responsible for determining the frequency and degree of water applications to control dust. The general contractor should coordinate with the Construction Project Manager to schedule water applications. The water applications should not overly wet and degrade the working condition of the soil. Use of wetting agents will be considered.

Dust emissions will be monitored visually and with a real-time handheld monitoring instrument at least twice per day; once in the morning and a second time in the afternoon. The monitoring instrument will be a DustTrak II Aerosol Monitor, or equivalent. The DustTrak II can measure dust over a range of 0.001 to 150 milligrams per cubic meter (mg/ m³).

The American Conference of Governmental Industrial Hygienists (ACGIH) suggests that airborne concentrations of nuisance dusts or “particulates not otherwise classified” should be kept below 3 mg/m³, respirable particles, and 10 mg/ m³, inhalable particles, (TLVs and BEIs. Threshold Limit Values for Chemical Substances and Physical Agents, Biological Exposure Indices, Appendix B. 2012). Using the ACGIH respirable particles criteria, an action level during construction activities will be established at 1.5 mg/ m³. This will maintain a dust level well below the potential dust exposure limit calculation for arsenic and manganese of 20.8 mg/m³ and 21.7 mg/m³ respectively, which were based on the maximum detected concentrations in soil of 120 milligrams per kilogram (mg/kg) and 2,300 mg/kg respectively. Dust exposure limit calculations are presented in Appendix B.

If the Construction Project Manager or the WSP Project Coordinator determines the dust levels are too high, or are measured at or above 1.5 mg/ m³, the contractor will be responsible for employing dust control.

If necessary, water will be applied to paved surfaces, including parking areas and roads that become tracked with construction/excavation soils. A water truck may be used to limit dust generation during periods of high truck traffic in the construction area. When necessary, paved surfaces will be swept (mechanical street sweeper) to reduce dust generation and to prevent the tracking of soils onto public roads.

3.5 SOIL MANAGEMENT

All EA soils, including topsoil, disturbed during build out construction of the CBRC will be transported to an EPA pre-approved CERCLA waste off-site licensed landfill for proper disposal. Since soil segregation is not necessary, analytical soil sampling will occur only for waste profiling purposes and will follow the requirements set forth by the EPA off-site disposal coordinator and the disposal facility during the waste characterization and profiling process.

Soils will either be direct loaded into covered trucks for transport or will be stockpiled for later disposal. Stockpiled soils will be placed on plastic sheeting and bermed within a secured area and will be covered with plastic sheeting to prevent dust generation.

3.5.1 EXCAVATED SOIL CHARACTERIZATION AND HANDLING

Excavated soils will be sampled for waste characterization purposes only. Excavated soils will be transported and disposed of by a qualified subcontractor. Waste characterization parameters and frequency will be dictated by the disposal requirements of the EPA and the approved landfill accepting the excavation spoils. EPA will be notified of analytical results and landfill information prior to disposal.

3.5.2 CONTINGENCY PLANNING

If unexpected conditions are encountered during earthwork, such as discovery of large amounts of fill material, soil staining, or strong odors originating from soils, work should cease until the WSP Project Coordinator is notified. If further investigation is necessary, the WSP Project Coordinator should review the site conditions and provide recommendations, which may include segregating the suspect soils and collecting analytical samples for soil characterization.

3.6 DECONTAMINATION PLAN

Equipment used during the excavation of soils should be properly decontaminated before leaving the construction area. Decontamination includes brushing, seeping, and removal of dust and soil from equipment. A decontamination area will be constructed to provide space for wet or dry decontamination methods. Dry methods should be used to remove any large accumulations of soil on equipment. If further decontamination is needed, wet methods may then be used. Any accumulated soil removed by decontamination will be disposed of with the excavated spoils. Decontamination tools should be cleaned or discarded.

Construction worker PPE should also be decontaminated prior to workers leaving the Site at the end of each shift. Reusable PPE such as boots and gloves should be decontaminated with wet methods, while disposable PPE should be disposed of as solid waste.

3.7 SITE ACCESS AND SECURITY

Site access is the responsibility of the Construction Project Manager during construction and will be limited to construction personnel. If necessary, the Construction Project Manager will establish requirements for visitors entering the Site. As described in Section 4.1, an exclusion zone will be delineated using temporary chain-linked fencing. All construction personnel and visitors admitted to the exclusion zone should have proper training, made aware of the soil exposure pathways, and wear proper PPE. The entire work area will be closed off from public access during construction and will be properly secured after hours to ensure the general public is not exposed to soils or dust.

3.8 TRAINING

Site training is required to access the exclusion zone and will be set forth in the Contractor's HASP. A contractor is any company that is engaged in work related to the expansion of the CBRC. All contractors who perform work within the exclusion zone or handle site soils should develop a HASP that adequately addresses health and safety concerns for workers under their supervision.

All workers with the potential for exposure to soils should receive awareness training of this SMP during site orientation. At a minimum, each worker will be briefed on all relevant health and safety requirements before performing site work. Safety practices for employees who manage soil and debris are to be incorporated into the Contractor's HASP. A training log sheet acknowledging that each worker is aware of and understands this SMP should be used for record keeping purposes (Appendix A).

3.9 MONITORING

Dust will be managed during disturbance activities to minimize the potential for airborne migration of affected materials and to be protective of employees, site workers, and properties adjacent to the construction area. Dust will be monitored visually and with a real-time handheld instrument with the goal of no visual emissions and measured levels at or below 1.5 mg/m³. Dust control measures such as mechanical street sweeping, soil wetting, and water trucks will be employed as needed to eliminate dust generation. Construction area personal air monitoring is not anticipated to be required for this site due to the limited scope of soil disturbance, but may be used if site conditions suggest otherwise.

4 INSTITUTIONAL AND ENGINEERING CONTROLS

4.1 FENCED WORK AREA

The entire work area will be enclosed with temporary chain-linked fencing to create an exclusion zone. The fenced working area will delineate the exclusion zone and create a physical barrier to deter the general public from accessing the work area. Only workers with site awareness training and adequate PPE will be permitted to access the exclusion zone. At the end of each work day, access gate(s) on the fence will be locked and the Contractor's Safety Officer will verify that the work area is secure.

4.2 CLEAN SOIL CAPPING

Large-scale clean soil capping will not be needed in the construction area. It is anticipated that nearly all soil disturbing activities will occur within the footprint of the addition to the CBRC. Clean soil capping may be required in areas adjacent to the new addition footprint where the topsoil is stripped and removed to create a suitable work surface. In these areas a minimum of 12-inches of clean topsoil will be placed over the sub-soil prior to landscaping or re-seeding the area with grass. Clean soils intended for backfill will be sampled prior to use and analyzed for VOCs, SVOCs, metals, pesticides, herbicides, and PCBs at a rate of one sample per 500 cubic yards per source. Results will be compared to the June 2017 RSL values for residential soil, except for arsenic where results will be compared to the IDEM Remediation Closure Guide (IDEM 2012) for soil exposure/direct contact (residential) value of 9.5 mg/kg.

5 TERMINATION

This SMP is intended only for construction activities related to the expansion of the CBRC. Future soil management or remediation will be conducted as needed following completion of the Final LPA RI and in accordance with future remedial work plans.

REFERENCES

Amec Foster Wheeler Environment & Infrastructure, Inc., 2017. *DRAFT Focused LaSalle Park Area Remedial Investigation Report – Expedited Area*. March 27.

American Conference of Governmental Industrial Hygienists (ACGIH). 2012 TLVs and BEIs. Threshold Limit Values for Chemical Substances and Physical Agents, Biological Exposure Indices, Appendix B.

Bendix Corporation. 1984 *103c CERCLA Notification for Beck's Lake Site*. March 28.

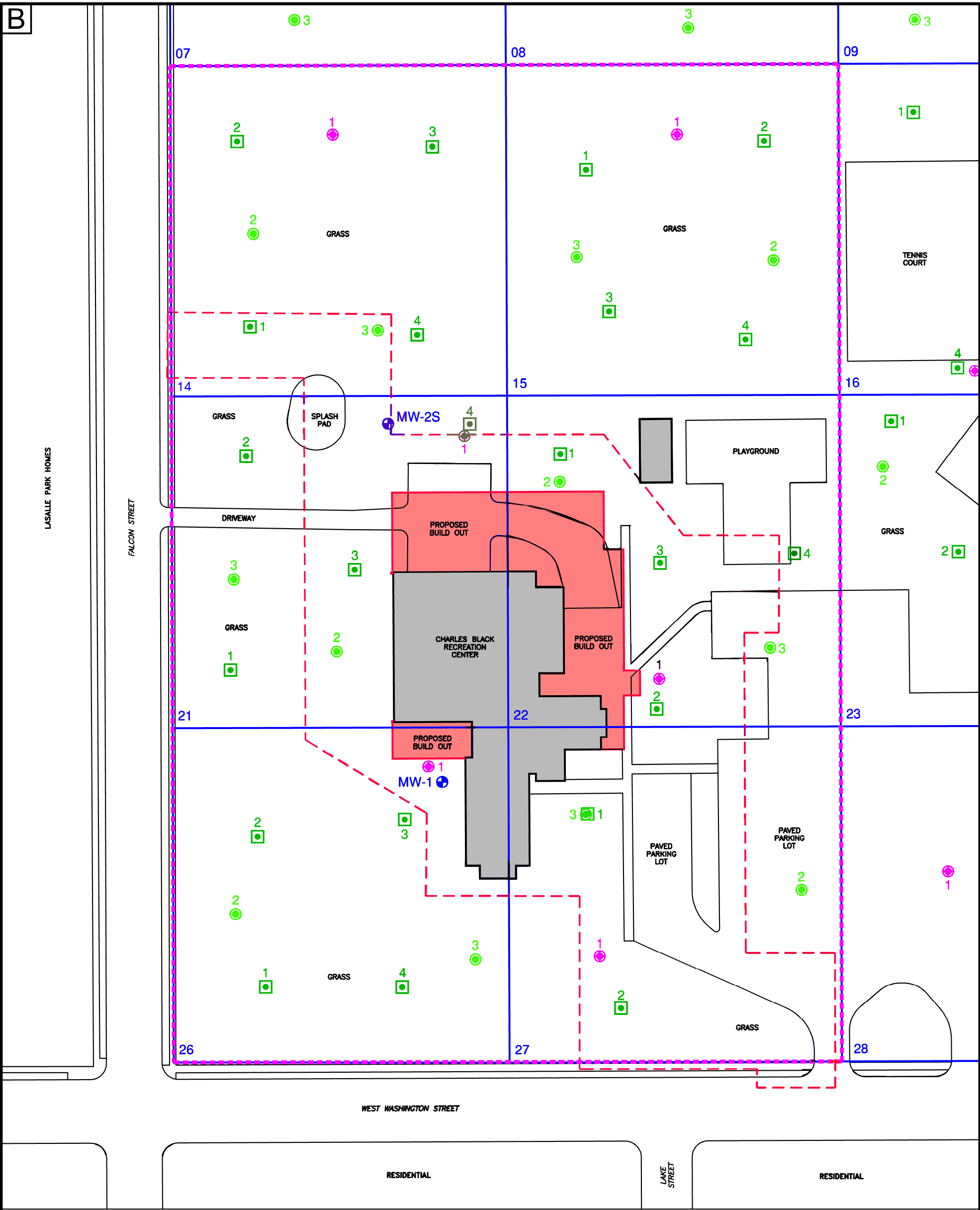
Indiana Department of Environment and Health (IDEM), 2012. *Remediation Closure Guide*. March 22, with correction July 9, 2012.

United States Environmental Protection Agency (USEPA), 2015. *Administrative Settlement Agreement and Order On Consent (ASAOC) For Focused Remedial Investigation/Feasibility Study Of The LaSalle Park Area Of The Beck's Lake Site*. October 2.

ACRONYMS

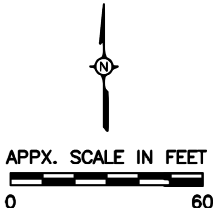
ACGIH	American Conference of Governmental Industrial Hygienists
BHHRA	baseline human health risk assessment
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CBRC	Charles Black Recreation Center
COPC	chemicals of potential concern
EA	Expedited Area
EPA	U.S. Environmental Protection Agency
HASP	health and safety plan
IDEM	Indiana Department of Environmental Management
LPA	LaSalle Park Area
mg/m ³	milligrams per cubic meter
mg/kg	milligrams per kilograms
NPL	National Priorities List
PPE	personal protective equipment
RI	Remedial Investigation
SMP	Soil Management Plan
SVOC	semi-volatile organic compound
VOC	volatile organic compound

FIGURES



LEGEND

- Expedited investigation area boundary
- Sampling grid / identifier
- Construction limits
- Soil boring with groundwater sample location
- Soil boring location
- Surface soil sample location
- Monitoring well location

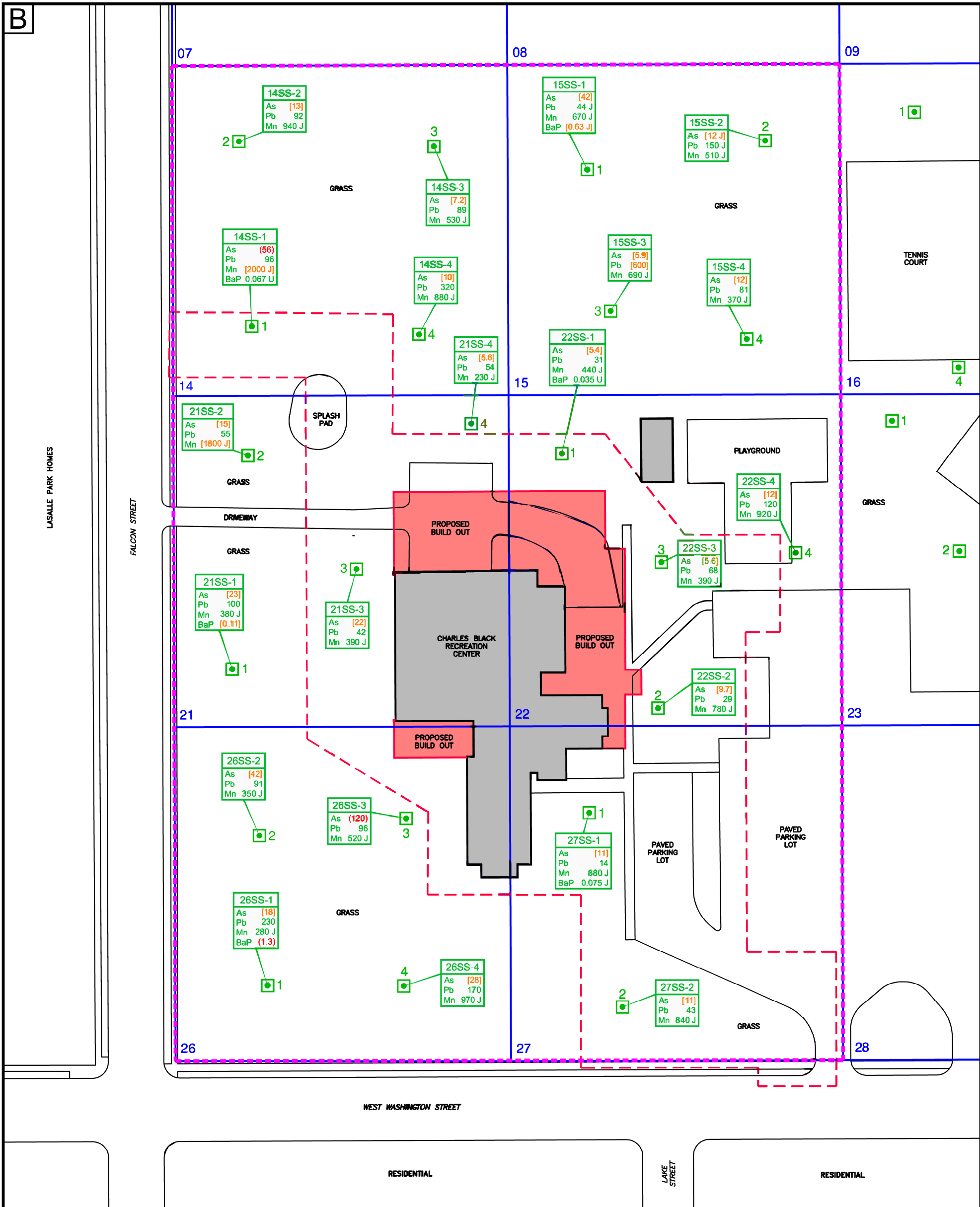


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TEL: +1 574.287.2282

FIGURE 2
SITE MAP
EXPEDITED AREA

BECK'S LAKE SITE
LaSALLE PARK AREA
SOUTH BEND, INDIANA

Drawn By: CRB 6/1/17
Checked:
Approved:
DWG Name: SITE_MAP



LEGEND

- Expedited investigation area boundary
- Sampling grid / identifier
- Construction limits
- Surface Soil sample location

Sample ID number: 14 = grid number, SS = Surface Soil, -1 = sequential number

14SS-1

- As (56)
- Pb 96
- Mn [2000 J]
- BaP 0.067 U

(56)

[310]

U

J

Concentration exceeds IDEM OLQ 2017 Recreational Park User Soil Direct Contact Screening Level

Concentration exceeds EPA Region 5 2016 (or most current) Residential Soil RSL

Concentration not detected above indicated laboratory reporting limit

Concentration is an estimated value

Soil

Select Compounds	EPA Region 5 2016 (or most current) Residential RSL	IDEM OLQ 2017 Recreational Park User Soil Direct Contact Screening Level
Arsenic	0.68 mg/kg	9.5 mg/kg
Lead	400 mg/kg	400 mg/kg
Manganese	1800 mg/kg	2500 mg/kg
Benzo(a)pyrene	0.115 mg/kg	0.22 mg/kg

NOTES

- All samples collected at 0-0.5 feet below grade
- Where applicable, the higher of the BaP Method 8270 c/8270 SIM is used
- Only Arsenic (As), Lead (Pb), Manganese (Mn), and Benzo(a)pyrene (BaP) results are shown

FIGURE 3

SELECT SURFACE SOIL RESULTS EXPEDITED AREA

BECK'S LAKE SITE
LaSALLE PARK AREA
SOUTH BEND, INDIANA

Drawn By: CRB 6/1/17

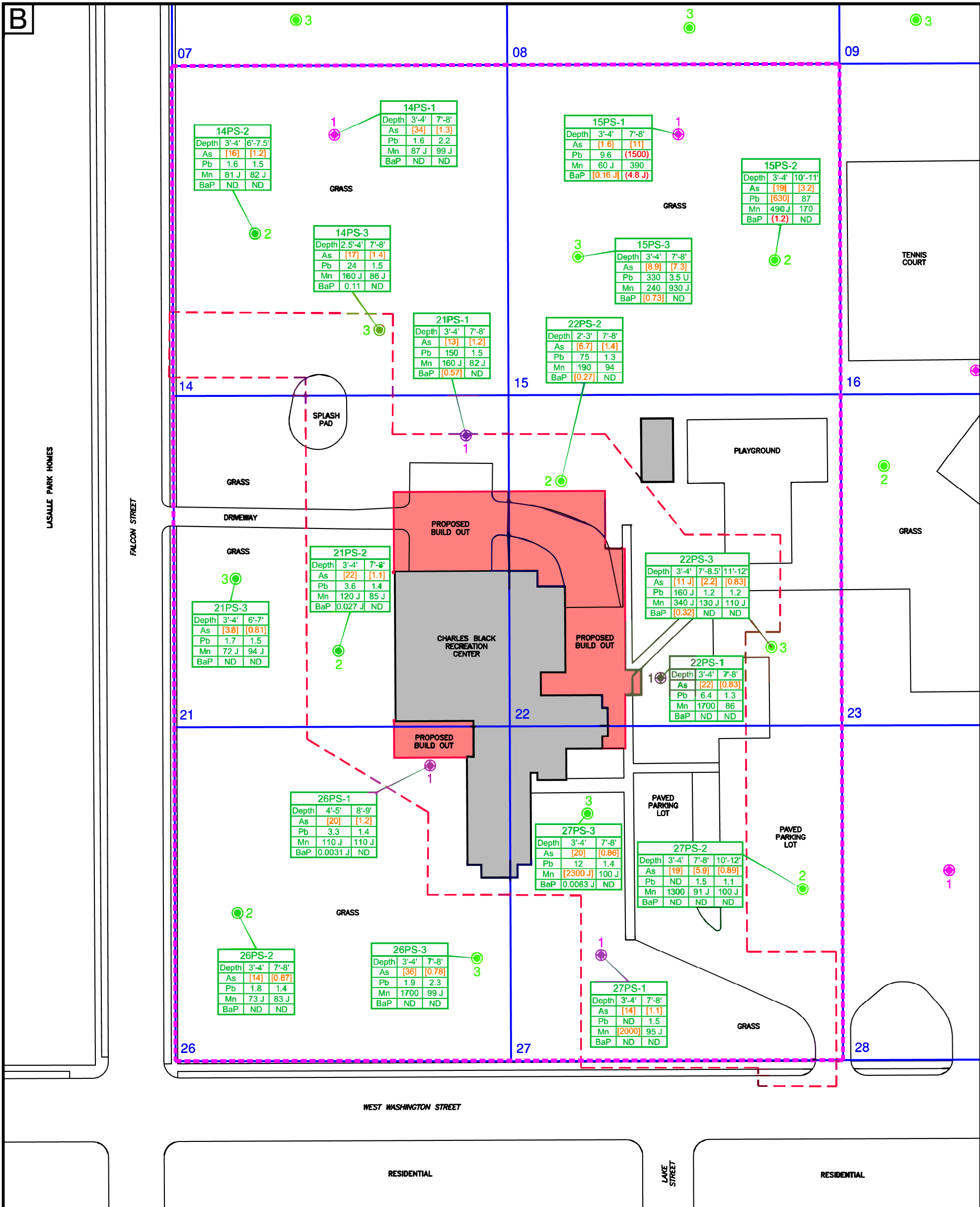
Checked:

Approved:

DWG Name: SURFACE

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APPX. SCALE IN FEET
0 60



B

14PW-1
8'-12"
Total Dis.
As 1 U 1 U
Pb 3 U 3 U
Mn (590) (640)

15PW-1
8'-12"
Total Dis.
As 1.3 1 U
Pb (190) (36)
Mn (520) (570)

MW-2S
4'-14"
Total Dis.
As 0.12 U 1 UJ
Pb 3 U 3 UJ
Mn 260 260 J

21PW-1
8'-12"
Total Dis.
As 1 U 1 U
Pb 3 U 3 U
Mn 230 260

22PW-1 (DUP)
8'-12"
Total Dis.
As 1 U 1 U
Pb 3 U 3 U
Mn 160 160

26PW-1
8'-12"
Total Dis.
As 1 U 1 U
Pb 3 U 3 U
Mn 110 120

MW-1
5'-15"
Total Dis.
As 0.12 U 1 UJ
Pb 3 U 3 UJ
Mn 200 200 J

27PW-1
9'-13"
Total Dis.
As 1 U 1 U
Pb 3 U 3 U
Mn 64 66

CHARLES BLACK RECREATION CENTER

PROPOSED BUILD OUT

SPLASH PAD

PLAYGROUND

PAVED PARKING LOT

GRASS

TENNIS COURT

FALCON STREET

WEST WASHINGTON STREET

LASALLE PARK HOMES

RESIDENTIAL

LAKE STREET

01

-  Expedited investigation area boundary
 Sampling grid / identifier
 Construction limits
 Soil boring with groundwater sample location
 Monitoring well location

15PW-1
8'-12'

	Total	Dis.
As	(1.3)	1 U
Pb	(190)	(35)
Mn	(520)	(570)

(190)
[1.3]
U
J

➤ Sample ID number: 15 = grid number, PS = Geoprobe Water sample, -1 = sequential number

➤ Screen interval

➤ Total (unfiltered) or Dissolved (filtered) analysis

➤ Arsenic concentration in micrograms per liter

➤ Lead concentration in micrograms per liter

➤ Manganese concentration in micrograms per liter

Concentration exceeds IDEM OLQ 2017 Tapwater Residential Screening Level

Concentration exceeds EPA Region 5 2016 Tapwater RSL

Concentration not detected above indicated laboratory reporting limit

Concentration is an estimated value

Water		
Select Compounds	EPA Region 5 2016 Tapwater RSL	IDEM OLQ 2017 Tapwater Residential Screening Level
Arsenic	0.052 ug/l	10 ug/l
Lead	15 ug/l	15 ug/l
Manganese	430 ug/l	430 ug/l



APPX. SCALE IN FEET



0 60

APPENDIX A SMP ACKNOWLEDGEMENT FORM

SMP Acknowledgement Form

Proposed Charles Black Community Recreation Center Buildout South Bend, Indiana

I have been informed of the existence of the above referenced Soil Mangement Plan (SMP), dated August 2017, in effect for construction and excavation activities at the subject property, have access to the SMP, and have read, understood, and agree to comply with the SMP provisions for work activities at this site.

[illegible]

APPENDIX B DUST EXPOSURE LIMIT CALCULATIONS

DUST EXPOSURE CALCULATION WORKSHEET					
DustLevel		Safety Factor for this site = 4			
Chemical	Exposure Limit (mg/m3)	Maximum Soil Concentration (mg/kg)	Exposure Limit Based on Single Compound (EL Mix, mg/m3)	Dust Quotient for Each Compound (level/limit)	Exposure from Single Compound [1.5 mg/m3)/ELmix]
Arsenic	0.01	120	20.83	1.20E+04	0.072
Manganese	0.2	2,300	21.74	1.15E+04	0.069
Sum				2.35E+04	
Dust Exposure Level at Mixture PEL =			10.638		0.282

EQUATIONS USED IN THIS CALCULATION

$$\text{Dust action level} = \frac{(1E+6)(\text{Exposure Limit mg/m3})}{(\text{Concentration mg/kg})(\text{Safety Factor})}$$

(For one dust)

$$\text{Dust action level} = \frac{(1E+6) / (\text{Safety Factor})}{\text{Sum of } [(\text{Concentration mg/kg}) / (\text{Exposure Limit})]}$$

(For mixed dusts)

Author: Amec Foster Wheeler



ATTACHMENT B

Dust Exposure Calculation Worksheet

DUST EXPOSURE CALCULATION WORKSHEET - Site-Wide			
DustLevel		Safety Factor for this site = 4	
Chemical (a)	Occupational Exposure Limit (b) (mg/m ³)	Maximum Detected Soil Concentration (mg/kg)	Exposure Limit Based on Single Compound (c) EL _{mix} (mg/m ³)
0-5 ft Soil			
ALUMINUM	1	15000	16.7
ARSENIC	0.01	120	21
CADMIUM	0.002	89	5.6
MANGANESE	0.02	2500	2.0
Sum			
Dust Exposure Level at Mixture PEL (d) =			1.3
0-15 ft Soil			
ALUMINUM	1	51000	4.9
ARSENIC	0.01	120	21
CADMIUM	0.002	120	4.2
MANGANESE	0.02	2800	1.8
Sum			
Dust Exposure Level at Mixture PEL (d) =			1.0

Prepared by: KALS 5/11/2018

Checked by: ARQ 5/14/18

Notes:

(a) Chemicals of Concern for the inhalation of soil particulates pathway in the BHHRA are included. Although total chromium was evaluated as hexavalent chromium in the BHHRA, site-specific testing indicated total chromium was not primarily hexavalent chromium. Total chromium would not have been a COC in the BHHRA if it were evaluated as trivalent chromium, therefore chromium has not been included in this worksheet.

(b) Although OSHA PELs remain in effect, it is strongly encouraged by OSHA that workplaces use more protective values that have been provided in annotated Z tables: <https://www.osha.gov/dsg/annotated-pels/index.html>
For the purpose of this evaluation, typically the ACGIH 2018 Threshold Limit Values (TLVs) were selected. Respiratory TLVs were selected if available. These correspond to measured concentrations of 2.5 um in diameter. Total chromium has been evaluated as Hexavalent Chromium.

(c) Dust action level =
$$\frac{(1E+6)(\text{Exposure Limit (mg/m}^3\text{)})}{(\text{Concentration (mg/kg)})(\text{Safety Factor})}$$

OSHA Standard Interpretations, Standard Number: 1910.120.
<https://www.osha.gov/laws-regs/standardinterpretations/1993-03-24>

(d) Dust action level =
$$\frac{(1E+6)}{(\text{Safety Factor})}$$

(For mixed dusts)
$$\text{Sum of } [(\text{Concentration (mg/kg)}) / (\text{Exposure Limit})]$$

SPECIAL NOTE - At current maximum concentrations of lead in soil observed across the site, there is no reason to assume worker exposure to lead would cause an unacceptable risk given typical exposure.