REGULAR MEETING AGENDA

Date: 10/25/2017
Time: 6:30 p.m.
Arrillaga Family Recreation Center
Cypress Room
700 Alma St., Menlo Park, CA 94025

A. Call To Order

B. Roll Call

C. Public Comment

Under "Public Comment," the public may address the Commission on any subject not listed on the agenda. Each speaker may address the Commission once under Public Comment for a limit of three minutes. Please clearly state your name and address or political jurisdiction in which you live. The Commission cannot act on items not listed on the agenda and, therefore, the Commission cannot respond to non-agenda issues brought up under Public Comment other than to provide general information.

D. Presentations and Proclamations

D1. Update on the Menlo Atherton Performing Arts Center

E. Regular Business

E1. Accept Commission minutes for the meeting of September 18, 2017 and October 11, 2017 (attachment) (attachment)

E2. Consider a recommendation to the City Council to rename Market Place Park after Mr. Karl Clark, Menlo Park resident and WWII veteran (Staff Report # 17-025-PRC)

E3. Review and consider the results of a safety analysis of crumb rubber infill material on the artificial turf field at Hillview School and recommend next steps, if any (Staff Report # 17-026-PRC)

E4. Adopt a recommendation to City Council to approve the Bedwell Bayfront Park Master Plan (Staff Report # 17-027-PRC)

F. Reports and Announcements

F1. Commissioner Reports

F2. Community Services Director's update and announcements (Staff Report #17-028-PRC)

G. Adjournment

Agendas are posted in accordance with Government Code Section 54954.2(a) or Section 54956. Members of the public

can view electronic agendas and staff reports by accessing the City website at www.menlopark.org and can receive e-mail notification of agenda and staff report postings by subscribing to the "Notify Me" service at menlopark.org/notifyme. Agendas and staff reports may also be obtained by contacting City Clerk at 650-330-6620. (Posted: 10/19/17)

At every Regular Meeting of the Commission, in addition to the Public Comment period where the public shall have the right to address the Commission on any matters of public interest not listed on the agenda, members of the public have the right to directly address the Commission on any item listed on the agenda at a time designated by the Chair, either before or during the Commission's consideration of the item.

At every Special Meeting of the Commission, members of the public have the right to directly address the Commission on any item listed on the agenda at a time designated by the Chair, either before or during consideration of the item.

Any writing that is distributed to a majority of the Commission by any person in connection with an agenda item is a public record (subject to any exemption under the Public Records Act) and is available for inspection at the City Clerk's Office, 701 Laurel St., Menlo Park, CA 94025 during regular business hours.

Persons with disabilities, who require auxiliary aids or services in attending or participating in Commission meetings, may call the City Clerk's Office at 650-330-6620.

SPECIAL MEETING MINUTES DRAFT

Date: 9/18/2017
Time: 5:30 p.m.
Arrillaga Family Recreation Center
Oak Room
700 Alma St., Menlo Park, CA 94025

A. Call To Order

Chair Stanwood called the meeting to order at 5:30 p.m.

B. Roll Call

Present: Chair Stanwood, Vice Chair Johnson, Commissioner Baskin, Commissioner Harris, Commissioner Lane, Commissioner Palefsky and Commissioner Staley
Absent: None
Staff: Community Services Director, Cherise Brandell and Assistant Community Services Director, Derek Schweigart

C. Public Comment

Julie spoke to the Commission regarding her concerns with the park maintenance at Sharon Park.

D. Regular Business

D1. Review and discuss 2017 City Council Work Plan Goals (attachment)

Community Services Director, Cherise Brandell, Assistant Community Services Director, Derek Schweigart and the Commission reviewed and discussed the 2017 City Council Work Plan Goal items that will impact the Commission.

D2. Review and discuss Commission 2-Year Work Plan Goals and define next steps (attachment)

Community Services Director, Cherise Brandell, Assistant Community Services Director, Derek Schweigart and the Commission reviewed and discussed the Commission 2-Year Work Plan Goals and additional goals to consider.

D3. Review and discuss Commission meeting calendar for FY 2017-18

Community Services Director, Cherise Brandell, Assistant Community Services Director, Derek Schweigart and the Commission reviewed and discussed the Commission meeting calendar for FY 2017-18.

D4. Review and discuss stakeholder engagement opportunities for FY 2017-18

Community Services Director, Cherise Brandell, Assistant Community Services Director, Derek Schweigart and the Commission reviewed and discussed stakeholder engagement opportunities for FY 2017-18.

E. Adjournment

Chair Stanwood adjourned the meeting at 8:30 p.m.

Minutes prepared by Linda Munguia, Senior Office Assistant

CITY OF MENLO PARK

REGULAR MEETING MINUTES DRAFT

Date: 10/11/2017
Time: 6:30 p.m.
Arrillaga Family Recreation Center
Cypress Room
700 Alma St., Menlo Park, CA 94025

A. Call To Order

Chair Stanwood called the meeting to order at 6:33 p.m.

B. Roll Call

Present: Chair Stanwood, Vice Chair Johnson, Commissioner Harris, Commissioner Lane (arrived at 6:37 p.m.) Commissioner Staley and Commissioner Palefsky
Absent: Commissioner Baskin
Staff: Assistant Community Services Director, Derek Schweigart

C. Public Comment

There was no Public Comment

D. Study Session

D1. Review and provide feedback on the draft park master plan for Bedwell Bayfront Park (Staff Report # 17-022-PRC)

Brian Fletcher, Principal at Callander Associates gave the Commission a presentation on the draft park master plan for Bedwell Bayfront Park. He mentioned that the draft master plan includes accessibility improvements, enhanced educational opportunities, environmental protection considerations and passive recreation enhancements. Additional items for consideration that are not included in the draft park master plan are an off-leash dog park, a group seating area and a model glider area.

Public Comments

- Mitch Brenner (donated time from Richard Bright and Frank Dickinson) spoke in regards to the draft master plan for Bedwell Bayfront Park.
- Haoyang Wang spoke in regards to the draft master plan for Bedwell Bayfront Park.
- JoAnn Tyson spoke in regards to the draft master plan for Bedwell Bayfront Park.
- Eileen McLaughlin spoke in regards to the draft master plan for Bedwell Bayfront Park.

- Allan Bedwell spoke in regards to the draft master plan for Bedwell Bayfront Park.
- Vicky Roble spoke in regards to the draft master plan for Bedwell Bayfront Park.
- Nancy Borgeson spoke in regards to the draft master plan for Bedwell Bayfront Park.
- Chris Macintosh spoke in regards to the draft master plan for Bedwell Bayfront Park.
- Tate Snyder spoke in regards to the draft master plan for Bedwell Bayfront Park.
- Curtis Snyder spoke in regards to the draft master plan for Bedwell Bayfront Park.
- Helen Wolter spoke in regards to the draft master plan for Bedwell Bayfront Park.
- Christopher Turner spoke in regards to the draft master plan for Bedwell Bayfront Park.
- Claudia Lopez spoke in regards to the draft master plan for Bedwell Bayfront Park.

After discussion, the Commission requested information from Staff and Callander Associates regarding the boat launch and studies that show the effect of hand held gliders to wildlife. The Commission directed staff to bring back this item to a future Commission meeting with the requested information.

E. Regular Business

E1. Accept Commission minutes for the meeting of July 26, 2017 (attachment)

ACTION: Motion and second (Johnson/Palefsky) to accept the Parks and Recreation Commission meeting minutes of July 26, 2017 with the following change: Commissioner Palefsky was not absent, arrived at 6:30 p.m.; passes 6-0-1 (Commissioner Baskin absent)

E2. Nominate a Commissioner to monitor the updates related to the San Mateo County's Re-Imagine Flood Park Project, and report back to the Commission

ACTION: Motion and second (Johnson/Lane) to nominate Commissioner Staley to monitor the updates related to the San Mateo County's Re-Imagine Flood Park Project, and report back to the Commission; passes 6-0-1 (Commissioner Baskin absent)

E3. Make a recommendation to the City Council on the next steps for the Burgess Park Snack Shack Expansion project (Staff Report # 17-023-PRC)

Councilmember Ray Mueller gave a presentation on the next steps for the Burgess Park Snack Shack Expansion project and answered the questions and concerns of the Commission.

Public Comments

- Marc Bryman spoke to the Commission in regards to the Burgess Park Snack Shack Expansion project.

After discussion; the following action was taken:

ACTION: Motion and second (Staley/Harris) that the Parks and Recreation Commission conditionally supports and recommends that City Council move forward with the Burgess Park

Snack Shack remodel and expansion project; passes 6-0-1 (Commissioner Baskin absent)

F. Reports and Annoucements

F1. Commissioner Reports

There was no Commissioner Report

F2. Community Services Director's update and announcements (Staff Report #17-024-PRC)

Assistant Community Services Director, Derek Schweigart, gave the Community Services Director's update and announcements

G. Adjournment

Chair Stanwood adjourned the meeting at 10:02 p.m.

Minutes prepared by Linda Munguia, Senior Office Assistant

CITY OF MENLO PARK

STAFF REPORT

Parks and Recreation Commission
Meeting Date: **10/25/2017**
Staff Report Number: **17-025-PRC**

Study Session: **Consider making a recommendation to the City Council to rename Market Place Park after Mr. Karl Clark, Menlo Park resident and WWII veteran**

Recommendation

Staff recommends that the Commission consider making a recommendation to the City Council to rename Market Place Park (313 Market Place, Menlo Park) after Mr. Karl Clark, Menlo Park resident and WWII veteran.

Policy Issues

City Council Policy #CC-86, dated February 25, 1986, provides guidance on the naming and/or changing the name of facilities (Attachment A).

This request represents a deviation from existing City policy which states "…The City will modify existing names only with the greatest reluctance and only to commemorate a person or persons who have made major, overriding contributions to the City and whose distinctions are as yet unrecognized." The policy also states the naming will recognize a deceased person no sooner than five years after that person's death.

The City Council has made exceptions to the policy in the past. In October 2004, the City Council waived the policy by naming the Burgess Park Little League field in honor of Tom Harrison, former Chair of the Park and Recreation Commission. In September 2008, the policy was waived to change the name of Bayfront Park to Bedwell-Bayfront Park in honor of Michael Bedwell, former City Manager from 1964 to 1991. On April 5, 2011, Council approved a recommendation to rename a number of Burgess Campus facilities including the Arrillaga Family Recreation Center, Arrillaga Family Gymnasium and Arrillaga Family Gymnastics Center, honoring John Arrillaga for his generous donations and leadership. In each case Council determined that the standard for "overriding contributions" by these individuals had been met. For example, Michael Bedwell had worked for years to champion the retirement of the City's landfill and turn it into a Bayfront park and John Arrillaga donated tens of millions of dollars allowing the building or renovation of three new community recreation facilities.

Background

Per Council policy, the Parks and Recreation Commission is responsible for considering and recommending naming or renaming facilities to the City Council after receiving input from the community. On June 28, 2017, the Commission received a request to rename Market Place Park from residents Julie Shanson and Cecilia Taylor, representing the Belle Haven Action Group, requesting to rename the park near the Boys and Girls Club on Market and Hamilton Streets known as Market Place Park after Mr. Karl Clark, a long time Belle Haven resident and decorated WWII veteran. The Commission held a study session to consider the request, summarized in (Attachment B).

The Commission received a presentation during the study session from residents on behalf of late Mr. Karl Clark which outlined his many contributions including his work with the Boys and Girls Club in Menlo Park, life-saving efforts while in the Navy during WWII and accomplishments as an author of three books. City staff pointed out that the request is a deviation from current City policy and would require Council to waive the policy to make this exception. In particular, the policy states "the naming will recognize a deceased person no sooner than five years after that person's death." The Commission has recommended to Council exceptions to the policy in the past which were covered in the study session.

The Commission considered the request and recommended that the request be tabled until a future date when the requestors could demonstrate broader support from the community and the Commission could have a better understanding of the criteria for making an exception to Council policy as in other instances.

Analysis

City Ordinance No. 884 was adopted on December 16, 1997 to rezone the property which now is Market Place Park from R-1-U (residential) to OSC (Open Space & Conservation). At the time, it was a 5,402 sq ft vacant parcel of land surrounded by Market Place Midi Park, a public park owned by the City of Menlo Park. Following the rezoning, the property was to be incorporated into the existing park A map of the park today and maps on file with the original parcel confirms the location. The park is now known as Market Place Park which is located at 313 Market Place, Menlo Park. In addition, we know that in 2004 this single-acre park was renovated as part of the Belle Haven neighborhood improvement program. The project included new tube steel fencing for the tot lot, new concrete walks, new site furnishings, irrigation modifications, planting and park lighting.

The resident-led Belle Haven Action Group is spearheading the effort to rename the park, including circulating a petition with approximately 100 neighborhood resident signatures and collecting testimonials on behalf of Mr. Clark supporting the renaming. In addition, the group received a letter for support from Congresswoman Anna Eshoo (Attachment C). The group recognizes the changing neighborhood and the nationally divisive political climate and wish to preserve local history while celebrating what unites us as a community.

Exceptions to the Council naming policy have been made to recognize other individuals including in 2008 and 2011 when a number of Burgess Campus facilities were renamed after John Arrillaga and the Arrillaga Family including the Arrillaga Family Recreation Center, Arrillaga Family Gymnastics Center and Arrillaga Family Gymnasium. The Commission recommended an exception honoring John Arrillaga for his generous financial contributions which made the construction of these facilities possible. The policy states that there must be "a major overriding contribution to the City whose distinctions are yet unrecognized … and a deceased person after 5 years." The Commission agreed that John Arrillaga's contributions met the overriding contribution criteria and warranted renaming the facilities although other criteria were not met.

In October 2004, the Burgess Park Little League Field was named after Tom Harrison, a former Parks and Recreation Commission chairperson who worked on the successful 2001 campaign to pass Measure T, a $38 million city bond measure fueling allowing Burgess Park renovations, pool renovations and many other park projects. Tom Harrison passed away within a year of the request of the park renaming. In September 2008, the former Marsh Road Landfill and Bayfront Park was renamed after former City Manager Michael Bedwell and is now known as Bedwell Bayfront Park. The park was Michael Bedwell's longtime vision for converting the former landfill into a public park and open space. Michael Bedwell passed away in 2008 which meant the park renaming required an exception to Council policy.

City staff does not generally recommend the Commission approve requests that deviate from the current

City policy. In particular, the policy states “the naming will recognize a deceased person no sooner than five years after that person’s death.” The Commission is being asked to consider the merits of this request and decide whether or not to make a recommendation to Council to make an exception to current policy in this case.

Impact on City Resources

Should the Commission recommend the name change and Council eventually approve it, there would be a cost to replace the existing park signage, estimated to be less than $5,000 for the materials and labor?

Environmental Review

The subject of this report does not represent a project under the California Environmental Quality Act.

Public Notice

Public Notification was achieved by posting the agenda, with the agenda items being listed, at least 72 hours prior to the meeting.

Attachments

A. City Council Policy #CC-86 naming and/or changing name of facilities
B. Parks and Recreation Commission Staff Report – June 28, 2017
C. Letter from Congresswoman Anna Eshoo

Report prepared by:
Derek Schweigart
Assistant Community Services Director

City of Menlo Park

City Council Policy

Department City Council	Page 1 of 1	Effective Date February 25, 1986
Subject Naming and/or Changing the Name of Facilities	**Approved by** Department Head City Manager	**Procedure #** CC-86-

PURPOSE AND SCOPE

From time to time the City has the opportunity to name a new facility, or is requested to change the name of a previously designated park, playground, building or other unit under the City's jurisdiction.

In order to formalize the City's consideration of these requests, and to provide better guidelines to the public, the City does hereby adopt the following policy guidelines for the naming of facilities.

1. It shall be the policy of the City not to change the name of any existing recreation and park facility, particularly one whose name has City or national significance, unless there is the most extraordinary circumstances of City or National interest and no other new facility can so be designated.

2. The existing place names within Menlo Park shall be deemed to have historic significance to the City. The City will modify existing names only with the greatest reluctance and only to commemorate a person or persons who have made major, overriding contributions to the City and whose distinctions are as yet unrecognized.

3. The Park and Recreation Commission, after considering inputs from the community, will recommend to the City Council names for new parks, playgrounds, athletic fields, paths, tennis courts, flower beds, buildings and miscellaneous facilities. The naming will recognize:
A deceased person (no sooner than five years after death, ethnic or other national or community groups not yet honored in some fashion, who have made significant contributions to the City and/or the Park and Recreation and have not been previously honored in a meaningful way by the City.

4. It shall be the policy of the City generally to encourage plaques commemorating donations including tree memorials, horticultural collections or plant materials.

5. Where appropriate to the facility, the City encourages the donation of memorial benches.

6. At those facilities having recreation buildings, the City from time to time may authorize placing of a memorial plaque inside a building when that facility is closely identified with a person or group, but the policy of the City is to retain the historic name of the facility.

7. For other than naming a new facility, it is the policy of the City to take no action until at least six months from the receipt of a suggested name change or the adoption of these policies.

(Council took a look at this policy again on Jan. 27, 1998 with no changes)

CITY OF MENLO PARK

STAFF REPORT

Parks and Recreation Commission
Meeting Date: **6/28/2017**
Staff Report Number: **17-017-PRC**

Study Session: **Consider a request to rename Market Place Park after Mr. Carl Clark, Menlo Park resident and WWII veteran**

Recommendation

Staff recommends that the Commission review and consider a request to rename Market Place Park (313 Market Place, Menlo Park) after Mr. Carl Clark, Menlo Park resident and WWII veteran and provide staff feedback and general direction on possible next steps.

Policy Issues

City Council Policy #CC-86, dated February 25, 1986, provides guidance on the naming and/or changing the name of facilities which is included as Attachment A.

This request does represent a deviation from existing City policy which states "…The City will modify existing names only with the greatest reluctance and only to commemorate a person or persons who have made major, overriding contributions to the City and whose distinctions are as yet unrecognized." The policy also states the naming will recognize a deceased person no sooner than five years after that person's death.

The City Council has made exceptions to the policy in the past. In October 2004, the City Council waived the policy by naming the Burgess Park Little League field in honor of Tom Harrison, former Chair of the Park and Recreation Commission. In September 2008, the policy was waived by changing the name of Bayfront Park to Bedwell-Bayfront Park in honor of Michael Bedwell, former City Manager from 1964 to 1991. On April 5, 2011, Council approved a recommendation to rename a number of Burgess Campus facilities including the Arrillaga Family Recreation Center, Arrillaga Family Gymnasium and Arrillaga Family Gymnastics Center, honoring John Arrillaga for his generous donations and leadership.

Background

On April 3, 2017, City staff and the Commission received communication from residents Julie Shanson and Cecilia Taylor, representing the Belle Haven Action group, requesting to name or rename the park by the Boys and Girls Club on Market and Hamilton Streets which we understand now as Market Place Park that the City owns and operates. The name was unclear at the time since there wasn't a park sign at the time. The group requested that the City consider naming the park after Mr. Carl Clark, a long time Belle Haven resident and decorated WWII veteran. Links to stories concerning Mr. Clark and his obituary can be found in the Huffington Post, Almanac and Boston Globe and are included as Attachments B, C and D.

Per Council policy, the Parks and Recreation Commission is responsible for considering and recommending naming of facilities to the City Council after receiving input from the community. In the last several years, the Commission has requested and received from the Council waivers of the naming policy in order to name the

new Arrillaga facilities after the John Arrillaga family, due to the major donations from Mr. Arrillaga that allowed the City to build them.

The last time the Commission considered the City's Facility Naming Policy was at their meeting on January 22, 2014 when it considered the inclusion of a monuments and memorial policy in response to the high interest for memorial plaques in City parks by the community. The current policy does not specifically address monuments and memorials in City parks and facilities except for the encouraging the donation of memorial benches. The Commission agreed to maintain the City's current moratorium on all plaques and stones in City parks siting concerns that such a practice would lead to a cemetery-like feeling and negatively impact the park's character. Instead, when requests are made by a member of the public, it is recommended that the member consider a donation of a tree planting or memorial bench in the park.

Analysis

The City policy on naming and/or changing the name of facilities is an important guide on whether to consider a name change to Market Place Park. The request is a deviation from current City policy and would require Council to waive the policy to make this exception. In particular, the policy states "the naming will recognize a deceased person no sooner than five years after that person's death." The Commission has recommended to Council exceptions to the policy in the past which we already mentioned in the report.

In consideration of the request, City staff suggests the following questions to help guide the Commission's discussion on the topic:

1. What other relevant information is needed to help guide the Commission's discussion?
2. What are the important policy considerations related to this request?
3. Does the request warrant an exception to the current policy? If so, what information supports the exception? If not, what other recommendations would the Commission offer?
4. Based on the Commission's discussion, what next steps if any does the Commission recommend?

Impact on City Resources

There is no direct impact to City resources by the recommendation in this report.

Environmental Review

Subject of report does not represent a project under the California Environmental Quality Act.

Public Notice

Public Notification was achieved by posting the agenda, with the agenda items being listed, at least 72 hours prior to the meeting.

Attachments

A. City Council Policy #CC-86 naming and/or changing name of facilities
B. Huffington Post Article Dated January 18, 2012 http://www.huffingtonpost.com/2012/01/18/carl-clark-black-navy-vet-awarded-medal-66-years-later_n_1212188.html
C. Almanac Article Dated August 2, 2016 https://www.almanacnews.com/news/2016/08/02/a-war-hero-

turns-100

D. Boston Globe Obituary Article March 30, 2017
https://www.bostonglobe.com/metro/obituaries/2017/03/29/carl-clark-wwii-hero-recognized-decades-later-dies/SVrJUGWBXzECsbnxSMmDkO/story.html

Report prepared by:
Derek Schweigart
Assistant Community Services Director

Congress of the United States
House of Representatives
Washington, D.C. 20515

Anna G. Eshoo
Eighteenth District
California

June 28, 2017

Mr. Christopher Harris, Chair
Parks and Recreation Commission
City of Menlo Park
701 Laurel Street
Menlo Park, California 94025

Dear Mr. Harris,

I'm pleased to join the members of Belle Haven Action in their quest to rename Marketplace Park in honor of former Belle Haven resident Carl Clark.

I was privileged to secure the honors due to Mr. Clark for his heroic service in World War II, honors he was deprived of for decades because of his race. I know Mr. Clark as a devoted public servant, a man committed to his community, making it stronger and our country better. I can think of no one more deserving than the late Carl Clark to be honored by the City of Menlo Park by having a park named after him.

Most gratefully,

Anna G. Eshoo
Member of Congress

cc: Members of the Parks and Recreation Commission
Derek Schweigart, Assistant Community Services Director
Julie Shanson, Belle Haven Action
Cecilia Taylor, Belle Haven Action

STAFF REPORT

Parks and Recreation Commission
Meeting Date: **10/25/2017**
Staff Report Number: **17-026-PRC**

Regular Business: **Consider results of a safety analysis of crumb rubber infill material on the artificial turf field at Hillview School and recommend next steps, if any**

This report was amended on 10/25/17 to include Attachment B - Crumb Rubber Infill Analysis and Reporting – Kelly Park study by Millennium Consulting. The attachment was received by staff after the agenda-posting date.

Recommendation

Staff recommends that the Parks and Recreation Commission consider a recent analysis of the Hillview turf field by David Teter, PhD, PE, QSD of Millennium Consulting, commissioned by the Menlo Park City School District, and determine if it warrants taking further steps toward replacing the infill material at the Hillview School and Kelly Park fields.

Policy Issues

While the City desires to be proactive on the concerns regarding crumb rubber infill material, replacing the material in the City's artificial turf fields prior to the need for a complete renovation at the end of the turf's lifespan would necessarily displace other high-priority projects in the capital improvement plan and delay other priority projects for a year or more. Federal and State studies are currently underway that will provide additional guidance on the use of crumb rubber infill material. The Commission considered this issue in November of 2016 and determined to take no action until State and Federal studies are released. The State Office of Environmental Health Hazard Assessment, (OEHHA) indicated the study results will be released in mid-2019 with preliminary results sometime in 2018. The Federal study results release date has not been confirmed.

Background

Synthetic fields have been popular since the mid-1960s with the debut of "AstroTurf" at the Houston Astrodome. In those days, artificial turf was not much more than carpet laid over concrete. Manufacturers introduced a gentler surface using crumb rubber, made from recycled tires, in the 1990's.

Beginning in 2010, anecdotal stories about cancer incidents among goalies arose in various media outlets leading agencies to debate the safety of the crumb rubber infill material to the point where the Federal government commissioned a study attempting to settle the question definitively. It was previously reported that by the end 2017 the federal government will release a draft status report describing the findings and conclusions of the research through that point in time. The report will also outline any additional research needs and next steps. Additionally, a state of California study is being conducted and the findings and conclusions are expected to be released in 2018.

The Menlo Park City School District approached the City of Menlo Park in the fall of 2016 to express concern about the crumb rubber infill material underlying the artificial turf field at Hillview School. The construction of the field was a joint project between the school district and the City. Kelly Park has the same

crumb rubber material on the field as well. Kelly Park field was opened in 2011 and is estimated to be about 4 years from the end of its lifespan. Hillview field opened in 2013 and is estimated about 6 years from the end of its lifespan.

In November of 2016 the Parks and Recreation Commission discussed the data available at the time and determined that there was no compelling proof that would suggest any danger from the crumb rubber infill and determined to review the question once again when the State and Federal studies were finalized and published.

Analysis

Recently the Menlo Park City School District commissioned a study of Hillview Field by David Teter, PhD, PE, QSD of Millennium Consulting to determine whether or not the field was exposing users to unsafe substances. Dr. Teter will present his findings at the October 25, 2017 Parks and Recreation Commission meeting and be available to answer questions.

Results of the analysis (Attachment A) indicate "all of the detected concentrations of heavy metals, VOCs, SVOCs, and carcinogenic PAHs in crumb rubber infill collected from the synthetic turf athletic field at Hillview Middle School fall below guideline values for the protection of human health. A human health risk assessment was developed to estimate the additional cancer risk from exposure to carcinogenic PAHs and arsenic during a soccer-specific recreational use scenario. The additional cancer risk from exposure to carcinogenic PAHs and arsenic in crumb rubber infill was estimated to fall below the USEPA *de minimis* risk level of 1 in 1,000,000 and is below the estimated additional cancer risk from playing soccer on urban and rural surface soils."

Following the presentations and question and answer period, staff suggests the Commission consider and provide feedback on the following questions:

- Does the information presented indicate replacement of infill material at Hillview and Kelly fields be immediately prioritized?
- If the Commission determines that the infill should be replaced immediately, should we study the safety of other infill material options before installation as well as other pros/cons related to alternative infield options?
- What additional information might be needed and what next steps are suggested?

Impact on City Resources

Initial budget estimates indicate infill replacement costs vary from $370,000 to $850,000 for Hillview and Kelly Park depending on the type of material selected. The City currently has no budget allocated for either of these projects and would most likely need to delay or eliminate other projects from the Capital Improvement Plan.

Environmental Review

Potential replacement of the turf on existing sports fields is not a project under CEQA.

Public Notice

Public Notification was achieved by posting the agenda, with the agenda items being listed, at least 72

hours prior to the meeting.

Attachments

A. Crumb Rubber Infill Analysis and Reporting – Hillview Middle School study by Millennium Consulting
B. Crumb Rubber Infill Analysis and Reporting – Kelly Park study by Millennium Consulting

Report prepared by:
Todd Zeo, Recreation Supervisor

MILLENNIUM
CONSULTING ASSOCIATES
A MECA Consulting, Inc. Company

"Providing Premiere Environmental & Industrial Hygiene Services since 1986"

Corporate Offices:
401 Roland Way, Suite 250
Oakland, CA 94621
www.mecaenviro.com

October 3, 2017 Project No. 13054.2000

Mr. Ahmad Sheikholeslami
Chief Business and Operations Officer
Menlo Park City School District
181 Encinal Avenue
Atherton, CA 94027

Subject: Crumb Rubber Infill Analysis and Reporting – Hillview Middle School

Dear Mr. Sheikholeslami:

Millennium Consulting Associates (Millennium) is pleased to present this Letter Report to the Menlo Park City School District (District) on the analysis of crumb rubber infill collected from the synthetic turf athletic field located at Hillview Middle School in Menlo Park, CA.

EXECUTIVE SUMMARY

A sample of crumb rubber infill from the athletic field at Hillview Middle School was collected and analyzed for Title 22 (CAM 17) metals, hexavalent chromium, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polycyclic aromatic hydrocarbons (PAHs), and polychlorinated biphenyls (PCBs). All of the detected concentrations of heavy metals, VOCs, SVOCs, and carcinogenic PAHs in crumb rubber infill collected from the synthetic turf athletic field at Hillview Middle School fall below guideline values for the protection of human health. A human health risk assessment was developed to estimate the additional cancer risk from exposure to carcinogenic PAHs and arsenic during a soccer-specific recreational use scenario. The additional cancer risk from exposure to carcinogenic PAHs and arsenic in crumb rubber infill was estimated to fall below the USEPA *de minimis* risk level of 1 in 1,000,000 and is below the estimated additional cancer risk from playing soccer on urban and rural surface soils.

INTRODUCTION

Numerous studies have been performed to assess the risk to human health from exposure to heavy metals, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and carcinogenic polycyclic aromatic hydrocarbons (PAHs) from sports activities on synthetic turf athletic fields; TRC (2008) and Cardno Chemrisk (2013) provide an excellent review on this topic. The results of these studies have generally shown that exposure to chemicals of potential concern (COPCs) in crumb rubber infill does not pose an elevated risk to human health.

This Letter Report compares the COPCs from crumb rubber infill to guideline values developed for the protection of human health**.** The California Department of Toxic Substances Control (DTSC) modified regional screening levels (RSLs) for soil (residential-use) are used as guideline values for heavy metals, VOCs, and SVOCs in crumb rubber. These RSLs were originally developed by the USEPA Region 9. The DTSC has modified several of these RSLs to take into account new cancer slope factors and reference doses developed by the California Office of Environmental Health Hazard Assessment (OEHHA). The RSLs consider both carcinogenic and non-carcinogenic effects and are highly protective of human health. An exception is made for arsenic as the health-based RSL value is

lower than both the laboratory reporting limit and naturally occurring background concentrations of arsenic in surface soil. In this situation, OEHHA's guidance is to use a naturally occurring background concentration as the screening level for arsenic (OEHHA, 2005b). A background concentration of 11 mg/kg was calculated for arsenic in surface soils in the San Francisco Bay Area (Duverge, 2011). This background concentration of 11 mg/kg is proposed as the guideline value for arsenic in synthetic turf infill products. For the cases of carcinogenic-PAHs, a human health risk assessment (HHRA; Appendix A) was performed to estimate the additional cancer risk from exposure to carcinogenic PAHs via the ingestion and dermal exposure pathways during a soccer-specific recreational use scenario. This HHRA is then used to develop guideline values for carcinogenic PAHs in synthetic turf infill based upon acceptable levels of additional cancer risk.

Finally, this Letter report will compare all detected concentrations of heavy metals, VOCs, SVOCs, and PCBs in crumb rubber infill collected from the Hillview Middle School to the guideline values for the protection of human health. The additional cancer risk from exposure to carcinogens in the crumb rubber infill collected from the athletic field at Hillview Middle School will be estimated and compared to that of native soils.

SAMPLE COLLECTION

Four discrete samples (see Figure 1 for sample locations) of crumb rubber infill were collected from the athletic field at Hillview Middle School on the afternoon of September 20, 2017. The samples were shipped under chain-of-custody to McCampbell Analytical (Laboratory) of Pittsburg, CA. The Laboratory created a four-point composite sample out of the discrete samples.

ANALYTICAL RESULTS

Title 22 (CAM 17) Metals

The composite sample was extracted using EPA Method 3050B (Acid Digestion of Sediments, Sludges, and Soils) and the extract was analyzed using EPA Method 6020 (Inductively Coupled Plasma – Mass Spectroscopy). Table 1 presents the concentrations of CAM 17 metals that were detected above laboratory reporting limits are compared to guideline values for the protection of human health. All detected concentrations of CAM 17 metals in the sample fell below the guideline values.

Hexavalent Chromium

The composite sample was extracted using EPA Method 3050B (Alkaline Digestion for Hexavalent Chromium) and the extract was analyzed using EPA Method 7199 (Determination of Hexavalent Chromium in Drinking Water, Groundwater, and Industrial Wastewater Effluents by Ion Chromatography). Hexavalent chromium in the sample was not detected above the laboratory reporting limit.

Volatile Organic Compounds

The composite sample was extracted using EPA Method 5030B (Purge-and-Trap for Aqueous Samples) and the extract was analyzed for volatile organic compounds (VOCs) using EPA Method 8260B (Volatile Organic Compounds by Gas Chromatography/Mass Spectroscopy). The only VOC detected above laboratory reporting limits was 4-methyl-2-pentanone (methyl isobutyl ketone; MIBK), which was detected at a concentration of 0.023 mg/kg. The detected concentration of MIBK is significantly below the guideline value of 33,000 mg/kg which is based upon the United States

Environmental Protection Agency (USEPA) Regional Screening Level (RSL) for direct exposure to residential soil.

Semi-Volatile Organic Compounds

The composite sample was extracted using EPA Method 5030B and the extract was cleaned up using EPA Method 3640A (Gel Permeation Cleanup)prior to being analyzed for semi-volatile organic compounds (SVOCs) by EPA Method 8270C (Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectroscopy). The only SVOC detected above laboratory reporting limits was diethyl phthalate, which was detected at a concentration of 0.030 mg/kg. The detected concentration of MIBK is significantly below the guideline value of 51,000 mg/kg which is based upon the USEPA RSL for direct exposure to residential soil.

Carcinogenic Polycyclic Aromatic Hydrocarbons

The composite sample was extracted using EPA Method 3550B and analyzed for carcinogenic PAHs using EPA Method 8270C in Selected Ion Monitoring (SIM) mode. The concentrations of the carcinogenic PAHs were converted into benzo(a)pyrene toxic equivalents (B(a)P-TEQ) using the 1993 USEPA relative potency factors (USEPA, 1993). For the purposes of calculating the B(a)P-TEQ, non-detected PAHs were estimated as one-half of the method detection limit (MDL). The concentration of carcinogenic PAHs was calculated to be 0.058 mg/kg expressed as B(a)P-TEQ. This concentration falls significantly below the guideline value of 10 mg/kg B(a)P-TEQ. The development of the guideline value for carcinogenic PAHs is discussed in Appendix A.

Polychlorinated Biphenyls

The composite sample was extracted using EPA Method 3550B (Ultrasonic Extraction) and the extract was cleaned up using EPA Method 3630C (Silica Gel Cleanup) prior to being analyzed for polychlorinated biphenyls (PCBs) by EPA Method 8270C (Polychlorinated Biphenyls by Gas Chromatography). No PCBs were detected above laboratory reporting limits

COMPARISON OF ADDITIONAL CANCER RISK FROM EXPOSURE TO CRUMB RUBBER FROM HILLVIEW MIDDLE SCHOOL TO NATIVE SOILS FOR A SOCCER-SPECIFIC RECREATIONAL USE SCENARIO

Background concentrations of PAHs and arsenic were gathered from the following surveys of urban and rural surface soils:

- Urban Surface Soils - Boston, MA (Bradley *et al.*, 1994);
- Urban Surface Soils – California, North (ENVIRON, 2002b);
- Urban Surface Soils – California, South (ENVIRON, 2002a);
- Urban Surface Soils – Chattanooga, TN (Hussar *et al.*, 2012);
- Urban Surface Soils - Chicago, IL (USGS, 2003);
- Urban Surface Soils – Coastal Plain, New Jersey (BEM, 1998);
- Urban Surface Soils – Maine (AMEC, 2012);
- Urban Surface Soils – Piedmont Region, NJ (BEM, 1997);
- Urban Surface Soils - Providence, RI (Bradley *et al.*, 1994);
- Urban Surface Soils – Seattle, WA (Hart Crowser, 2011b);
- Urban Surface Soils - Springfield, MA (Bradley *et al.*, 1994);

- Urban Surface Soils - Western NY (EPRI, 2003);
- Rural Surface Soils – Coastal Plain, New Jersey (BEM, 2002);
- Rural Surface Soils – Delaware (DNREC, 2012);
- Rural Surface Soils – Highlands, New Jersey (BEM, 2002);
- Rural Surface Soils – Maine (AMEC, 2012);
- Rural Surface Soils – Parks (Forested), WA (Hart Crowser, 2011a);
- Rural Surface Soils – Parks (Open Space), WA (Hart Crowser, 2011a);
- Rural Surface Soils – Terre Haute, IN (IDEM, 2014); and
- Rural Surface Soils – Valley and Ridge, New Jersey (BEM, 2002).

PAH concentrations were obtained for each soil sample and B(a)p-TEQs were calculated using the USEPA-recommended relative potency factors (USEPA, 1993). All PAH and arsenic non-detects were treated as detections at half of the laboratory reporting limit, or at half of the MDL, if available. For the surveys that did not collect arsenic data; synthetic arsenic data was generated from a statistical analysis of regional arsenic concentrations using the surface soil data set collected by the USGS (2013). The B(a)p-TEQs and arsenic concentrations were transformed into log-normal distributions and a UCL95 was calculated for the B(a)p-TEQ and arsenic concentrations for each surface soil survey.

The PAH background concentrations in urban surface soils expressed as B(a)p-TEQ range from a low of 0.09 mg/kg in Terre Haute, IN to a high of 4.6 mg/kg in Boston, MA. The arsenic background concentrations in urban surface soils range from a low of 4.3 mg/kg in Providence, RI to a high of 16 mg/kg in Chicago, IL. A human health risk assessment using the exposure factors developed for the soccer-specific recreational use scenario was performed and the additional cancer risks from exposure to B(a)p-TEQ and arsenic were estimated (Table 2). The cumulative additional cancer risk from exposure to carcinogenic PAHs and arsenic in urban surface soils during a soccer recreational use scenario ranges from a low of 1 in 4,300,000 in Seattle, WA to a high of 1 in 770,000 in Springfield, MA. Although the additional cancer risk from exposure to carcinogenic PAHs and arsenic in several of the urban surface soils exceed the USEPA *de minimis* risk level of 1 in 1,000,000, they still fall within the range of acceptable risk (from 1 in 1,000,000 to 1 in 10,000).

The PAH background concentrations in rural surface soils expressed as B(a)p-TEQ range from a low of 1.1 mg/kg in the WA State Parks (forested) to a high of 3.4 mg/kg in WA State Parks (open space). The arsenic background levels in rural surface soils range from a low of 2.8 mg/kg in WA State Parks (forested) to a high of 8.5 mg/kg in rural ME. A human health risk assessment was performed using the exposure factors developed for the soccer-specific recreational use scenario and the additional cancer risks from exposure to carcinogenic PAHs and arsenic were estimated (Table 4). The cumulative additional cancer risk from exposure to carcinogenic PAHs and arsenic in rural surface soils during a soccer-specific recreational use scenario range from a low of 1 in 2,900,000 in WA State Parks (forested) to a high of 1 in 1,100,000 in WA State Parks (open space).

A comparison of carcinogenic PAH and arsenic concentrations for urban surface soils, rural surface soils, and crumb rubber infill is presented in Table 2. The additional cancer risk from exposure to carcinogenic PAHs and arsenic in the crumb rubber collected from the Hillview Middle School was estimated to be 1 in 66,000,000 (Table 2). This additional cancer risk is significantly below the USEPA *de minimis risk* level of 1 in 1,000,000 and is below the risk from exposure to carcinogenic PAHs and arsenic in the native soils previously discussed.

MILLENNIUM
CONSULTING ASSOCIATES
A MECA Consulting, Inc. Company

SUMMARY AND CONCLUSIONS

All of the detected concentrations of heavy metals, VOCs, SVOCs, and carcinogenic PAHs in crumb rubber infill collected from the synthetic turf athletic field at Hillview Middle School fall below guideline values for the protection of human health.

A human health risk assessment was developed to estimate the additional cancer risk from exposure to carcinogenic PAHs and arsenic during a soccer-specific recreational use scenario. The additional cancer risk from exposure to carcinogenic PAHs and arsenic in crumb rubber infill was estimated to fall below the USEPA *de minimis* risk level of 1 in 1,000,000 and is below the estimated additional cancer risk from playing soccer on urban and rural surface soils.

Thank you for considering Millennium Consulting Associates. If you have any comments or questions, please feel free to contact us.

Sincerely,
Millennium Consulting Associates

David Teter, PhD, PE, QSD
Director of Engineering and Environmental Services

Attachments
References
Appendix A – Human Health Risk Assessment
Figure 1
Table 1 – Comparison of Detected Concentrations of COPCs to Guideline Values
Table 2 – Additional Cancer Risk for a Soccer Recreational Use Scenario: Comparison Synthetic
Laboratory Report

REFERENCES

AMEC, 2012. Summary Report for Evaluation of Concentrations of Polycyclic Aromatic Hydrocarbons (PAHs) and Metals in Background Soils in Maine, Report prepared for the Maine Department of Environmental Protection, AMEC Project 3612112178, November 16.

BEM Systems Inc. (BEM), 1997. Characterization of Ambient Levels of Selected Metals and Other Analytes in New Jersey Soils: Year 1, Urban Piedmont Region, Report prepared for the New Jersey Department of Environmental Protection, BE-1241, May.

BEM, 1998. Characterization of Ambient Levels of Selected Metals and Other Analytes in New Jersey Urban Coastal Plain Region Soils – Volume 1 Final Report, Report prepared for the New Jersey Department of Environmental Protection, October.

BEM, 2002. Characterization of Ambient Levels of Selected Metals and cPAHs in New Jersey Soils: Year III – Rural Areas of New Jersey Highlands, Valley and Ridge, and Coastal Plain Physiographic Provinces, Report prepared for the New Jersey Department of Environmental Protection, March.

Bradley, L.J.N., B.H. Magee, and S.L. Allen, 1994. Background Levels of Polycyclic Aromatic Hydrocarbons (PAH) and Selected Metals in New England Urban Soils, Journal of Soil Contamination, 3(4):349-361.

Cardno Chemrisk, 2013. Review of the Human Health & Ecological Safety of Exposure to Recycled Tire Rubber found at Playgrounds and Synthetic Turf Fields, Report prepared for the Rubber Manufacturers Association, August 1.

Delaware Department of Natural Resources and Environmental Control (DNREC), 2012. Statewide Soil Background Study: Report of Findings, Report No. DE-1348, July.

Duverge, Dylan Jacques, 2011. Establishing Background Arsenic in Soil of the Urbanized San Francisco Bay Region, Masters Thesis in Geosciences, San Francisco State University, December 5.

Electric Power Research Institute (EPRI), 2003. Polycyclic Aromatic Hydrocarbons (PAHs) in Surface Soils in Western New York Follow-up Report for New York State Soils, 1005296, October.

ENVIRON 2002a. A Methodology for Using Background PAHs to Support Remediation Decisions, Report prepared for Southern California Gas Company and Sothern California Edison, Report 03-415OI, January 24.

ENVIRON, 2002b. Background Levels of Polycyclic Aromatic Hydrocarbons in Northern California Surface Soil, Report prepared for Pacific Gas and Electric Company and the U.S. Navy, Report 03-9116B and 03-9497A, June 7.

Hart Crowser, 2011a. Washington State Background Soil Concentration Study, Rural Parks, Washington State – DRAFT, Report prepared for the Washington State Department of Ecology, 17330-29, June 7.

Hart Crowser, 2011b. Urban Seattle Area Soil Dioxin and PAH Concentrations Initial Summary Report, Report Prepared for the Washington State Department of Ecology, September.

Hussar, Erika, Sean Richards, Zhi-Qing Lin, Robert P. Dixon, and Kevin A. Johnson, 2012. Human Health Risk Assessment of 16 Priority Polycyclic Aromatic Hydrocarbons in Soils of Chattanooga, Tennessee, USA, Water, Air, and Soil Pollution 223:5535-5548.

Indiana Department of Environmental Management (IDEM), 2014. Background Lead, Arsenic, and Polynuclear Aromatic Hydrocarbons (PAHs) Surface Soil Levels Terre Haute, Indiana, September.

OEHHA, 2005b. Use of California Human-Health Screening Levels (CHHSLs) in Evaluation of Contaminated Properties, January.

TRC, 2008. A Review of the Potential Health and Safety Risks from Synthetic Turf Fields Containing Crumb Rubber Infill, Report prepared for the New York Department of Health and Mental Hygiene, May.

United States Environmental Protection Agency (USEPA), 1993. Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons, EPA/600/R-93/089, July.

United States Geological Survey (USGS), 2003. Concentrations of Polynuclear Aromatic Hydrocarbons and Inorganic Constituents in Ambient Surface Soils, Chicago, Illinois: 2001-02, Water-Resources Investigations Report 03-4105.

USGS, 2013. Geochemical and Mineralogical Data for Soils of the Conterminous United States, U.S. Geological Survey Data Series 801, October 25.

APPENDIX A – HUMAN HEALTH RISK ASSESSMENT

CONCEPTUAL SITE MODEL

A conceptual site model is the representation of processes that control the transport, migration, and potential impacts of COPCs to human and ecological receptors. A simplified conceptual site model is presented to provide a framework for developing guideline values that are protective of human health. The following assumptions are proposed:

- Heavy metals, VOCs, SVOCs, and carcinogenic-PAHs may be present in synthetic turf infill at concentrations that can adversely impact human and health.
- Direct contact exposure via the dermal and ingestion pathways are considered as potential exposure pathways in this analysis.
- The inhalation of VOCs off-gassing from synthetic turf materials is not considered to be a potential exposure pathway in this analysis as the synthetic turf athletic field at the Hillview Middle School is located outdoors.
- Exposure factors will be developed based upon an aggressive soccer player who begins playing soccer at age 4 and plays until the age of 30. The development of the exposure factors will be covered in the next section of this letter report.
- The synthetic turf athletic field is not considered to be a habitat for plants, soil fauna (invertebrates), or wildlife.
- COPCs in stormwater leachate from the synthetic turf athletic field is treated by an on-site bioswale and does not migrate to groundwater or to the San Francisco Bay.

HHRA FOR CARCINOGENIC PAHs AND ARSENIC FOR A SOCCER-SPECIFIC RECREATIONAL USE SCENARIO

A HHRA was developed using the USEPA Risk Assessment Guidance for Superfund (RAGS) methodology (USEPA, 2004) to estimate the additional cancer risk from exposure to carcinogenic PAHs and arsenic for a soccer-specific recreational use scenario via the incidental ingestion and dermal contact pathways. Soccer was chosen for the exposure scenario as organized league play can begin as early as age 4 and exposure frequency and soil adherence factors for soccer play have been previously developed (Holmes (1999); Kissel (1996); and OEHHA (2010)). The inhalation exposure pathway was not considered in this analysis as several previous studies have shown that the concentrations of VOCs, SVOCs, and respirable particulate matter over synthetic turf athletic fields are generally indistinguishable from background levels (OEHHA, 2010; USEPA, 2009).

The following equations were used to estimate the annual additional cancer risk from exposure to carcinogenic PAHs and arsenic in synthetic turf and surface soils during a soccer specific recreational use exposure from ages 4 to 30.

The annual additional cancer risk from incidental ingestion of carcinogenic PAHs and arsenic is:

$$ACR_{oral,i} = \left(\frac{C_{soil} \times RAF_{oral} \times CF \times IR_i \times EF_i \times ED}{BW_i \times AT}\right) \times SF_{oral} \times ADAF_i$$

The annual additional cancer risk from dermal contact with carcinogenic PAHs and arsenic is:

$$ACR_{dermal,i} = \left(\frac{C_{soil} \times RAF_{dermal} \times SA_i \times AF_i \times EF_i \times ED}{BW_i \times AT}\right) \times SF_{oral} \times ADAF_i$$

The total additional lifetime cancer risk determined by summing up the annual additional cancer risk from both incidental ingestion and dermal contact is:

$$ACR_{total} = \sum_{i=4}^{30} ACR_{oral,i} + ACR_{dermal,i}$$

The exposure factors used in this analysis are presented in Table 1 of this report and are described in further detail below.

C_{soil}: Concentrations of Chemicals of Potential Concern in Synthetic Turf and Surface Soils

This is the exposure point concentration in mg/kg of carcinogenic PAHs or arsenic in synthetic turf infill or surface soil. The concentrations of the carcinogenic PAHs are converted into benzo(a)pyrene toxic equivalents (B(a)p-TEQ) using the following relative potency factors (RPFs) (USEPA, 1993):

- benzo(a)pyrene RPF=1.0;
- benzo(a)anthracene RPF=0.1;
- benzo(b)fluoranthene RPF=0.1;
- benzo(k)fluoranthene RPF=0.01;
- chysene RPF=0.001;
- dibenz(a,h)anthracene RPF=1.0; and
- indeno(1,2,3-cd)pyrene RPF=0.1

CF: Conversion Factor

A conversion factor of 10^{-6} kg/mg is used.

RAF_{oral}: Relative Availability Factor (Oral)

The oral relative availability factor (RAF_{oral}) is an adjustment factor to convert the concentration of a specific chemical of concern in soil to the amount absorbed from ingestion. An oral RAF of 0.29 was chosen for benzo(a)pyrene based upon an analysis of twelve studies of PAH absorption from soils (Magee *et al.*, 1996). Although the USEPA has not set an oral RAF for benzo(a)pyrene, the Massachusetts Department of Environmental Protection (MADEP) accepts an oral RAF of 0.3 for use in human health risk assessments for exposure to PAHs in contaminated soils (MassDEP, 2015). The oral RAF for crumb rubber is likely to be less than that for soil as PAHs absorb very strongly to the high organic carbon content in crumb rubber. The USEPA-recommended oral RAF of 0.6 for arsenic in soil was used in this analysis (USEPA, 2012).

RAF_{dermal}: Relative Availability Factor (Dermal)

The dermal relative availability factor (RAF_{dermal}) is an adjustment factor used to convert the concentration of a specific chemical of concern in soil to the amount absorbed via dermal contact. A dermal RAF of 0.02 was chosen for benzo(a)pyrene based upon an analysis of four studies of PAH absorption from soils (Magee *et al.*, 1996). The MADEP has accepted the dermal RAF of 0.02 for use in human health assessments. The EPA-accepted RAF for benzo(a)pyrene in soil is 0.13 and is based upon a study of dermal absorption of benzo(a)pyrene from soil to monkey skin; however, the same

study determined a RAF of 0.014 for human skin (Wester *et al.*, 1990). The dermal RAF for crumb rubber is likely to be less than that for soil as PAHs absorb very strongly to high organic carbon content in crumb rubber; a dermal RAF of 0.0011 was determined for the absorption of benzo(a)pyrene in lamp black to human skin (Stroo *et al.*, 2000). The USEPA-recommended dermal RAF of 0.03 for arsenic was used in this study.

IR_i: Daily Soil Ingestion Rate at the Athletic Playing Field

A daily soil ingestion rate of 100 mg/day for young children (ages less than 6 years) was chosen based upon a reported 95th percentile soil ingestion rate of 106 mg/day when measured over a 365-day period (Stanek and Calabrese, 2000). A daily soil ingestion rate of 50 mg/day for older children and adults was chosen for this analysis based upon a reported upper-75th percentile soil ingestion rate of 49 mg/day (Stanek *et al.*, 1997). The daily soil ingestion rate at the athletic playing field was calculated by multiplying the daily soil ingestion rate by the amount of time spent at the athletic playing field divided by 16 hours per day. This is based upon the assumption that soil ingestion is proportional to the amount of time spent at a given locale, and only occurs during waking hours, which comprise 16 hours per day (OEHHA, 2004). Soil-pica behavior (the recurrent ingestion of unusually high amounts of soil; 1,000 to >5,000 mg/day) and geophagy (the intentional ingestion of earth as a cultural practice; 50,000 mg/day) are not considered in this study.

EF_i: Exposure Frequency

The exposure frequency is number of days per year that the soccer player practices or plays on the athletic playing field. The 95th percentile value for the number of hours played per year for an enthusiastic soccer player was chosen for this analysis (OEHHA, 2010). The number of daily practices/games per year was determined by dividing the total hours played by the US Youth Soccer recommended play lengths (under-6 players practice 0.75 hours, under-8 players practice 1 hour, under-10 players practice 1.25 hours, and older players practice for 1.5 hours) (USYS, 2015).

ED: Exposure Duration

This analysis was performed using age-specific exposure factors with an exposure duration of 1 year for every year from ages 4 to until 30. An initial exposure age of 4 years was chosen as U-5 (age 4) is typically the youngest age group for league play in the United States.

BW_i: Body Weight

This analysis was performed using the USEPA-recommended values for body weight obtained from analysis of the National Health and Nutrition Examination Survey (NHANES) data from 1999-2006 (USEPA, 2008).

AT: Averaging Time

This analysis was performed using the USEPA-recommended averaging time of 25,550 days (70 years).

SF_{oral}: Oral Cancer Slope Factors

This analysis was performed using the USEPA Integrated Risk Information System (IRIS) oral cancer slope factors of 7.3 $(mg/kg\text{-}day)^{-1}$ for benzo(a)pyrene and 1.5 $(mg/kg\text{-}day)^{-1}$ for arsenic.

$ADAF_i$: Age Dependent Adjustment Factor

This analysis was performed using the USEPA-recommended age dependent adjustment factors (ADAFs) for assessing susceptibility of early-life exposure to carcinogens that act via a mutagenic mode of action (USEPA, 2005). An ADAF of 3 was used for soccer players for ages 4 to 16 and an ADAF of 1 for ages 16 to 30.

SA_i: Exposed Body Surface Area

The USEPA-recommended mean surface areas by body part were used in this analysis (USEPA, 2008). Surface areas of the face are assumed to be 1/3 that of the head, forearms are assumed to represent 45 percent of the arms, and lower legs are assumed to represent 40 percent of the legs (USEPA, 2004).

AF_i: Soil Adherence Factor (Weighted)

The adherence factor (AF) describes the amount of solid material that adheres to the skin per unit of surface area. The USEPA recommends that scenario-specific adherence factors be weighted according to the body parts exposed (USEPA, 2004). Adherence factors for three soccer scenarios (Kissel *et al.*, 1996) and two rugby scenarios (Holmes *et al.*, 1999) were normalized to a per hour exposure and then geometrically averaged to generate body part specific adherence factors. For each age, a weighted soil adherence factor is calculated by multiplying the body part specific soil adherence factors by the surface area of the body part and then normalized to the total body surface area.

PROPOSED GUIDELINE VALUES FOR CARCINOGENIC PAHS IN SYNTHETIC TURF INFILL

Although the USEPA range of acceptable risk lies between 1 in 1,000,000 and 1 in 10,000, a risk of 1 in 100,000 is considered generally to be the maximum risk tolerated by state and federal public health agencies. For a soccer-specific recreational use scenario, a target risk level of 1 in 1,000,000 is equivalent to an exposure point concentration of 4.9 mg/kg B(a)p-TEQ and a target risk of 1 in 100,000 is equivalent to an exposure point concentration of 49 mg/kg B(a)p-TEQ. A guideline value of 10 mg/kg B(a)p-TEQ for carcinogenic PAHs in synthetic turf infill is equivalent to a target risk level of 1 in 500,000, a risk level that is more conservative than the 1 in 100,000 risk level used by the State of California to generate Proposition 65 no significant risk levels (NSRLs).

REFERENCES

Holmes, Jr., King K., Jeffry H. Sirai, Karen Y. Richter, and John C. Kissel, 1999. Field Measurement of Dermal Soil Loadings in Occupational and Recreational Activities, Environmental Research Section A 80:148-157.

Kissel, John C., Karen Y. Richter, and Richard A. Fenske, 1996. Field Measurement of Dermal Soil Loading Attributable to Various Activities: Implications for Exposure Assessment, Risk Analysis 16(1):115-125.

Magee, Brian, Paul Anderson, and David Burmaster, 1996. Absorption Adjustment Factor (AAF) Distributions for Polycyclic Aromatic Hydrocarbons (PAHs), Human and Ecological Risk Assessment 2(4):841-873.

Massachusetts Department of Environmental Protection (MassDEP), 2015. Massachusetts Contingency Plan, March.

Office of Environmental Health Hazard Assessment (OEHHA), 2004. Guidance for Assessing Exposures and Health Risks at Existing and Proposed School Sites – Final Report, February.

OEHHA, 2010. Safety Study of Artificial Turf Containing Crumb Rubber Infill Made from Recycled Tires: Measurements of Chemicals and Particulates in the Air, Bacteria in the Turf, and Skin Abrasions Caused by Contact with the Surface, report prepared for California Department of Resources Recycling and Recovery (CalRecycle), DRRR-2010-009, October.

Stanek III, Edward J., Edward J. Calabrese, Ramon Barnes, and Penelope Pekow, 1997. Soil Ingestion in Adults – Results of a Second Pilot Study, Ecotoxicology and Environmental Safety 36:249-257.

Stanek III, Edward J. and Edward J. Calabrese, 2000. Daily Soil Ingestion Rates for Children at a Superfund Site, Risk Analysis 20(5):627-635.

Stroo, Hans F., Ron Jensen, Raymond C. Loehr, David V. Nakles, Anne Fairbrother, and Cris B. Liban, 2000. Environmentally Acceptable Endpoints for PAHs at a Manufactured Gas Plant Site, Environmental Science & Technology 34(18):3831-3836.

United States Environmental Protection Agency (USEPA), 1993. Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons, EPA/600/R-93/089, July.

USEPA, 2004. Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) – Final, EPA/540/R/99/005, July.

USEPA, 2005. Guidance on Selecting Age Groups for Monitoring and Assessing Childhood Exposures to Environmental Contaminants, EPA/630/P-03/003F, November.

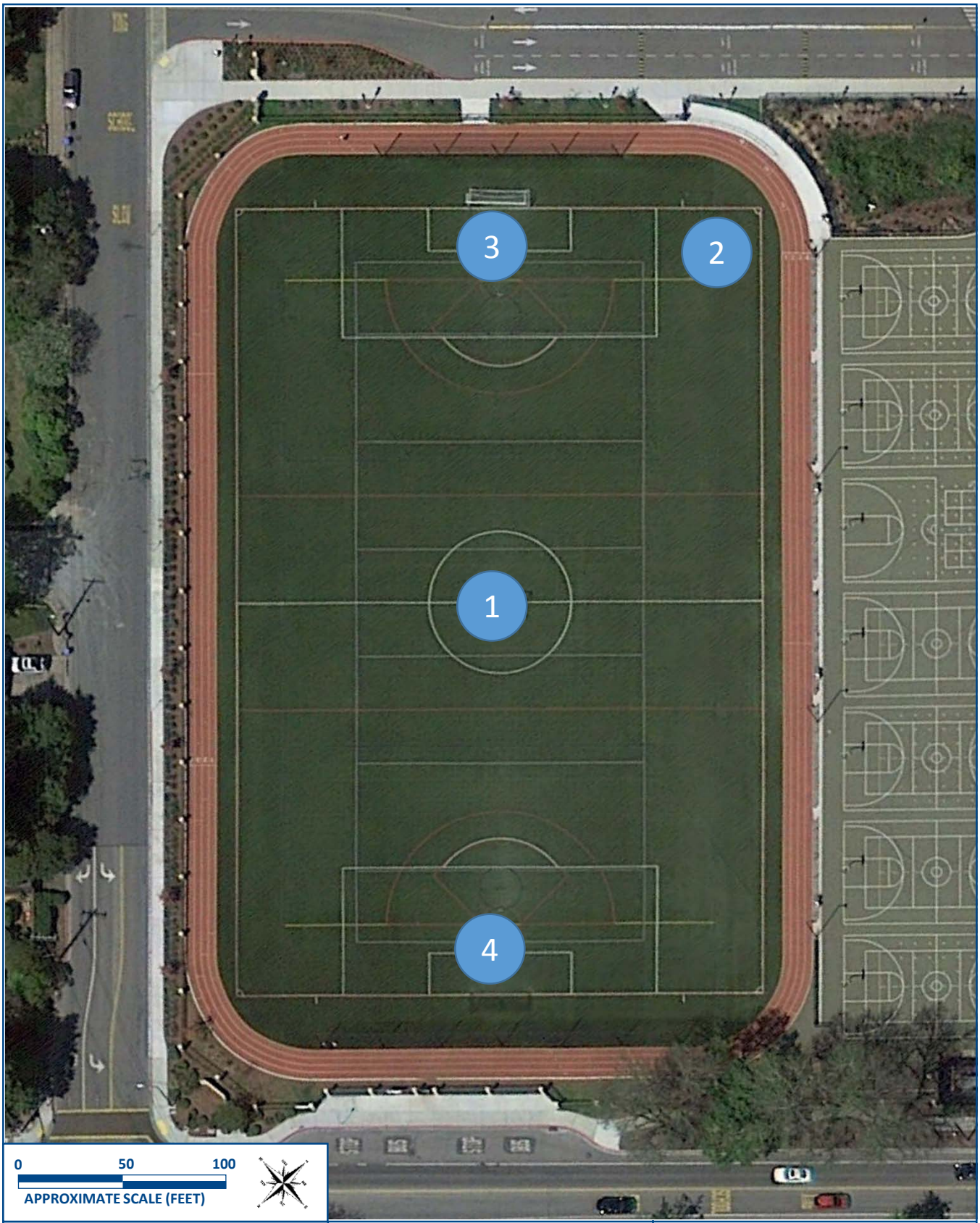
USEPA, 2008. Child-Specific Exposure Factors Handbook, EPA/600/R-06/096F, September.

USEPA, 2009. A Scoping-Level Field Monitoring Study of Synthetic Turf Fields and Playgrounds, EPA/600/R-09/135, November.

USEPA, 2012. Recommendations for Default Value for Relative Bioavailability of Arsenic in Soil, OSWER 9200.1-113, December.

United States Youth Soccer (USYS), 2015. Frequently Asked Questions, downloaded from http://www.usyouthsoccer.org/aboutus/FAQ on March 15, 2015.

Wester, Ronald C., Howard I. Maibach, Daniel A.W. Bucks, Lena Sedik, Joseph Melendres, Cheng Liao, and Stephen DiZio, 1990. Percutaneous Absorption of [14C]DDT and [14C]Benz(a)pyrene from Soil, Fundamental and Applied Toxicology 15:510-516.



0 50 100

APPROXIMATE SCALE (FEET)

MILLENNIUM
CONSULTING ASSOCIATES
A MECA Consulting, Inc. Company

Sample Collection Locations

Hillview Middle School
1100 Elder Avenue
Menlo Park, CA 94025

Project Number	13054.2000
Figure Number	Figure 1
Date	October 2017
Drawn By	DMT

TABLE 1 - Detected Target Analytes Compareed to Guideline Values for the Protection of Human Health

Analyte Type	Metal	Crumb Rubber (mg/kg)	Guideline Value (mg/kg)	Basis for Guideline Value	Result
Metal	Antimony	0.55	31	USEPA RSL	Pass
Metal	Cadmium	0.65	5.2	DTSC-modified RSL	Pass
Metal	Chromium (Total)	0.50	36,000	DTSC-modified RSL	Pass
Metal	Cobalt	66	660	DTSC CHHSL	Pass
Metal	Copper	24	3,100	USEPA RSL	Pass
Metal	Lead	10	80	DTSC-modified RSL	Pass
Metal	Mercury	0.070	23	DTSC-modified RSL	Pass
Metal	Nickel	0.98	490	DTSC-modified RSL	Pass
Metal	Zinc	6,600	23,000	USEPA RSL	Pass
VOC	MIBK	0.023	33,000	USEPA RSL	Pass
SVOC	Diethyl Phthalate	0.030	51,000	USEPA RSL	Pass
PAH	BaP(TEQ)	0.016	10	Risk-Based Value	Pass

Notes and Abbreviations

BaP(TEQ): Benzo(a)pyrene Toxic Equivalent

CHHSL: California Human Health Screening Level

DTSC: California Department of Toxic Substances Control

mg/kg: milligram per kilogram.

MIBK: 4-Methyl-2-pentanone

PAH: Polycyclic Aromatic Hydrocarbon

RSL: Regional Screening Level

SVOC: Semi-Volatile Organic Compound

USEPA: United States Environmental Protection Agency

VOC: Volatile Organic Compound

TABLE 2 - Additional Cancer Risk for a Soccer Recreational Use Scenario: Comparison of Synthetic Turf With Crumb Rubber Infill to Various Surface Soils

Soil/Infill Type	Description	SOURCE	B(a)p-TEQ (mg/kg)	Arsenic (mg/kg)	ACR (B(a)p-TEQ)	ACR (Arsenic)	ACR Cumulative
Urban Surface Soil	Springfield, MA	Bradley *et al.* , 1994	4.5	9.2	9.6E-07	3.6E-07	1.3E-06
Urban Surface Soil	Boston, MA	Bradley *et al.* , 1994	4.6	5.6	9.8E-07	2.2E-07	1.2E-06
Urban Surface Soil	Chicago, IL	USGS, 2003	2.1	16	4.4E-07	6.2E-07	1.1E-06
Rural Surface Soil	WA State Parks (Open)	Hart Crowser, 2011a	3.4	4.5	7.2E-07	1.8E-07	8.9E-07
Urban Surface Soil	Chattanooga, TN	Hussar *et al.* , 2012	3.0	5.1	6.5E-07	2.0E-07	8.5E-07
Urban Surface Soil	Providence, RI	Bradley *et al.* , 1994	2.9	4.3	6.2E-07	1.7E-07	7.9E-07
Rural Surface Soil	ME Background	AMEC, 2012	1.3	8.5	2.8E-07	3.3E-07	6.1E-07
Urban Surface Soil	ME Background	AMEC, 2012	1.4	7.3	3.1E-07	2.9E-07	6.0E-07
Urban Surface Soil	NJ Piedmont	BEM, 1997	1.1	8.6	2.2E-07	3.4E-07	5.6E-07
Urban Surface Soil	Western NY	EPRI, 2003	1.2	7.5	2.5E-07	3.0E-07	5.5E-07
Urban Surface Soil	NJ - Valley and Ridge	BEM, 1998	0.31	10	6.6E-08	4.1E-07	4.7E-07
Rural Surface Soil	Terre Haute, IN	IDEP, 2014	0.086	8.7	1.8E-08	3.4E-07	3.6E-07
Rural Surface Soil	Deleware	DNREC, 2012	0.460	6.1	9.8E-08	2.4E-07	3.4E-07
Rural Surface Soil	WA State Parks (Forested)	Hart Crowser, 2011a	1.1	2.8	2.3E-07	1.1E-07	3.4E-07
Urban Surface Soil	CA Background (North)	ENVIRON, 2002b	0.14	6.4	2.9E-08	2.5E-07	2.8E-07
Urban Surface Soil	Seattle, WA	WSDOE, 2011	0.14	5.6	3.0E-08	2.2E-07	2.5E-07
Rural Surface Soil	NJ - Valley and Ridge	BEM, 2002	0.031	5.5	6.6E-09	2.2E-07	2.3E-07
Urban Surface Soil	CA Background (South)	ENVIRON, 2002a	0.091	4.9	1.9E-08	1.9E-07	2.1E-07
Rural Surface Soil	NJ - Coastal Plain	BEM, 2002	0.040	1.6	8.5E-09	6.3E-08	7.2E-08
Crumb Rubber	**Hillview Middle School**	**This Report**	**0.058**	**0.070**	**1.2E-08**	**2.8E-09**	**1.5E-08**

McCampbell Analytical, Inc.
"When Quality Counts"

Analytical Report

WorkOrder: 1709887

Report Created for: MECA Consulting, Inc.

401 Roland Way, Ste. 250
Oakland, CA 94621

Project Contact: David Teter
Project P.O.: DMT20170921-1
Project Name: DMT20170921-1; Menlo Park Cr

Project Received: 09/21/2017

Analytical Report reviewed & approved for release on 09/27/2017 by:

Angela Rydelius,
Laboratory Manager

McCampbell Analytical, Inc.
"When Quality Counts"
1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Glossary of Terms & Qualifier Definitions

Client: MECA Consulting, Inc.
Project: DMT20170921-1; Menlo Park Cr
WorkOrder: 1709887

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

McCampbell Analytical, Inc.
"When Quality Counts"
1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Glossary of Terms & Qualifier Definitions

Client: MECA Consulting, Inc.
Project: DMT20170921-1; Menlo Park Cr
WorkOrder: 1709887

Analytical Qualifiers

B	Analyte detected in the associated Method Blank and in the sample
J	Result is less than the RL/ML but greater than the MDL. The reported concentration is an estimated value.
S	Surrogate spike recovery outside accepted recovery limits
c2	Surrogate recovery outside of the control limits due to matrix interference.

Quality Control Qualifiers

F1	MS/MSD recovery and/or RPD is out of acceptance criteria; LCS validates the prep batch.

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1709887
Date Received:	9/21/17 14:54	**Extraction Method:**	SW3060A
Date Prepared:	9/22/17	**Analytical Method:**	SW7199
Project:	DMT20170921-1; Menlo Park Cr	**Unit:**	mg/Kg

Hexavalent chromium by Alkaline Digestion and IC Analysis

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
1,2,3,4 Comp	1709887-001A	Soil	09/20/2017 15:50	IC2 17092301.CHW	145951

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Hexavalent chromium	**0.17**	JB	0.10	0.20	1	09/23/2017 00:01

Analyst(s): AO

McCampbell Analytical, Inc.
"When Quality Counts"
1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1709887
Date Received:	9/21/17 14:54	**Extraction Method:**	SW3550B/3630C
Date Prepared:	9/21/17	**Analytical Method:**	SW8082
Project:	DMT20170921-1; Menlo Park Cr	**Unit:**	mg/kg

Polychlorinated Biphenyls (PCBs) Aroclors w/ Column Style Clean-up

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
1,2,3,4 Comp	1709887-001A	Soil	09/20/2017 15:50	GC20 09221732.D	145954

Analytes	Result	MDL	RL	DF	Date Analyzed
Aroclor1016	ND	0.010	0.10	1	09/23/2017 15:57
Aroclor1221	ND	0.022	0.10	1	09/23/2017 15:57
Aroclor1232	ND	0.013	0.10	1	09/23/2017 15:57
Aroclor1242	ND	0.013	0.10	1	09/23/2017 15:57
Aroclor1248	ND	0.0080	0.10	1	09/23/2017 15:57
Aroclor1254	ND	0.014	0.10	1	09/23/2017 15:57
Aroclor1260	ND	0.012	0.10	1	09/23/2017 15:57
PCBs, total	ND	0.0080	0.10	1	09/23/2017 15:57

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	90	70-130	09/23/2017 15:57

Analyst(s): KX

McCampbell Analytical, Inc.
"When Quality Counts"
1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1709887
Date Received:	9/21/17 14:54	**Extraction Method:**	SW5030B
Date Prepared:	9/21/17	**Analytical Method:**	SW8260B
Project:	DMT20170921-1; Menlo Park Cr	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
1,2,3,4 Comp	1709887-001A	Soil	09/20/2017 15:50	GC28 09261716.D	145864

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Acetone	**0.12**	J	0.078	0.20	1	09/26/2017 17:04
tert-Amyl methyl ether (TAME)	ND		0.0020	0.010	1	09/26/2017 17:04
Benzene	ND		0.0032	0.010	1	09/26/2017 17:04
Bromobenzene	ND		0.0034	0.010	1	09/26/2017 17:04
Bromochloromethane	ND		0.0030	0.010	1	09/26/2017 17:04
Bromodichloromethane	ND		0.0024	0.010	1	09/26/2017 17:04
Bromoform	ND		0.0016	0.010	1	09/26/2017 17:04
Bromomethane	ND		0.0040	0.010	1	09/26/2017 17:04
2-Butanone (MEK)	**0.018**	J	0.011	0.040	1	09/26/2017 17:04
t-Butyl alcohol (TBA)	ND		0.011	0.10	1	09/26/2017 17:04
n-Butyl benzene	ND		0.0070	0.010	1	09/26/2017 17:04
sec-Butyl benzene	ND		0.0068	0.010	1	09/26/2017 17:04
tert-Butyl benzene	ND		0.0060	0.010	1	09/26/2017 17:04
Carbon Disulfide	ND		0.0034	0.010	1	09/26/2017 17:04
Carbon Tetrachloride	ND		0.0034	0.010	1	09/26/2017 17:04
Chlorobenzene	ND		0.0036	0.010	1	09/26/2017 17:04
Chloroethane	ND		0.0032	0.010	1	09/26/2017 17:04
Chloroform	ND		0.0032	0.010	1	09/26/2017 17:04
Chloromethane	ND		0.0034	0.010	1	09/26/2017 17:04
2-Chlorotoluene	ND		0.0044	0.010	1	09/26/2017 17:04
4-Chlorotoluene	ND		0.0042	0.010	1	09/26/2017 17:04
Dibromochloromethane	ND		0.0022	0.010	1	09/26/2017 17:04
1,2-Dibromo-3-chloropropane	ND		0.0024	0.0080	1	09/26/2017 17:04
1,2-Dibromoethane (EDB)	ND		0.0026	0.0080	1	09/26/2017 17:04
Dibromomethane	ND		0.0028	0.010	1	09/26/2017 17:04
1,2-Dichlorobenzene	ND		0.0028	0.010	1	09/26/2017 17:04
1,3-Dichlorobenzene	ND		0.0036	0.010	1	09/26/2017 17:04
1,4-Dichlorobenzene	ND		0.0036	0.010	1	09/26/2017 17:04
Dichlorodifluoromethane	ND		0.0022	0.010	1	09/26/2017 17:04
1,1-Dichloroethane	ND		0.0034	0.010	1	09/26/2017 17:04
1,2-Dichloroethane (1,2-DCA)	ND		0.0028	0.0080	1	09/26/2017 17:04
1,1-Dichloroethene	ND		0.0034	0.010	1	09/26/2017 17:04
cis-1,2-Dichloroethene	ND		0.0030	0.010	1	09/26/2017 17:04
trans-1,2-Dichloroethene	ND		0.0032	0.010	1	09/26/2017 17:04
1,2-Dichloropropane	ND		0.0028	0.010	1	09/26/2017 17:04
1,3-Dichloropropane	ND		0.0032	0.010	1	09/26/2017 17:04
2,2-Dichloropropane	ND		0.0026	0.010	1	09/26/2017 17:04

(Cont.)

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1709887
Date Received:	9/21/17 14:54	**Extraction Method:**	SW5030B
Date Prepared:	9/21/17	**Analytical Method:**	SW8260B
Project:	DMT20170921-1; Menlo Park Cr	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
1,2,3,4 Comp	1709887-001A	Soil	09/20/2017 15:50	GC28 09261716.D	145864

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
1,1-Dichloropropene	ND		0.0036	0.010	1	09/26/2017 17:04
cis-1,3-Dichloropropene	ND		0.0030	0.010	1	09/26/2017 17:04
trans-1,3-Dichloropropene	ND		0.0028	0.010	1	09/26/2017 17:04
Diisopropyl ether (DIPE)	ND		0.0028	0.010	1	09/26/2017 17:04
Ethylbenzene	ND		0.0040	0.010	1	09/26/2017 17:04
Ethyl tert-butyl ether (ETBE)	ND		0.0026	0.010	1	09/26/2017 17:04
Freon 113	ND		0.0032	0.010	1	09/26/2017 17:04
Hexachlorobutadiene	ND		0.010	0.010	1	09/26/2017 17:04
Hexachloroethane	ND		0.0050	0.010	1	09/26/2017 17:04
2-Hexanone	ND		0.0050	0.010	1	09/26/2017 17:04
Isopropylbenzene	ND		0.0044	0.010	1	09/26/2017 17:04
4-Isopropyl toluene	ND		0.0062	0.010	1	09/26/2017 17:04
Methyl-t-butyl ether (MTBE)	ND		0.0026	0.010	1	09/26/2017 17:04
Methylene chloride	ND		0.0072	0.010	1	09/26/2017 17:04
4-Methyl-2-pentanone (MIBK)	**0.023**		0.0016	0.010	1	09/26/2017 17:04
Naphthalene	ND		0.0012	0.010	1	09/26/2017 17:04
n-Propyl benzene	ND		0.0058	0.010	1	09/26/2017 17:04
Styrene	ND		0.0028	0.010	1	09/26/2017 17:04
1,1,1,2-Tetrachloroethane	ND		0.0032	0.010	1	09/26/2017 17:04
1,1,2,2-Tetrachloroethane	ND		0.0026	0.010	1	09/26/2017 17:04
Tetrachloroethene	ND		0.0046	0.010	1	09/26/2017 17:04
Toluene	ND		0.0044	0.010	1	09/26/2017 17:04
1,2,3-Trichlorobenzene	ND		0.0014	0.010	1	09/26/2017 17:04
1,2,4-Trichlorobenzene	ND		0.0022	0.010	1	09/26/2017 17:04
1,1,1-Trichloroethane	ND		0.0036	0.010	1	09/26/2017 17:04
1,1,2-Trichloroethane	ND		0.0032	0.010	1	09/26/2017 17:04
Trichloroethene	ND		0.0034	0.010	1	09/26/2017 17:04
Trichlorofluoromethane	ND		0.0032	0.010	1	09/26/2017 17:04
1,2,3-Trichloropropane	ND		0.0038	0.010	1	09/26/2017 17:04
1,2,4-Trimethylbenzene	ND		0.0048	0.010	1	09/26/2017 17:04
1,3,5-Trimethylbenzene	ND		0.0054	0.010	1	09/26/2017 17:04
Vinyl Chloride	ND		0.0030	0.010	1	09/26/2017 17:04
Xylenes, Total	ND		0.0050	0.010	1	09/26/2017 17:04

(Cont.)

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1709887
Date Received:	9/21/17 14:54	**Extraction Method:**	SW5030B
Date Prepared:	9/21/17	**Analytical Method:**	SW8260B
Project:	DMT20170921-1; Menlo Park Cr	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
1,2,3,4 Comp	1709887-001A	Soil	09/20/2017 15:50	GC28 09261716.D	145864

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Qualifiers**		**Limits**		
Dibromofluoromethane	101			82-136		09/26/2017 17:04
Toluene-d8	115			92-139		09/26/2017 17:04
4-BFB	87			82-135		09/26/2017 17:04
Benzene-d6	61			55-122		09/26/2017 17:04
Ethylbenzene-d10	54	S		58-141		09/26/2017 17:04
1,2-DCB-d4	50	S		51-107		09/26/2017 17:04

Analyst(s): AK Analytical Comments: c2

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1709887
Date Received:	9/21/17 14:54	**Extraction Method:**	SW3550B
Date Prepared:	9/22/17	**Analytical Method:**	SW8270C-SIM
Project:	DMT20170921-1; Menlo Park Cr	**Unit:**	mg/kg

Polynuclear Aromatic Hydrocarbons (PAHs / PNAs) using SIM Mode

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
1,2,3,4 Comp	1709887-001A	Soil	09/20/2017 15:50	GC35 09251715.D	145963

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Acenaphthene	ND		0.026	0.10	10	09/25/2017 15:45
Acenaphthylene	ND		0.034	0.10	10	09/25/2017 15:45
Anthracene	ND		0.029	0.10	10	09/25/2017 15:45
Benzo (a) anthracene	ND		0.017	0.10	10	09/25/2017 15:45
Benzo (a) pyrene	ND		0.027	0.10	10	09/25/2017 15:45
Benzo (b) fluoranthene	**0.15**		0.015	0.10	10	09/25/2017 15:45
Benzo (g,h,i) perylene	**0.26**		0.033	0.10	10	09/25/2017 15:45
Benzo (k) fluoranthene	**0.051**	J	0.016	0.10	10	09/25/2017 15:45
Chrysene	ND		0.024	0.10	10	09/25/2017 15:45
Dibenzo (a,h) anthracene	ND		0.050	0.10	10	09/25/2017 15:45
Fluoranthene	**1.1**		0.040	0.10	10	09/25/2017 15:45
Fluorene	ND		0.060	0.10	10	09/25/2017 15:45
Indeno (1,2,3-cd) pyrene	ND		0.049	0.10	10	09/25/2017 15:45
1-Methylnaphthalene	ND		0.029	0.10	10	09/25/2017 15:45
2-Methylnaphthalene	ND		0.020	0.10	10	09/25/2017 15:45
Naphthalene	ND		0.016	0.10	10	09/25/2017 15:45
Phenanthrene	**0.16**		0.035	0.10	10	09/25/2017 15:45
Pyrene	**2.9**		0.045	0.10	10	09/25/2017 15:45

Surrogates	REC (%)	Limits	
1-Fluoronaphthalene	118	30-130	09/25/2017 15:45
2-Fluorobiphenyl	121	30-130	09/25/2017 15:45

Analyst(s): REB

McCampbell Analytical, Inc.
"When Quality Counts"
1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1709887
Date Received:	9/21/17 14:54	**Extraction Method:**	SW3550B/3640A
Date Prepared:	9/22/17	**Analytical Method:**	SW8270C
Project:	DMT20170921-1; Menlo Park Cr	**Unit:**	mg/Kg

Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
1,2,3,4 Comp	1709887-001A	Soil	09/20/2017 15:50	GC21 09261709.D	145985

Analytes	Result	MDL	RL	DF	Date Analyzed
Acenaphthene	ND	1.4	2.5	10	09/26/2017 13:06
Acenaphthylene	ND	1.4	2.5	10	09/26/2017 13:06
Acetochlor	ND	2.5	2.5	10	09/26/2017 13:06
Anthracene	ND	1.4	2.5	10	09/26/2017 13:06
Benzidine	ND	2.3	13	10	09/26/2017 13:06
Benzo (a) anthracene	ND	0.50	0.50	10	09/26/2017 13:06
Benzo (a) pyrene	ND	0.025	0.025	10	09/26/2017 13:06
Benzo (b) fluoranthene	ND	0.12	0.12	10	09/26/2017 13:06
Benzo (g,h,i) perylene	ND	1.5	2.5	10	09/26/2017 13:06
Benzo (k) fluoranthene	ND	1.6	2.5	10	09/26/2017 13:06
Benzyl Alcohol	ND	5.1	13	10	09/26/2017 13:06
1,1-Biphenyl	ND	1.5	2.5	10	09/26/2017 13:06
Bis (2-chloroethoxy) Methane	ND	1.4	2.5	10	09/26/2017 13:06
Bis (2-chloroethyl) Ether	ND	0.012	0.012	10	09/26/2017 13:06
Bis (2-chloroisopropyl) Ether	ND	0.012	0.012	10	09/26/2017 13:06
Bis (2-ethylhexyl) Adipate	ND	2.5	2.5	10	09/26/2017 13:06
Bis (2-ethylhexyl) Phthalate	ND	1.3	2.5	10	09/26/2017 13:06
4-Bromophenyl Phenyl Ether	ND	1.6	2.5	10	09/26/2017 13:06
Butylbenzyl Phthalate	ND	1.3	2.5	10	09/26/2017 13:06
4-Chloroaniline	ND	0.012	0.012	10	09/26/2017 13:06
4-Chloro-3-methylphenol	ND	1.2	2.5	10	09/26/2017 13:06
2-Chloronaphthalene	ND	1.6	2.5	10	09/26/2017 13:06
2-Chlorophenol	ND	0.050	0.050	10	09/26/2017 13:06
4-Chlorophenyl Phenyl Ether	ND	1.5	2.5	10	09/26/2017 13:06
Chrysene	ND	1.4	2.5	10	09/26/2017 13:06
Dibenzo (a,h) anthracene	ND	0.025	0.025	10	09/26/2017 13:06
Dibenzofuran	ND	1.3	2.5	10	09/26/2017 13:06
Di-n-butyl Phthalate	ND	1.3	2.5	10	09/26/2017 13:06
1,2-Dichlorobenzene	ND	1.2	2.5	10	09/26/2017 13:06
1,3-Dichlorobenzene	ND	1.4	2.5	10	09/26/2017 13:06
1,4-Dichlorobenzene	ND	0.25	0.25	10	09/26/2017 13:06
3,3-Dichlorobenzidine	ND	0.050	0.050	10	09/26/2017 13:06
2,4-Dichlorophenol	ND	0.025	0.025	10	09/26/2017 13:06
Diethyl Phthalate	**0.030**	0.025	0.025	10	09/26/2017 13:06
2,4-Dimethylphenol	ND	0.25	0.25	10	09/26/2017 13:06
Dimethyl Phthalate	ND	0.025	0.025	10	09/26/2017 13:06
4,6-Dinitro-2-methylphenol	ND	1.3	13	10	09/26/2017 13:06

(Cont.)

NELAP 4033ORELAP

Angela Rydelius, Lab Manager

McCampbell Analytical, Inc.
"When Quality Counts"
1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1709887
Date Received:	9/21/17 14:54	**Extraction Method:**	SW3550B/3640A
Date Prepared:	9/22/17	**Analytical Method:**	SW8270C
Project:	DMT20170921-1; Menlo Park Cr	**Unit:**	mg/Kg

Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
1,2,3,4 Comp	1709887-001A	Soil	09/20/2017 15:50	GC21 09261709.D	145985

Analytes	Result	MDL	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	6.2	6.2	10	09/26/2017 13:06
2,4-Dinitrotoluene	ND	0.25	0.25	10	09/26/2017 13:06
2,6-Dinitrotoluene	ND	1.4	2.5	10	09/26/2017 13:06
Di-n-octyl Phthalate	ND	1.4	5.0	10	09/26/2017 13:06
1,2-Diphenylhydrazine	ND	1.6	2.5	10	09/26/2017 13:06
Fluoranthene	ND	1.3	2.5	10	09/26/2017 13:06
Fluorene	ND	1.4	2.5	10	09/26/2017 13:06
Hexachlorobenzene	ND	0.25	0.25	10	09/26/2017 13:06
Hexachlorobutadiene	ND	0.25	0.25	10	09/26/2017 13:06
Hexachlorocyclopentadiene	ND	7.3	13	10	09/26/2017 13:06
Hexachloroethane	ND	1.4	2.5	10	09/26/2017 13:06
Indeno (1,2,3-cd) pyrene	ND	0.12	0.12	10	09/26/2017 13:06
Isophorone	ND	1.2	2.5	10	09/26/2017 13:06
2-Methylnaphthalene	ND	0.25	0.25	10	09/26/2017 13:06
2-Methylphenol (o-Cresol)	ND	1.4	2.5	10	09/26/2017 13:06
3 & 4-Methylphenol (m,p-Cresol)	ND	1.2	2.5	10	09/26/2017 13:06
Naphthalene	ND	0.025	0.025	10	09/26/2017 13:06
2-Nitroaniline	ND	6.2	13	10	09/26/2017 13:06
3-Nitroaniline	ND	5.9	13	10	09/26/2017 13:06
4-Nitroaniline	ND	5.5	13	10	09/26/2017 13:06
Nitrobenzene	ND	1.4	2.5	10	09/26/2017 13:06
2-Nitrophenol	ND	6.4	13	10	09/26/2017 13:06
4-Nitrophenol	ND	4.1	13	10	09/26/2017 13:06
N-Nitrosodiphenylamine	ND	1.6	2.5	10	09/26/2017 13:06
N-Nitrosodi-n-propylamine	ND	0.12	0.12	10	09/26/2017 13:06
Pentachlorophenol	ND	3.2	13	10	09/26/2017 13:06
Phenanthrene	ND	1.4	2.5	10	09/26/2017 13:06
Phenol	ND	0.050	0.050	10	09/26/2017 13:06
Pyrene	ND	1.3	2.5	10	09/26/2017 13:06
Pyridine	ND	2.5	2.5	10	09/26/2017 13:06
1,2,4-Trichlorobenzene	ND	1.4	2.5	10	09/26/2017 13:06
2,4,5-Trichlorophenol	ND	0.12	0.12	10	09/26/2017 13:06
2,4,6-Trichlorophenol	ND	0.12	0.12	10	09/26/2017 13:06

(Cont.)

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1709887
Date Received:	9/21/17 14:54	**Extraction Method:**	SW3550B/3640A
Date Prepared:	9/22/17	**Analytical Method:**	SW8270C
Project:	DMT20170921-1; Menlo Park Cr	**Unit:**	mg/Kg

Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
1,2,3,4 Comp	1709887-001A	Soil	09/20/2017 15:50	GC21 09261709.D	145985

Analytes	Result	MDL	RL	DF	Date Analyzed
Surrogates	**REC (%)**		**Limits**		
2-Fluorophenol	89		30-130		09/26/2017 13:06
Phenol-d5	84		30-130		09/26/2017 13:06
Nitrobenzene-d5	73		30-130		09/26/2017 13:06
2-Fluorobiphenyl	78		30-130		09/26/2017 13:06
2,4,6-Tribromophenol	78		16-130		09/26/2017 13:06
4-Terphenyl-d14	86		30-130		09/26/2017 13:06

Analyst(s): REB

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1709887
Date Received:	9/21/17 14:54	**Extraction Method:**	SW3050B
Date Prepared:	9/21/17	**Analytical Method:**	SW6020
Project:	DMT20170921-1; Menlo Park Cr	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
1,2,3,4 Comp	1709887-001A	Soil	09/20/2017 15:50	ICP-MS3 121SMPL.D	145893

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Antimony	**0.55**		0.094	0.50	1	09/25/2017 21:06
Arsenic	ND		0.14	0.50	1	09/25/2017 21:06
Barium	**3.6**	J	0.97	5.0	1	09/25/2017 21:06
Beryllium	ND		0.072	0.50	1	09/25/2017 21:06
Cadmium	**0.65**		0.058	0.25	1	09/25/2017 21:06
Chromium	**0.50**		0.092	0.50	1	09/25/2017 21:06
Cobalt	**66**		0.056	0.50	1	09/25/2017 21:06
Copper	**24**		0.069	0.50	1	09/25/2017 21:06
Lead	**10**		0.094	0.50	1	09/25/2017 21:06
Mercury	**0.070**		0.0050	0.050	1	09/25/2017 21:06
Molybdenum	ND		0.23	0.50	1	09/25/2017 21:06
Nickel	**0.98**		0.072	0.50	1	09/25/2017 21:06
Selenium	ND		0.13	0.50	1	09/25/2017 21:06
Silver	ND		0.055	0.50	1	09/25/2017 21:06
Thallium	ND		0.10	0.50	1	09/25/2017 21:06
Vanadium	**0.35**	J	0.064	0.50	1	09/25/2017 21:06
Zinc	**6600**		28	100	20	09/22/2017 16:46

Surrogates	REC (%)	Limits	
Terbium	80	70-130	09/25/2017 21:06

Analyst(s): JC

McCampbell Analytical, Inc.
"When Quality Counts"
1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1709887
Date Prepared:	9/21/17	**BatchID:**	145951
Date Analyzed:	9/21/17	**Extraction Method:**	SW3060A
Instrument:	IC2	**Analytical Method:**	SW7199
Matrix:	Soil	**Unit:**	mg/Kg
Project:	DMT20170921-1; Menlo Park Cr	**Sample ID:**	MB/LCS-145951 1709889-001AMS/MSD

QC Summary Report for SW7199 (Hexavalent chromium)

Analyte	MB Result	LCS Result	MDL	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Hexavalent chromium	0.104,J	18.7	0.10	0.20	20	-	94	70-130

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Hexavalent chromium	16.4	16.6	20	ND	82	83	70-130	1.14	20

McCampbell Analytical, Inc.
"When Quality Counts"
1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1709887
Date Prepared:	9/20/17	**BatchID:**	145954
Date Analyzed:	9/23/17	**Extraction Method:**	SW3550B/3630C
Instrument:	GC20	**Analytical Method:**	SW8082
Matrix:	Soil	**Unit:**	mg/kg
Project:	DMT20170921-1; Menlo Park Cr	**Sample ID:**	MB/LCS/LCSD-145954

QC Summary for SW8082

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
Aroclor1016	ND	0.0051	0.050	-	-	-
Aroclor1221	ND	0.011	0.050	-	-	-
Aroclor1232	ND	0.0063	0.050	-	-	-
Aroclor1242	ND	0.0067	0.050	-	-	-
Aroclor1248	ND	0.0040	0.050	-	-	-
Aroclor1254	ND	0.0068	0.050	-	-	-
Aroclor1260	ND	0.0061	0.050	-	-	-
PCBs, total	ND	0.0040	0.050	-	-	-
Surrogate Recovery						
Decachlorobiphenyl	0.05297			0.050	106	70-130

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Aroclor1016	0.105	0.116	0.15	70	77	70-130	10.0	20
Aroclor1260	0.132	0.152	0.15	88	101	70-130	13.5	20
Surrogate Recovery								
Decachlorobiphenyl	0.0491	0.0577	0.050	98	115	70-130	16.2	20

McCampbell Analytical, Inc.
"When Quality Counts"
1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1709887
Date Prepared:	9/20/17	**BatchID:**	145864
Date Analyzed:	9/22/17	**Extraction Method:**	SW5030B
Instrument:	GC38	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	DMT20170921-1; Menlo Park Cr	**Sample ID:**	MB/LCS-145864 1709799-001AMS/MSD

QC Summary Report for SW8260B

Analyte	MB Result	LCS Result	MDL	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Acetone	ND	0.901	0.039	0.10	1	-	90	48-156
tert-Amyl methyl ether (TAME)	ND	0.0401	0.0010	0.0050	0.050	-	80	56-115
Benzene	ND	0.0470	0.0016	0.0050	0.050	-	94	63-131
Bromobenzene	ND	0.0526	0.0017	0.0050	0.050	-	105	66-127
Bromochloromethane	ND	0.0483	0.0015	0.0050	0.050	-	97	64-124
Bromodichloromethane	ND	0.0482	0.0012	0.0050	0.050	-	96	64-120
Bromoform	0.001753,J	0.0372	0.00080	0.0050	0.050	-	74	48-92
Bromomethane	ND	0.0612	0.0020	0.0050	0.050	-	122	25-163
2-Butanone (MEK)	ND	0.159	0.0054	0.020	0.20	-	80	51-133
t-Butyl alcohol (TBA)	ND	0.185	0.0053	0.050	0.20	-	93	52-129
n-Butyl benzene	ND	0.0696	0.0035	0.0050	0.050	-	139	83-200
sec-Butyl benzene	ND	0.0696	0.0034	0.0050	0.050	-	139	81-199
tert-Butyl benzene	ND	0.0676	0.0030	0.0050	0.050	-	135	79-178
Carbon Disulfide	ND	0.0560	0.0017	0.0050	0.050	-	112	64-136
Carbon Tetrachloride	ND	0.0560	0.0017	0.0050	0.050	-	112	66-140
Chlorobenzene	ND	0.0474	0.0018	0.0050	0.050	-	95	73-116
Chloroethane	ND	0.0410	0.0016	0.0050	0.050	-	82	35-147
Chloroform	ND	0.0525	0.0016	0.0050	0.050	-	105	65-130
Chloromethane	ND	0.0440	0.0017	0.0050	0.050	-	88	30-137
2-Chlorotoluene	ND	0.0576	0.0022	0.0050	0.050	-	115	75-152
4-Chlorotoluene	ND	0.0564	0.0021	0.0050	0.050	-	113	71-148
Dibromochloromethane	ND	0.0469	0.0011	0.0050	0.050	-	94	61-106
1,2-Dibromo-3-chloropropane	ND	0.0165	0.0012	0.0040	0.020	-	82	36-120
1,2-Dibromoethane (EDB)	ND	0.0503	0.0013	0.0040	0.050	-	101	67-118
Dibromomethane	ND	0.0461	0.0014	0.0050	0.050	-	92	61-116
1,2-Dichlorobenzene	ND	0.0426	0.0014	0.0050	0.050	-	85	59-106
1,3-Dichlorobenzene	ND	0.0498	0.0018	0.0050	0.050	-	100	75-129
1,4-Dichlorobenzene	ND	0.0492	0.0018	0.0050	0.050	-	98	66-127
Dichlorodifluoromethane	ND	0.0256	0.0011	0.0050	0.050	-	51	13-74
1,1-Dichloroethane	ND	0.0488	0.0017	0.0050	0.050	-	98	65-134
1,2-Dichloroethane (1,2-DCA)	ND	0.0476	0.0014	0.0040	0.050	-	95	57-131
1,1-Dichloroethene	ND	0.0539	0.0017	0.0050	0.050	-	108	62-127
cis-1,2-Dichloroethene	ND	0.0456	0.0015	0.0050	0.050	-	91	66-130
trans-1,2-Dichloroethene	ND	0.0599	0.0016	0.0050	0.050	-	120	60-131
1,2-Dichloropropane	ND	0.0438	0.0014	0.0050	0.050	-	88	63-127
1,3-Dichloropropane	ND	0.0453	0.0016	0.0050	0.050	-	91	68-124
2,2-Dichloropropane	ND	0.0593	0.0013	0.0050	0.050	-	119	63-150

(Cont.)

McCampbell Analytical, Inc.
"When Quality Counts"
1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1709887
Date Prepared:	9/20/17	**BatchID:**	145864
Date Analyzed:	9/22/17	**Extraction Method:**	SW5030B
Instrument:	GC38	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	DMT20170921-1; Menlo Park Cr	**Sample ID:**	MB/LCS-145864 1709799-001AMS/MSD

QC Summary Report for SW8260B

Analyte	MB Result	LCS Result	MDL	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
1,1-Dichloropropene	ND	0.0580	0.0018	0.0050	0.050	-	116	67-134
cis-1,3-Dichloropropene	ND	0.0515	0.0015	0.0050	0.050	-	103	65-138
trans-1,3-Dichloropropene	ND	0.0486	0.0014	0.0050	0.050	-	97	66-124
Diisopropyl ether (DIPE)	ND	0.0404	0.0014	0.0050	0.050	-	81	58-129
Ethylbenzene	ND	0.0556	0.0020	0.0050	0.050	-	111	73-145
Ethyl tert-butyl ether (ETBE)	ND	0.0458	0.0013	0.0050	0.050	-	92	62-125
Freon 113	ND	0.0465	0.0016	0.0050	0.050	-	93	55-116
Hexachlorobutadiene	ND	0.0744	0.0050	0.0050	0.050	-	149	75-178
Hexachloroethane	ND	0.0635	0.0025	0.0050	0.050	-	127	75-152
2-Hexanone	ND	0.0324	0.0025	0.0050	0.050	-	65	41-113
Isopropylbenzene	ND	0.0696	0.0022	0.0050	0.050	-	139	67-172
4-Isopropyl toluene	ND	0.0720	0.0031	0.0050	0.050	-	144	88-171
Methyl-t-butyl ether (MTBE)	ND	0.0467	0.0013	0.0050	0.050	-	93	58-122
Methylene chloride	ND	0.0475	0.0036	0.0050	0.050	-	95	57-140
4-Methyl-2-pentanone (MIBK)	ND	0.0316	0.00080	0.0050	0.050	-	63	42-117
Naphthalene	0.0006724,J	0.0299	0.00060	0.0050	0.050	-	60	29-65
n-Propyl benzene	ND	0.0685	0.0029	0.0050	0.050	-	137	85-174
Styrene	ND	0.0474	0.0014	0.0050	0.050	-	95	63-126
1,1,1,2-Tetrachloroethane	ND	0.0541	0.0016	0.0050	0.050	-	108	68-131
1,1,2,2-Tetrachloroethane	ND	0.0403	0.0013	0.0050	0.050	-	81	45-121
Tetrachloroethene	ND	0.0602	0.0023	0.0050	0.050	-	120	65-150
Toluene	ND	0.0544	0.0022	0.0050	0.050	-	109	72-135
1,2,3-Trichlorobenzene	ND	0.0358	0.00070	0.0050	0.050	-	72	35-80
1,2,4-Trichlorobenzene	ND	0.0447	0.0011	0.0050	0.050	-	89	45-103
1,1,1-Trichloroethane	ND	0.0597	0.0018	0.0050	0.050	-	119	67-137
1,1,2-Trichloroethane	ND	0.0460	0.0016	0.0050	0.050	-	92	67-117
Trichloroethene	ND	0.0542	0.0017	0.0050	0.050	-	108	62-135
Trichlorofluoromethane	ND	0.0517	0.0016	0.0050	0.050	-	103	56-124
1,2,3-Trichloropropane	ND	0.0470	0.0019	0.0050	0.050	-	94	58-133
1,2,4-Trimethylbenzene	ND	0.0646	0.0024	0.0050	0.050	-	129	78-161
1,3,5-Trimethylbenzene	ND	0.0673	0.0027	0.0050	0.050	-	135	85-170
Vinyl Chloride	ND	0.0442	0.0015	0.0050	0.050	-	88	32-142
Xylenes, Total	ND	0.157	0.0025	0.0050	0.15	-	105	70-137

(Cont.)

McCampbell Analytical, Inc.
"When Quality Counts"
1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1709887
Date Prepared:	9/20/17	**BatchID:**	145864
Date Analyzed:	9/22/17	**Extraction Method:**	SW5030B
Instrument:	GC38	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	DMT20170921-1; Menlo Park Cr	**Sample ID:**	MB/LCS-145864 1709799-001AMS/MSD

QC Summary Report for SW8260B

Analyte	MB Result	LCS Result	MDL	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Surrogate Recovery								
Dibromofluoromethane	0.1436	0.147			0.12	115	118	87-127
Toluene-d8	0.1441	0.145			0.12	115	116	93-141
4-BFB	0.0131	0.0146			0.012	105	117	84-137
Benzene-d6	0.09901	0.104			0.10	99	104	67-131
Ethylbenzene-d10	0.1109	0.119			0.10	111	119	78-153
1,2-DCB-d4	0.08803	0.0929			0.10	88	93	63-109

(Cont.)

McCampbell Analytical, Inc.
"When Quality Counts"
1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1709887
Date Prepared:	9/20/17	**BatchID:**	145864
Date Analyzed:	9/22/17	**Extraction Method:**	SW5030B
Instrument:	GC38	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	DMT20170921-1; Menlo Park Cr	**Sample ID:**	MB/LCS-145864 1709799-001AMS/MSD

QC Summary Report for SW8260B

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Acetone	0.856	0.916	1	ND	86	92	36-141	6.80	20
tert-Amyl methyl ether (TAME)	0.0394	0.0418	0.050	ND	79	84	46-105	6.00	20
Benzene	0.0454	0.0482	0.050	ND	91	96	46-124	5.95	20
Bromobenzene	0.0499	0.0536	0.050	ND	100	107	50-119	7.18	20
Bromochloromethane	0.0469	0.0499	0.050	ND	94	100	42-122	6.27	20
Bromodichloromethane	0.0470	0.0504	0.050	ND	94	101	48-112	6.92	20
Bromoform	0.0365	0.0392	0.050	ND	73	78	36-90	7.10	20
Bromomethane	0.0605	0.0641	0.050	ND	116	124	10-149	5.86	20
2-Butanone (MEK)	0.151	0.162	0.20	ND	70	76	43-114	7.42	20
t-Butyl alcohol (TBA)	0.176	0.183	0.20	ND	88	92	33-123	3.74	20
n-Butyl benzene	0.0651	0.0695	0.050	ND	130	139	40-185	6.59	20
sec-Butyl benzene	0.0648	0.0695	0.050	ND	130	139	40-183	7.07	20
tert-Butyl benzene	0.0626	0.0674	0.050	ND	125	135	44-168	7.26	20
Carbon Disulfide	0.0522	0.0552	0.050	ND	104	110	23-139	5.54	20
Carbon Tetrachloride	0.0543	0.0575	0.050	ND	109	115	43-133	5.80	20
Chlorobenzene	0.0457	0.0484	0.050	ND	91	97	51-115	5.87	20
Chloroethane	0.0391	0.0418	0.050	ND	78	84	16-138	6.71	20
Chloroform	0.0508	0.0541	0.050	ND	101	108	54-117	6.32	20
Chloromethane	0.0416	0.0443	0.050	ND	83	89	14-128	6.48	20
2-Chlorotoluene	0.0549	0.0581	0.050	ND	110	116	54-141	5.66	20
4-Chlorotoluene	0.0534	0.0567	0.050	ND	107	113	52-134	5.98	20
Dibromochloromethane	0.0461	0.0489	0.050	ND	92	98	46-102	6.00	20
1,2-Dibromo-3-chloropropane	0.0157	0.0172	0.020	ND	79	86	16-120	9.14	20
1,2-Dibromoethane (EDB)	0.0483	0.0517	0.050	ND	97	103	48-113	6.85	20
Dibromomethane	0.0448	0.0475	0.050	ND	90	95	44-110	5.91	20
1,2-Dichlorobenzene	0.0412	0.0436	0.050	ND	82	87	43-106	5.74	20
1,3-Dichlorobenzene	0.0479	0.0512	0.050	ND	96	102	49-128	6.72	20
1,4-Dichlorobenzene	0.0470	0.0502	0.050	ND	94	100	48-120	6.54	20
Dichlorodifluoromethane	0.0234	0.0247	0.050	ND	47	49	8-63	5.37	20
1,1-Dichloroethane	0.0468	0.0498	0.050	ND	94	99	50-122	6.07	20
1,2-Dichloroethane (1,2-DCA)	0.0464	0.0491	0.050	ND	93	98	46-116	5.67	20
1,1-Dichloroethene	0.0514	0.0549	0.050	ND	103	110	37-124	6.58	20
cis-1,2-Dichloroethene	0.0439	0.0466	0.050	ND	88	93	47-123	5.91	20
trans-1,2-Dichloroethene	0.0573	0.0614	0.050	ND	115	123	31-131	6.84	20
1,2-Dichloropropane	0.0426	0.0453	0.050	ND	85	91	50-116	6.26	20
1,3-Dichloropropane	0.0438	0.0465	0.050	ND	88	93	52-115	6.00	20
2,2-Dichloropropane	0.0565	0.0599	0.050	ND	113	120	43-137	5.73	20

(Cont.)

McCampbell Analytical, Inc.
"When Quality Counts"
1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1709887
Date Prepared:	9/20/17	**BatchID:**	145864
Date Analyzed:	9/22/17	**Extraction Method:**	SW5030B
Instrument:	GC38	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	DMT20170921-1; Menlo Park Cr	**Sample ID:**	MB/LCS-145864 1709799-001AMS/MSD

QC Summary Report for SW8260B

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
1,1-Dichloropropene	0.0554	0.0594	0.050	ND	111	119	43-126	6.85	20
cis-1,3-Dichloropropene	0.0496	0.0528	0.050	ND	99	106	35-134	6.24	20
trans-1,3-Dichloropropene	0.0474	0.0500	0.050	ND	95	100	35-124	5.40	20
Diisopropyl ether (DIPE)	0.0393	0.0416	0.050	ND	79	83	49-116	5.50	20
Ethylbenzene	0.0530	0.0565	0.050	ND	106	113	49-137	6.32	20
Ethyl tert-butyl ether (ETBE)	0.0446	0.0474	0.050	ND	89	95	50-113	6.04	20
Freon 113	0.0434	0.0465	0.050	ND	87	93	28-114	6.70	20
Hexachlorobutadiene	0.0666	0.0717	0.050	ND	133	143	22-180	7.34	20
Hexachloroethane	0.0592	0.0638	0.050	ND	113	122	28-158	7.47	20
2-Hexanone	0.0316	0.0342	0.050	ND	63	68	31-102	7.92	20
Isopropylbenzene	0.0647	0.0691	0.050	ND	129	138	50-153	6.65	20
4-Isopropyl toluene	0.0676	0.0718	0.050	ND	135	144	41-171	5.97	20
Methyl-t-butyl ether (MTBE)	0.0452	0.0481	0.050	ND	90	96	48-110	6.07	20
Methylene chloride	0.0467	0.0500	0.050	ND	86	93	42-127	7.05	20
4-Methyl-2-pentanone (MIBK)	0.0300	0.0343	0.050	ND	60	69	24-114	13.5	20
Naphthalene	0.0296	0.0316	0.050	ND	59	63	19-69	6.74	20
n-Propyl benzene	0.0637	0.0685	0.050	ND	127	137	46-168	7.28	20
Styrene	0.0460	0.0487	0.050	ND	92	97	42-122	5.66	20
1,1,1,2-Tetrachloroethane	0.0528	0.0561	0.050	ND	106	112	52-121	6.02	20
1,1,2,2-Tetrachloroethane	0.0164	0.0174	0.050	ND	33	35	27-116	5.83	20
Tetrachloroethene	0.0575	0.0614	0.050	ND	115	123	37-149	6.49	20
Toluene	0.0519	0.0553	0.050	ND	104	111	52-124	6.24	20
1,2,3-Trichlorobenzene	0.0347	0.0368	0.050	ND	69	74	20-86	5.79	20
1,2,4-Trichlorobenzene	0.0436	0.0464	0.050	ND	87	93	24-107	6.03	20
1,1,1-Trichloroethane	0.0574	0.0612	0.050	ND	115	122	48-128	6.44	20
1,1,2-Trichloroethane	0.0443	0.0473	0.050	ND	89	95	51-110	6.61	20
Trichloroethene	0.0769	0.0821	0.050	ND	154,F1	164,F1	42-128	6.49	20
Trichlorofluoromethane	0.0487	0.0520	0.050	ND	97	104	31-121	6.66	20
1,2,3-Trichloropropane	0.0439	0.0473	0.050	ND	88	95	50-115	7.50	20
1,2,4-Trimethylbenzene	0.0614	0.0655	0.050	ND	123	131	48-151	6.51	20
1,3,5-Trimethylbenzene	0.0636	0.0675	0.050	ND	127	135	51-159	5.94	20
Vinyl Chloride	0.0422	0.0446	0.050	ND	84	89	11-136	5.52	20
Xylenes, Total	0.152	0.160	0.15	ND	101	107	38-141	5.28	20

(Cont.)

McCampbell Analytical, Inc.
"When Quality Counts"
1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1709887
Date Prepared:	9/20/17	**BatchID:**	145864
Date Analyzed:	9/22/17	**Extraction Method:**	SW5030B
Instrument:	GC38	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	DMT20170921-1; Menlo Park Cr	**Sample ID:**	MB/LCS-145864 1709799-001AMS/MSD

QC Summary Report for SW8260B

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Surrogate Recovery									
Dibromofluoromethane	0.148	0.148	0.12		118	118	82-136	0	20
Toluene-d8	0.145	0.145	0.12		116	116	92-139	0	20
4-BFB	0.0145	0.0144	0.012		116	116	82-135	0	20
Benzene-d6	0.100	0.103	0.10		100	103	55-122	2.53	20
Ethylbenzene-d10	0.115	0.118	0.10		115	118	58-141	2.49	20
1,2-DCB-d4	0.0898	0.0932	0.10		90	93	51-107	3.71	20

McCampbell Analytical, Inc.
"When Quality Counts"
1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1709887
Date Prepared:	9/22/17	**BatchID:**	145963
Date Analyzed:	9/22/17	**Extraction Method:**	SW3550B
Instrument:	GC35	**Analytical Method:**	SW8270C-SIM
Matrix:	Soil	**Unit:**	mg/kg
Project:	DMT20170921-1; Menlo Park Cr	**Sample ID:**	MB/LCS-145963 1709887-001AMS/MSD

QC Summary Report for SW8270C

Analyte	MB Result	LCS Result	MDL	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Acenaphthene	ND	-	0.0026	0.010	-	-	-	-
Acenaphthylene	ND	-	0.0034	0.010	-	-	-	-
Anthracene	ND	-	0.0029	0.010	-	-	-	-
Benzo (a) anthracene	0.003625,J	-	0.0017	0.010	-	-	-	-
Benzo (a) pyrene	ND	0.139	0.0027	0.010	0.20	-	70	23-129
Benzo (b) fluoranthene	ND	-	0.0015	0.010	-	-	-	-
Benzo (g,h,i) perylene	ND	-	0.0033	0.010	-	-	-	-
Benzo (k) fluoranthene	ND	-	0.0016	0.010	-	-	-	-
Chrysene	ND	0.124	0.0024	0.010	0.20	-	62	38-104
Dibenzo (a,h) anthracene	ND	-	0.0050	0.010	-	-	-	-
Fluoranthene	ND	-	0.0040	0.010	-	-	-	-
Fluorene	ND	-	0.0060	0.010	-	-	-	-
Indeno (1,2,3-cd) pyrene	ND	-	0.0049	0.010	-	-	-	-
1-Methylnaphthalene	ND	0.171	0.0029	0.010	0.20	-	85	59-106
2-Methylnaphthalene	ND	0.164	0.0020	0.010	0.20	-	82	54-108
Naphthalene	ND	-	0.0016	0.010	-	-	-	-
Phenanthrene	ND	0.142	0.0035	0.010	0.20	-	71	48-107
Pyrene	ND	0.158	0.0045	0.010	0.20	-	79	40-104
Surrogate Recovery								
1-Fluoronaphthalene	0.462	0.390			0.50	92	78	63-123
2-Fluorobiphenyl	0.4721	0.378			0.50	94	75	55-127

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Benzo (a) pyrene	NR	NR		ND<0.1	NR	NR	-	NR	-
Chrysene	NR	NR		ND<0.1	NR	NR	-	NR	-
1-Methylnaphthalene	NR	NR		ND<0.1	NR	NR	-	NR	-
2-Methylnaphthalene	NR	NR		ND<0.1	NR	NR	-	NR	-
Phenanthrene	NR	NR		0.16	NR	NR	-	NR	-
Pyrene	NR	NR		2.9	NR	NR	-	NR	-
Surrogate Recovery									
1-Fluoronaphthalene	NR	NR			NR	NR	-	NR	-
2-Fluorobiphenyl	NR	NR			NR	NR	-	NR	-

McCampbell Analytical, Inc.
"When Quality Counts"
1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1709887
Date Prepared:	9/22/17	**BatchID:**	145985
Date Analyzed:	9/22/17	**Extraction Method:**	SW3550B/3640A
Instrument:	GC21	**Analytical Method:**	SW8270C
Matrix:	Soil	**Unit:**	mg/Kg
Project:	DMT20170921-1; Menlo Park Cr	**Sample ID:**	MB/LCS-145985 1709390-001AMS/MSD

QC Summary Report for SW8270C (Low Level) w/ GPC

Analyte	MB Result	LCS Result	MDL	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Acenaphthene	ND	2.15	0.14	0.25	5	-	43	32-118
Acenaphthylene	ND	2.22	0.14	0.25	5	-	44	32-122
Acetochlor	ND	-	0.25	0.25	-	-	-	-
Anthracene	ND	2.39	0.14	0.25	5	-	48	36-125
Benzidine	ND	1.67	0.23	1.3	5	-	33	4-83
Benzo (a) anthracene	ND	2.68	0.050	0.050	5	-	53	35-117
Benzo (a) pyrene	ND	3.11	0.0025	0.0025	5	-	62	42-138
Benzo (b) fluoranthene	ND	2.96	0.012	0.012	5	-	59	37-125
Benzo (g,h,i) perylene	ND	3.10	0.15	0.25	5	-	62	45-146
Benzo (k) fluoranthene	ND	3.04	0.16	0.25	5	-	61	39-124
Benzyl Alcohol	ND	2.97	0.51	1.3	5	-	59	5-105
1,1-Biphenyl	ND	-	0.15	0.25	-	-	-	-
Bis (2-chloroethoxy) Methane	ND	2.38	0.14	0.25	5	-	48	35-115
Bis (2-chloroethyl) Ether	ND	2.58	0.0012	0.0012	5	-	52	35-105
Bis (2-chloroisopropyl) Ether	ND	2.66	0.0012	0.0012	5	-	53	34-119
Bis (2-ethylhexyl) Adipate	ND	2.84	0.25	0.25	5	-	57	27-117
Bis (2-ethylhexyl) Phthalate	ND	2.80	0.13	0.25	5	-	56	34-124
4-Bromophenyl Phenyl Ether	ND	2.54	0.16	0.25	5	-	51	33-112
Butylbenzyl Phthalate	ND	2.94	0.13	0.25	5	-	59	35-127
4-Chloroaniline	ND	2.14	0.0012	0.0012	5	-	43	12-77
4-Chloro-3-methylphenol	ND	2.71	0.12	0.25	5	-	54	35-123
2-Chloronaphthalene	ND	2.08	0.16	0.25	5	-	42	28-109
2-Chlorophenol	ND	2.60	0.0050	0.0050	5	-	52	38-116
4-Chlorophenyl Phenyl Ether	ND	2.48	0.15	0.25	5	-	50	33-122
Chrysene	ND	2.54	0.14	0.25	5	-	51	37-116
Dibenzo (a,h) anthracene	ND	3.25	0.0025	0.0025	5	-	65	43-141
Dibenzofuran	ND	2.37	0.13	0.25	5	-	47	33-117
Di-n-butyl Phthalate	ND	2.57	0.13	0.25	5	-	51	38-126
1,2-Dichlorobenzene	ND	2.49	0.12	0.25	5	-	50	34-105
1,3-Dichlorobenzene	ND	2.52	0.14	0.25	5	-	50	33-104
1,4-Dichlorobenzene	ND	2.12	0.025	0.025	5	-	42	31-102
3,3-Dichlorobenzidine	ND	2.33	0.0050	0.0050	5	-	47	14-84
2,4-Dichlorophenol	ND	2.80	0.0025	0.0025	5	-	56	31-124
Diethyl Phthalate	ND	2.50	0.0025	0.0025	5	-	50	35-118
2,4-Dimethylphenol	ND	2.69	0.025	0.025	5	-	54	30-120
Dimethyl Phthalate	ND	2.38	0.0025	0.0025	5	-	48	33-118
4,6-Dinitro-2-methylphenol	ND	2.93	0.13	1.3	5	-	59	12-126

(Cont.)

NELAP 4033ORELAP

QA/QC Officer

McCampbell Analytical, Inc.
"When Quality Counts"
1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1709887
Date Prepared:	9/22/17	**BatchID:**	145985
Date Analyzed:	9/22/17	**Extraction Method:**	SW3550B/3640A
Instrument:	GC21	**Analytical Method:**	SW8270C
Matrix:	Soil	**Unit:**	mg/Kg
Project:	DMT20170921-1; Menlo Park Cr	**Sample ID:**	MB/LCS-145985 1709390-001AMS/MSD

QC Summary Report for SW8270C (Low Level) w/ GPC

Analyte	MB Result	LCS Result	MDL	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
2,4-Dinitrophenol	ND	2.12	0.62	0.62	5	-	42	8-130
2,4-Dinitrotoluene	ND	2.86	0.025	0.025	5	-	57	38-117
2,6-Dinitrotoluene	ND	2.84	0.14	0.25	5	-	57	35-121
Di-n-octyl Phthalate	ND	2.91	0.14	0.50	5	-	58	42-150
1,2-Diphenylhydrazine	ND	2.46	0.16	0.25	5	-	49	0-117
Fluoranthene	ND	2.68	0.13	0.25	5	-	54	38-126
Fluorene	ND	2.29	0.14	0.25	5	-	46	34-118
Hexachlorobenzene	ND	2.32	0.025	0.025	5	-	46	30-130
Hexachlorobutadiene	ND	2.32	0.025	0.025	5	-	46	33-121
Hexachlorocyclopentadiene	ND	1.28	0.73	1.3	5	-	26	8-89
Hexachloroethane	ND	2.41	0.14	0.25	5	-	48	32-106
Indeno (1,2,3-cd) pyrene	ND	3.06	0.012	0.012	5	-	61	43-138
Isophorone	ND	2.02	0.12	0.25	5	-	40	26-92
2-Methylnaphthalene	ND	2.44	0.025	0.025	5	-	49	30-121
2-Methylphenol (o-Cresol)	ND	2.67	0.14	0.25	5	-	53	34-114
3 & 4-Methylphenol (m,p-Cresol)	ND	2.68	0.12	0.25	5	-	54	26-130
Naphthalene	ND	2.24	0.0025	0.0025	5	-	45	33-113
2-Nitroaniline	ND	2.80	0.62	1.3	5	-	56	29-115
3-Nitroaniline	ND	2.63	0.59	1.3	5	-	53	25-93
4-Nitroaniline	ND	2.99	0.55	1.3	5	-	60	31-108
Nitrobenzene	ND	2.49	0.14	0.25	5	-	50	33-122
2-Nitrophenol	ND	2.81	0.64	1.3	5	-	56	32-121
4-Nitrophenol	ND	2.75	0.41	1.3	5	-	55	27-102
N-Nitrosodiphenylamine	ND	-	0.16	0.25	-	-	-	-
N-Nitrosodi-n-propylamine	ND	2.73	0.012	0.012	5	-	55	25-108
Pentachlorophenol	ND	4.40	0.32	1.3	5	-	88	28-134
Phenanthrene	ND	2.65	0.14	0.25	5	-	53	36-123
Phenol	ND	2.70	0.0050	0.0050	5	-	54	33-107
Pyrene	ND	2.53	0.13	0.25	5	-	51	38-124
Pyridine	ND	3.24	0.25	0.25	5	-	65	30-130
1,2,4-Trichlorobenzene	ND	2.51	0.14	0.25	5	-	50	34-121
2,4,5-Trichlorophenol	ND	2.66	0.012	0.012	5	-	53	31-126
2,4,6-Trichlorophenol	ND	2.62	0.012	0.012	5	-	52	32-128

(Cont.)

NELAP 4033ORELAP

QA/QC Officer

McCampbell Analytical, Inc.
"When Quality Counts"
1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1709887
Date Prepared:	9/22/17	**BatchID:**	145985
Date Analyzed:	9/22/17	**Extraction Method:**	SW3550B/3640A
Instrument:	GC21	**Analytical Method:**	SW8270C
Matrix:	Soil	**Unit:**	mg/Kg
Project:	DMT20170921-1; Menlo Park Cr	**Sample ID:**	MB/LCS-145985 1709390-001AMS/MSD

QC Summary Report for SW8270C (Low Level) w/ GPC

Analyte	MB Result	LCS Result	MDL	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Surrogate Recovery								
2-Fluorophenol	2.476	2.85			5	50	57	31-108
Phenol-d5	2.534	2.93			5	51	59	32-106
Nitrobenzene-d5	2.176	2.52			5	44	50	27-109
2-Fluorobiphenyl	2.1	2.36			5	42	47	26-100
2,4,6-Tribromophenol	2.603	2.91			5	52	58	25-106
4-Terphenyl-d14	2.235	2.90			5	45	58	27-113

(Cont.)

NELAP 4033ORELAP

QA/QC Officer

McCampbell Analytical, Inc.
"When Quality Counts"
1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1709887
Date Prepared:	9/22/17	**BatchID:**	145985
Date Analyzed:	9/22/17	**Extraction Method:**	SW3550B/3640A
Instrument:	GC21	**Analytical Method:**	SW8270C
Matrix:	Soil	**Unit:**	mg/Kg
Project:	DMT20170921-1; Menlo Park Cr	**Sample ID:**	MB/LCS-145985 1709390-001AMS/MSD

QC Summary Report for SW8270C (Low Level) w/ GPC

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Acenaphthene	NR	NR		0.28	NR	NR	-	NR	-
Acenaphthylene	NR	NR		ND	NR	NR	-	NR	-
Anthracene	NR	NR		ND	NR	NR	-	NR	-
Benzidine	NR	NR		ND	NR	NR	-	NR	-
Benzo (a) anthracene	NR	NR		0.19	NR	NR	-	NR	-
Benzo (a) pyrene	NR	NR		0.074	NR	NR	-	NR	-
Benzo (b) fluoranthene	NR	NR		0.05	NR	NR	-	NR	-
Benzo (g,h,i) perylene	NR	NR		ND	NR	NR	-	NR	-
Benzo (k) fluoranthene	NR	NR		ND	NR	NR	-	NR	-
Benzyl Alcohol	NR	NR		ND	NR	NR	-	NR	-
Bis (2-chloroethoxy) Methane	NR	NR		ND	NR	NR	-	NR	-
Bis (2-chloroethyl) Ether	NR	NR		ND	NR	NR	-	NR	-
Bis (2-chloroisopropyl) Ether	NR	NR		ND	NR	NR	-	NR	-
Bis (2-ethylhexyl) Adipate	NR	NR		ND	NR	NR	-	NR	-
Bis (2-ethylhexyl) Phthalate	NR	NR		ND	NR	NR	-	NR	-
4-Bromophenyl Phenyl Ether	NR	NR		ND	NR	NR	-	NR	-
Butylbenzyl Phthalate	NR	NR		ND	NR	NR	-	NR	-
4-Chloroaniline	NR	NR		ND	NR	NR	-	NR	-
4-Chloro-3-methylphenol	NR	NR		ND	NR	NR	-	NR	-
2-Chloronaphthalene	NR	NR		ND	NR	NR	-	NR	-
2-Chlorophenol	NR	NR		ND	NR	NR	-	NR	-
4-Chlorophenyl Phenyl Ether	NR	NR		ND	NR	NR	-	NR	-
Chrysene	NR	NR		0.3	NR	NR	-	NR	-
Dibenzo (a,h) anthracene	NR	NR		0.011	NR	NR	-	NR	-
Dibenzofuran	NR	NR		ND	NR	NR	-	NR	-
Di-n-butyl Phthalate	NR	NR		ND	NR	NR	-	NR	-
1,2-Dichlorobenzene	NR	NR		ND	NR	NR	-	NR	-
1,3-Dichlorobenzene	NR	NR		ND	NR	NR	-	NR	-
1,4-Dichlorobenzene	NR	NR		ND	NR	NR	-	NR	-
3,3-Dichlorobenzidine	NR	NR		ND	NR	NR	-	NR	-
2,4-Dichlorophenol	NR	NR		ND	NR	NR	-	NR	-
Diethyl Phthalate	NR	NR		ND	NR	NR	-	NR	-
2,4-Dimethylphenol	NR	NR		ND	NR	NR	-	NR	-
Dimethyl Phthalate	NR	NR		ND	NR	NR	-	NR	-
4,6-Dinitro-2-methylphenol	NR	NR		ND	NR	NR	-	NR	-
2,4-Dinitrophenol	NR	NR		ND	NR	NR	-	NR	-
2,4-Dinitrotoluene	NR	NR		ND	NR	NR	-	NR	-

(Cont.)

NELAP 4033ORELAP

QA/QC Officer

McCampbell Analytical, Inc.
"When Quality Counts"
1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1709887
Date Prepared:	9/22/17	**BatchID:**	145985
Date Analyzed:	9/22/17	**Extraction Method:**	SW3550B/3640A
Instrument:	GC21	**Analytical Method:**	SW8270C
Matrix:	Soil	**Unit:**	mg/Kg
Project:	DMT20170921-1; Menlo Park Cr	**Sample ID:**	MB/LCS-145985 1709390-001AMS/MSD

QC Summary Report for SW8270C (Low Level) w/ GPC

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
2,6-Dinitrotoluene	NR	NR		ND	NR	NR	-	NR	-
Di-n-octyl Phthalate	NR	NR		ND	NR	NR	-	NR	-
1,2-Diphenylhydrazine	NR	NR		ND	NR	NR	-	NR	-
Fluoranthene	NR	NR		ND	NR	NR	-	NR	-
Fluorene	NR	NR		0.43	NR	NR	-	NR	-
Hexachlorobenzene	NR	NR		ND	NR	NR	-	NR	-
Hexachlorobutadiene	NR	NR		ND	NR	NR	-	NR	-
Hexachlorocyclopentadiene	NR	NR		ND	NR	NR	-	NR	-
Hexachloroethane	NR	NR		ND	NR	NR	-	NR	-
Indeno (1,2,3-cd) pyrene	NR	NR		0.013	NR	NR	-	NR	-
Isophorone	NR	NR		ND	NR	NR	-	NR	-
2-Methylnaphthalene	NR	NR		1.7	NR	NR	-	NR	-
2-Methylphenol (o-Cresol)	NR	NR		ND	NR	NR	-	NR	-
3 & 4-Methylphenol (m,p-Cresol)	NR	NR		ND	NR	NR	-	NR	-
Naphthalene	NR	NR		0.048	NR	NR	-	NR	-
2-Nitroaniline	NR	NR		ND	NR	NR	-	NR	-
3-Nitroaniline	NR	NR		ND	NR	NR	-	NR	-
4-Nitroaniline	NR	NR		ND	NR	NR	-	NR	-
Nitrobenzene	NR	NR		ND	NR	NR	-	NR	-
2-Nitrophenol	NR	NR		ND	NR	NR	-	NR	-
4-Nitrophenol	NR	NR		ND	NR	NR	-	NR	-
N-Nitrosodi-n-propylamine	NR	NR		ND	NR	NR	-	NR	-
Pentachlorophenol	NR	NR		ND	NR	NR	-	NR	-
Phenanthrene	NR	NR		1.1	NR	NR	-	NR	-
Phenol	NR	NR		ND	NR	NR	-	NR	-
Pyrene	NR	NR		0.31	NR	NR	-	NR	-
Pyridine	NR	NR		ND	NR	NR	-	NR	-
1,2,4-Trichlorobenzene	NR	NR		ND	NR	NR	-	NR	-
2,4,5-Trichlorophenol	NR	NR		ND	NR	NR	-	NR	-
2,4,6-Trichlorophenol	NR	NR		ND	NR	NR	-	NR	-

(Cont.)

NELAP 4033ORELAP

QA/QC Officer

McCampbell Analytical, Inc.
"When Quality Counts"
1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1709887
Date Prepared:	9/22/17	**BatchID:**	145985
Date Analyzed:	9/22/17	**Extraction Method:**	SW3550B/3640A
Instrument:	GC21	**Analytical Method:**	SW8270C
Matrix:	Soil	**Unit:**	mg/Kg
Project:	DMT20170921-1; Menlo Park Cr	**Sample ID:**	MB/LCS-145985 1709390-001AMS/MSD

QC Summary Report for SW8270C (Low Level) w/ GPC

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Surrogate Recovery									
2-Fluorophenol	NR	NR			NR	NR	-	NR	-
Phenol-d5	NR	NR			NR	NR	-	NR	-
Nitrobenzene-d5	NR	NR			NR	NR	-	NR	-
2-Fluorobiphenyl	NR	NR			NR	NR	-	NR	-
2,4,6-Tribromophenol	NR	NR			NR	NR	-	NR	-
4-Terphenyl-d14	NR	NR			NR	NR	-	NR	-

McCampbell Analytical, Inc.
"When Quality Counts"
1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1709887
Date Prepared:	9/21/17	**BatchID:**	145893
Date Analyzed:	9/21/17	**Extraction Method:**	SW3050B
Instrument:	ICP-MS2, ICP-MS3	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/Kg
Project:	DMT20170921-1; Menlo Park Cr	**Sample ID:**	MB/LCS-145893 1709864-018AMS/MSD

QC Summary Report for Metals

Analyte	MB Result	LCS Result	MDL	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Antimony	0.4408,J	51.0	0.094	0.50	50	-	102	75-125
Arsenic	ND	51.4	0.14	0.50	50	-	103	75-125
Barium	ND	514	0.97	5.0	500	-	103	75-125
Beryllium	ND	48.7	0.072	0.50	50	-	97	75-125
Cadmium	ND	51.3	0.058	0.25	50	-	103	75-125
Chromium	ND	51.1	0.092	0.50	50	-	102	75-125
Cobalt	ND	47.5	0.056	0.50	50	-	95	75-125
Copper	ND	50.7	0.069	0.50	50	-	101	75-125
Lead	ND	50.6	0.094	0.50	50	-	101	75-125
Mercury	0.0202,J	1.36	0.0050	0.050	1.25	-	108	75-125
Molybdenum	ND	50.4	0.23	0.50	50	-	101	75-125
Nickel	ND	51.0	0.072	0.50	50	-	102	75-125
Selenium	ND	46.0	0.13	0.50	50	-	92	75-125
Silver	ND	52.7	0.055	0.50	50	-	105	75-125
Thallium	ND	50.8	0.10	0.50	50	-	102	75-125
Vanadium	ND	51.2	0.064	0.50	50	-	102	75-125
Zinc	ND	505	1.4	5.0	500	-	101	75-125
Surrogate Recovery								
Terbium	508.7	521			500	102	104	70-130

(Cont.)

McCampbell Analytical, Inc.
"When Quality Counts"
1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1709887
Date Prepared:	9/21/17	**BatchID:**	145893
Date Analyzed:	9/21/17	**Extraction Method:**	SW3050B
Instrument:	ICP-MS2, ICP-MS3	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/Kg
Project:	DMT20170921-1; Menlo Park Cr	**Sample ID:**	MB/LCS-145893 1709864-018AMS/MSD

QC Summary Report for Metals

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Antimony	48.9	49.9	50	0.7019	96	98	75-125	2.02	20
Arsenic	53.6	54.1	50	5.161	97	98	75-125	0.854	20
Barium	615	595	500	91.44	105	101	75-125	3.37	20
Beryllium	49.6	51.2	50	ND	98	102	75-125	3.24	20
Cadmium	49.6	50.3	50	ND	99	100	75-125	1.48	20
Chromium	97.6	90.1	50	43.22	109	94	75-125	7.98	20
Cobalt	53.4	52.8	50	9.472	88	87	75-125	1.09	20
Copper	77.0	72.1	50	24.92	104	94	75-125	6.59	20
Lead	54.4	53.9	50	6.330	96	95	75-125	0.960	20
Mercury	1.25	1.28	1.25	ND	100	102	75-125	2.29	20
Molybdenum	46.6	47.3	50	ND	92	94	75-125	1.66	20
Nickel	105	93.9	50	46.80	116	94	75-125	11.0	20
Selenium	48.5	50.2	50	ND	97	100	75-125	3.37	20
Silver	45.2	46.3	50	ND	90	93	75-125	2.32	20
Thallium	44.9	45.8	50	ND	90	92	75-125	2.07	20
Vanadium	95.4	92.6	50	45.57	100	94	75-125	2.95	20
Zinc	521	515	500	42.53	96	94	75-125	1.12	20
Surrogate Recovery									
Terbium	524	538	500		105	108	70-130	2.71	20

Analyte	DLT Result	DLTRef Val	%D	%D Limit
Antimony	ND<2.5	0.7019	-	-
Arsenic	5.76	5.161	11.6	-
Barium	94.2	91.44	3.02	-
Beryllium	ND<2.5	ND	-	-
Cadmium	ND<1.2	ND	-	-
Chromium	44.9	43.22	3.89	20
Cobalt	10.1	9.472	6.63	-
Copper	25.5	24.92	2.33	20
Lead	6.81	6.330	7.58	-
Mercury	ND<0.25	ND	-	-
Molybdenum	ND<2.5	ND	-	-
Nickel	48.6	46.80	3.85	20
Selenium	ND<2.5	ND	-	-

(Cont.)

McCampbell Analytical, Inc.
"When Quality Counts"
1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1709887
Date Prepared:	9/21/17	**BatchID:**	145893
Date Analyzed:	9/21/17	**Extraction Method:**	SW3050B
Instrument:	ICP-MS2, ICP-MS3	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/Kg
Project:	DMT20170921-1; Menlo Park Cr	**Sample ID:**	MB/LCS-145893 1709864-018AMS/MSD

QC Summary Report for Metals

Analyte	DLT Result	DLTRef Val	%D	%D Limit
Silver	ND<2.5	ND	-	-
Thallium	ND<2.5	ND	-	-
Vanadium	46.2	45.57	1.38	20
Zinc	39.4	42.53	7.36	-

%D Control Limit applied to analytes with concentrations greater than 25 times the reporting limits.

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1709887 **ClientCode: MECA**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☑ EQuIS ☑ Email ☐ HardCopy ☐ ThirdParty ☑ J-flag
☑ Detection Summary ☑ Dry-Weight

Report to:
David Teter
MECA Consulting, Inc.
401 Roland Way, Ste. 250
Oakland, CA 94621
(925) 808-6700 FAX: (925) 808-6708

Email: dteter@mecaenviro.com
cc/3rd Party: jfeiner@mecaenviro.com;
PO: DMT20170921-1
ProjectNo: DMT20170921-1; Menlo Park Cr

Bill to:
Janice Feiner
MECA, LLC
401 Roland Way, Ste. 250
Oakland, CA 94621
jfeiner@mecaenviro.com

Requested TAT: **5 days;**

Date Received: **09/21/2017**
Date Logged: **09/21/2017**

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
1709887-001	1,2,3,4 Comp	Soil	9/20/2017 15:50	☐	A	A	A	A	A	A	A					

Test Legend:

1	7199_TTLC_LL_S [J]	2	8082_PCB_ESL_S [J]	3	8082_PCB_SG_S [J]	4	8260B_S
5	8270_PNA_S	6	8270_SCSM_S [J]	7	CAM17MS_TTLC_S	8	
9		10		11		12	

Prepared by: Alexandra Iniguez

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

WORK ORDER SUMMARY

Client Name: MECA CONSULTING, INC. **Project:** DMT20170921-1; Menlo Park Cr **Work Order:** 1709887
Client Contact: David Teter **QC Level:** LEVEL 2
Contact's Email: dteter@mecaenviro.com **Comments:** **Date Logged:** 9/21/2017

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☑ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1709887-001A	1,2,3,4 Comp	Soil	SW6020 (CAM 17)	1	4OZ GJ	☐	9/20/2017 15:50	5 days		☐	
			SW8270C (Low Level SVOCs) with GPC Cleanup			☐		5 days		☐	
			SW8270C (PAHs/PNAs)			☐		5 days		☐	
			SW8260B (VOCs)			☐		5 days		☐	
			SW8082 (PCBs w/ Column Style Clean-up)			☐		5 days		☐	
			SW8082 (PCBs Only)			☐		5 days		☑	
			SW7199 (Hexavalent chromium, Low-Level)			☐		5 days		☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

General COC

MAI Work Order # 1709887

McCAMPBELL ANALYTICAL, INC.

1534 Willow Pass Rd. Pittsburg, Ca. 94565-1701
Telephone: (877) 252-9262 / Fax: (925) 252-9269
www.mccampbell.com main@mccampbell.com

CHAIN OF CUSTODY RECORD

Turn Around Time: 1 Day Rush		2 Day Rush		3 Day Rush		STD	X	Quote #	
J-Flag / MDL	X	ESL	X	Cleanup Approved	X			Bottle Order #	
Delivery Format:	PDF		GeoTracker EDF		EDD		Write On (DW)		EQuIS

Report To: DAVID TETER Bill To: JENICE FEINER
Company: MILLENNIUM CONSULTING ASSOCIATES
Email: dteter@ mecaenviro.com
Alt Email: jfeiner@mecaenviro.com Tele: (925) 808-6700
Project Name: MENLO PARK CR Project #: DMT20170921-1
Project Location: 1100 ELDER AVE. PO # DMT20170921-1
Sampler Signature: [signature]

Analysis Requested

SAMPLE ID Location / Field Point	Sampling Date	Sampling Time	#Containers	Matrix	Preservative	BTEX & TPH as Gas (8021/ 8015) MTBE	TPH as Diesel (8015) + Motor Oil Without Silica Gel	TPH as Diesel (8015) + Motor Oil With Silica Gel	Total Oil & Grease (1664 / 9071) Without Silica Gel	Total Petroleum Hydrocarbons - Oil & Grease (1664 / 9071) With Silica Gel	Total Petroleum Hydrocarbons (418.1) With Silica Gel	EPA 505/ 608 / 8081 (Cl Pesticides)	EPA 608 / 8082 PCB's ; Aroclors only	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs)	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.8 / 6020)*	Metals (200.8 / 6020)	Baylands Requirements	Lab to filter sample for dissolved metals analysis	HEX CHROME 7199			
1) CENTER OF FIELD	9/20/17	15:30	1	O	7																			
2) NE CORNER	9/20/17	15:35	1	O	7																			
3) SOUTH GOAL	9/20/17	15:45	1	O	7																			
4) NORTH GOAL	9/20/17	15:50	1	O	7																			
COMPOSITE				O	7								X	X	X	X	X				X			

MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

* If metals are requested for water samples and the water type (Matrix) is not specified on the chain of custody, MAI will default to metals by E200.8.

Please provide an adequate volume of sample. If the volume is not sufficient for a MS/MSD a LCS/LCSD will be prepared in its place and noted in the report.

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
DAVID TETER / MILLENNIUM	9/21/17	14:51	[signature]	9/21/17	1454

Comments / Instructions: CREATE 4-POINT COMPOSITE

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SW=Seawater, S=Soil, SL=Sludge, A=Air, WP=Wipe, O=Other

Preservative Code: 1=4°C 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=ZnOAc/NaOH 7=None

Temp ______ °C Initials ______

Page ___ of ___

McCampbell Analytical, Inc.
"When Quality Counts"
1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Sample Receipt Checklist

Client Name:	**MECA Consulting, Inc.**	Date and Time Received	**9/21/2017 14:54**
Project Name:	**DMT20170921-1; Menlo Park Cr**	Date Logged:	**9/21/2017**
		Received by:	Alexandra Iniguez
WorkOrder №:	**1709887** Matrix: Soil	Logged by:	Alexandra Iniguez
Carrier:	Client Drop-In		

Chain of Custody (COC) Information

Chain of custody present?	Yes	☑	No	☐		
Chain of custody signed when relinquished and received?	Yes	☑	No	☐		
Chain of custody agrees with sample labels?	Yes	☑	No	☐		
Sample IDs noted by Client on COC?	Yes	☑	No	☐		
Date and Time of collection noted by Client on COC?	Yes	☑	No	☐		
Sampler's name noted on COC?	Yes	☑	No	☐		
COC agrees with Quote?	Yes	☐	No	☐	NA	☑

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes	☑	No	☐	NA	☐
Shipping container/cooler in good condition?	Yes	☑	No	☐		
Samples in proper containers/bottles?	Yes	☑	No	☐		
Sample containers intact?	Yes	☑	No	☐		
Sufficient sample volume for indicated test?	Yes	☑	No	☐		

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes	☑	No	☐	NA	☐
Sample/Temp Blank temperature	Temp: 7.3°C				NA	☐
Water - VOA vials have zero headspace / no bubbles?	Yes	☐	No	☐	NA	☑
Sample labels checked for correct preservation?	Yes	☑	No	☐		
pH acceptable upon receipt (Metal: <2; 522: <4; 218.7: >8)?	Yes	☐	No	☐	NA	☑
Samples Received on Ice?	Yes	☑	No	☐		
(Ice Type: WET ICE)						

UCMR Samples:

Total Chlorine tested and acceptable upon receipt for EPA 522?	Yes	☐	No	☐	NA	☑
Free Chlorine tested and acceptable upon receipt for EPA 218.7, 300.1, 537, 539?	Yes	☐	No	☐	NA	☑

Comments:

MILLENNIUM
CONSULTING ASSOCIATES
A MECA Consulting, Inc. Company

"Providing Premiere Environmental & Industrial Hygiene Services since 1986"

Corporate Offices:
401 Roland Way, Suite 250
Oakland, CA 94621
www.mecaenviro.com

October 23, 2017 Project No. 3118.2000

Mr. Chip Taylor
Assistant City Manager
City of Menlo Park
701 Laurel Street
Menlo Park, CA 94025

Subject: Crumb Rubber Infill Analysis and Reporting – Kelly Park

Dear Mr. Taylor:

Millennium Consulting Associates (Millennium) is pleased to present this Letter Report to the City of Menlo Park City (City) on the analysis of crumb rubber infill collected from the synthetic turf athletic field located at Kelly Park in Menlo Park, CA.

EXECUTIVE SUMMARY

A sample of crumb rubber infill from the athletic field at Kelly Park was collected and analyzed for Title 22 (CAM 17) metals, hexavalent chromium, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polycyclic aromatic hydrocarbons (PAHs), and polychlorinated biphenyls (PCBs). All of the detected concentrations of heavy metals, VOCs and carcinogenic PAHs in crumb rubber infill collected from the synthetic turf athletic field at Kelly Park fall below guideline values for the protection of human health. Bis (2-ethylhexyl) phthalate (DEHP) was detected in the sample at a concentration of 66 milligrams per kilogram (mg/kg) and exceeds the guidance value of 39 mg/kg. However, the detected concentration of DEHP in the crumb rubber sample is significantly below the Consumer Products Safety Commission limit of 1,000 mg/kg for DEHP in children's toys. A human health risk assessment was developed to estimate the additional cancer risk from exposure to carcinogenic PAHs and arsenic during a soccer-specific recreational use scenario. The additional cancer risk from exposure to carcinogenic PAHs and arsenic in crumb rubber infill was estimated to fall below the USEPA *de minimis* risk level of 1 in 1,000,000 and is below the estimated additional cancer risk from playing soccer on urban and rural surface soils.

INTRODUCTION

Numerous studies have been performed to assess the risk to human health from exposure to heavy metals, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and carcinogenic polycyclic aromatic hydrocarbons (PAHs) from sports activities on synthetic turf athletic fields; TRC (2008) and Cardno Chemrisk (2013) provide an excellent review on this topic. The results of these studies have generally shown that exposure to chemicals of potential concern (COPCs) in crumb rubber infill does not pose an elevated risk to human health.

This Letter Report compares the COPCs from crumb rubber infill to guideline values developed for the protection of human health**.** The California Department of Toxic Substances Control (DTSC) modified regional screening levels (RSLs) for soil (residential-use) are used as guideline values for heavy metals, VOCs, and SVOCs in crumb rubber. These RSLs were originally developed by the USEPA Region 9. The DTSC has modified several of these RSLs to take into account new cancer

slope factors and reference doses developed by the California Office of Environmental Health Hazard Assessment (OEHHA). The RSLs consider both carcinogenic and non-carcinogenic effects and are highly protective of human health. An exception is made for arsenic as the health-based RSL value is lower than both the laboratory reporting limit and naturally occurring background concentrations of arsenic in surface soil. In this situation, OEHHA's guidance is to use a naturally occurring background concentration as the screening level for arsenic (OEHHA, 2005b). A background concentration of 11 mg/kg was calculated for arsenic in surface soils in the San Francisco Bay Area (Duverge, 2011). This background concentration of 11 mg/kg is proposed as the guideline value for arsenic in synthetic turf infill products. For the cases of carcinogenic-PAHs, a human health risk assessment (HHRA; Appendix A) was performed to estimate the additional cancer risk from exposure to carcinogenic PAHs via the ingestion and dermal exposure pathways during a soccer-specific recreational use scenario. This HHRA is then used to develop guideline values for carcinogenic PAHs in synthetic turf infill based upon acceptable levels of additional cancer risk.

Finally, this Letter report will compare all detected concentrations of heavy metals, VOCs, SVOCs, and PCBs in crumb rubber infill collected from the Kelly Park to the guideline values for the protection of human health. The additional cancer risk from exposure to carcinogens in the crumb rubber infill collected from the athletic field at Kelly Park will be estimated and compared to that of native soils.

SAMPLE COLLECTION

Two discrete samples (see Figure 1 for sample locations) of crumb rubber infill were collected from the athletic field at Kelly Park on the afternoon of October 16, 2017. Millennium created a two-point composite sample out of the discrete samples. The sample were shipped under chain-of-custody to McCampbell Analytical (Laboratory) of Pittsburg, CA.

ANALYTICAL RESULTS

Title 22 (CAM 17) Metals

The composite sample was extracted using EPA Method 3050B (Acid Digestion of Sediments, Sludges, and Soils) and the extract was analyzed using EPA Method 6020 (Inductively Coupled Plasma – Mass Spectroscopy). Table 1 presents the concentrations of CAM 17 metals that were detected above laboratory reporting limits are compared to guideline values for the protection of human health. All detected concentrations of CAM 17 metals in the sample fall below the guideline values for the protection of human health.

Hexavalent Chromium

The composite sample was extracted using EPA Method 3050B (Alkaline Digestion for Hexavalent Chromium) and the extract was analyzed using EPA Method 7199 (Determination of Hexavalent Chromium in Drinking Water, Groundwater, and Industrial Wastewater Effluents by Ion Chromatography). Hexavalent chromium was not detected in the sample above the laboratory reporting limit.

Volatile Organic Compounds

The composite sample was extracted using EPA Method 5030B (Purge-and-Trap for Aqueous Samples) and the extract was analyzed for volatile organic compounds (VOCs) using EPA Method

8260B (Volatile Organic Compounds by Gas Chromatography/Mass Spectroscopy). No VOCs were detected in the sample above laboratory reporting limits.

Semi-Volatile Organic Compounds

The composite sample was extracted using EPA Method 5030B and the extract was cleaned up using EPA Method 3640A (Gel Permeation Cleanup)prior to being analyzed for semi-volatile organic compounds (SVOCs) by EPA Method 8270C (Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectroscopy). Bis (2-ethylhexyl) phthalate (DEHP) was detected in the sample at a concentration of 66 milligrams per kilogram (mg/kg) and exceeds the guidance value of 39 mg/kg. The detected concentration of DEHP is significantly below the Consumer Products Safety Commission limit of 1,000 mg/kg for DEHP in children's toys.

Carcinogenic Polycyclic Aromatic Hydrocarbons

The composite sample was extracted using EPA Method 3550B and analyzed for carcinogenic PAHs using EPA Method 8270C in Selected Ion Monitoring (SIM) mode. The concentrations of the carcinogenic PAHs were converted into benzo(a)pyrene toxic equivalents (B(a)P-TEQ) using the 1993 USEPA relative potency factors (USEPA, 1993). For the purposes of calculating the B(a)P-TEQ, non-detected PAHs were estimated as one-half of the method detection limit (MDL). The concentration of carcinogenic PAHs was calculated to be 1.2 mg/kg expressed in B(a)P-TEQ. This concentration falls significantly below the guideline value of 10 mg/kg B(a)P-TEQ. The development of the guideline value for carcinogenic PAHs is discussed in Appendix A.

Polychlorinated Biphenyls

The composite sample was extracted using EPA Method 3550B (Ultrasonic Extraction) and the extract was cleaned up using EPA Method 3630C (Silica Gel Cleanup) prior to being analyzed for polychlorinated biphenyls (PCBs) by EPA Method 8270C (Polychlorinated Biphenyls by Gas Chromatography). No PCBs were detected above laboratory reporting limits

COMPARISON OF ADDITIONAL CANCER RISK FROM EXPOSURE TO CRUMB RUBBER FROM HILLVIEW MIDDLE SCHOOL TO NATIVE SOILS FOR A SOCCER-SPECIFIC RECREATIONAL USE SCENARIO

Background concentrations of PAHs and arsenic were gathered from the following surveys of urban and rural surface soils:

- Urban Surface Soils - Boston, MA (Bradley *et al.*, 1994);
- Urban Surface Soils – California, North (ENVIRON, 2002b);
- Urban Surface Soils – California, South (ENVIRON, 2002a);
- Urban Surface Soils – Chattanooga, TN (Hussar *et al.*, 2012);
- Urban Surface Soils - Chicago, IL (USGS, 2003);
- Urban Surface Soils – Coastal Plain, New Jersey (BEM, 1998);
- Urban Surface Soils – Maine (AMEC, 2012);
- Urban Surface Soils – Piedmont Region, NJ (BEM, 1997);
- Urban Surface Soils - Providence, RI (Bradley *et al.*, 1994);
- Urban Surface Soils – Seattle, WA (Hart Crowser, 2011b);
- Urban Surface Soils - Springfield, MA (Bradley *et al.*, 1994);

- Urban Surface Soils - Western NY (EPRI, 2003);
- Rural Surface Soils – Coastal Plain, New Jersey (BEM, 2002);
- Rural Surface Soils – Delaware (DNREC, 2012);
- Rural Surface Soils – Highlands, New Jersey (BEM, 2002);
- Rural Surface Soils – Maine (AMEC, 2012);
- Rural Surface Soils – Parks (Forested), WA (Hart Crowser, 2011a);
- Rural Surface Soils – Parks (Open Space), WA (Hart Crowser, 2011a);
- Rural Surface Soils – Terre Haute, IN (IDEM, 2014); and
- Rural Surface Soils – Valley and Ridge, New Jersey (BEM, 2002).

PAH concentrations were obtained for each soil sample and B(a)p-TEQs were calculated using the USEPA-recommended relative potency factors (USEPA, 1993). All PAH and arsenic non-detects were treated as detections at half of the laboratory reporting limit, or at half of the MDL, if available. For the surveys that did not collect arsenic data; synthetic arsenic data was generated from a statistical analysis of regional arsenic concentrations using the surface soil data set collected by the USGS (2013). The B(a)p-TEQs and arsenic concentrations were transformed into log-normal distributions and a UCL95 was calculated for the B(a)p-TEQ and arsenic concentrations for each surface soil survey.

The PAH background concentrations in urban surface soils expressed as B(a)p-TEQ range from a low of 0.09 mg/kg in Terre Haute, IN to a high of 4.6 mg/kg in Boston, MA. The arsenic background concentrations in urban surface soils range from a low of 4.3 mg/kg in Providence, RI to a high of 16 mg/kg in Chicago, IL. A human health risk assessment using the exposure factors developed for the soccer-specific recreational use scenario was performed and the additional cancer risks from exposure to B(a)p-TEQ and arsenic were estimated (Table 2). The cumulative additional cancer risk from exposure to carcinogenic PAHs and arsenic in urban surface soils during a soccer recreational use scenario ranges from a low of 1 in 4,300,000 in Seattle, WA to a high of 1 in 770,000 in Springfield, MA. Although the additional cancer risk from exposure to carcinogenic PAHs and arsenic in several of the urban surface soils exceed the USEPA *de minimis* risk level of 1 in 1,000,000, they still fall within the range of acceptable risk (from 1 in 1,000,000 to 1 in 10,000).

The PAH background concentrations in rural surface soils expressed as B(a)p-TEQ range from a low of 1.1 mg/kg in the WA State Parks (forested) to a high of 3.4 mg/kg in WA State Parks (open space). The arsenic background levels in rural surface soils range from a low of 2.8 mg/kg in WA State Parks (forested) to a high of 8.5 mg/kg in rural ME. A human health risk assessment was performed using the exposure factors developed for the soccer-specific recreational use scenario and the additional cancer risks from exposure to carcinogenic PAHs and arsenic were estimated (Table 4). The cumulative additional cancer risk from exposure to carcinogenic PAHs and arsenic in rural surface soils during a soccer-specific recreational use scenario range from a low of 1 in 2,900,000 in WA State Parks (forested) to a high of 1 in 1,100,000 in WA State Parks (open space).

A comparison of carcinogenic PAH and arsenic concentrations for urban surface soils, rural surface soils, and crumb rubber infill is presented in Table 2. The additional cancer risk from exposure to carcinogenic PAHs and arsenic in the crumb rubber collected from the Kelly Park was estimated to be 1 in 7,600,000 (Table 2). This additional cancer risk is significantly below the USEPA *de minimis* risk level of 1 in 1,000,000 and is below the risk from exposure to carcinogenic PAHs and arsenic in the native soils previously discussed.

SUMMARY AND CONCLUSIONS

All of the detected concentrations of heavy metals, VOCs and carcinogenic PAHs in crumb rubber infill collected from the synthetic turf athletic field at Kelly Park fall below guideline values for the protection of human health. Bis (2-ethylhexyl) phthalate (DEHP) was detected in the sample at a concentration of 66 milligrams per kilogram (mg/kg) and exceeds the guidance value of 39 mg/kg. The detected concentration of DEHP is significantly below the Consumer Products Safety Commission limit of 1,000 mg/kg for DEHP in children's toys.

A human health risk assessment was developed to estimate the additional cancer risk from exposure to carcinogenic PAHs and arsenic during a soccer-specific recreational use scenario. The additional cancer risk from exposure to carcinogenic PAHs and arsenic in crumb rubber infill was estimated to fall below the USEPA *de minimis* risk level of 1 in 1,000,000 and is below the estimated additional cancer risk from playing soccer on urban and rural surface soils.

Thank you for considering Millennium Consulting Associates. If you have any comments or questions, please feel free to contact us.

Sincerely,
Millennium Consulting Associates

David Teter, PhD, PE, QSD
Director of Engineering and Environmental Services

Attachments
References
Figure 1
Table 1 – Comparison of Detected Concentrations of COPCs to Guideline Values
Table 2 – Additional Cancer Risk for a Soccer Recreational Use Scenario: Comparison Synthetic
Appendix A – Human Health Risk Assessment
Table A1 – Exposure Factors Used in the Human Health Risk Assessment
Laboratory Report

REFERENCES

AMEC, 2012. Summary Report for Evaluation of Concentrations of Polycyclic Aromatic Hydrocarbons (PAHs) and Metals in Background Soils in Maine, Report prepared for the Maine Department of Environmental Protection, AMEC Project 3612112178, November 16.

BEM Systems Inc. (BEM), 1997. Characterization of Ambient Levels of Selected Metals and Other Analytes in New Jersey Soils: Year 1, Urban Piedmont Region, Report prepared for the New Jersey Department of Environmental Protection, BE-1241, May.

BEM, 1998. Characterization of Ambient Levels of Selected Metals and Other Analytes in New Jersey Urban Coastal Plain Region Soils – Volume 1 Final Report, Report prepared for the New Jersey Department of Environmental Protection, October.

BEM, 2002. Characterization of Ambient Levels of Selected Metals and cPAHs in New Jersey Soils: Year III – Rural Areas of New Jersey Highlands, Valley and Ridge, and Coastal Plain Physiographic Provinces, Report prepared for the New Jersey Department of Environmental Protection, March.

Bradley, L.J.N., B.H. Magee, and S.L. Allen, 1994. Background Levels of Polycyclic Aromatic Hydrocarbons (PAH) and Selected Metals in New England Urban Soils, Journal of Soil Contamination, 3(4):349-361.

Cardno Chemrisk, 2013. Review of the Human Health & Ecological Safety of Exposure to Recycled Tire Rubber found at Playgrounds and Synthetic Turf Fields, Report prepared for the Rubber Manufacturers Association, August 1.

Delaware Department of Natural Resources and Environmental Control (DNREC), 2012. Statewide Soil Background Study: Report of Findings, Report No. DE-1348, July.

Duverge, Dylan Jacques, 2011. Establishing Background Arsenic in Soil of the Urbanized San Francisco Bay Region, Masters Thesis in Geosciences, San Francisco State University, December 5.

Electric Power Research Institute (EPRI), 2003. Polycyclic Aromatic Hydrocarbons (PAHs) in Surface Soils in Western New York Follow-up Report for New York State Soils, 1005296, October.

ENVIRON 2002a. A Methodology for Using Background PAHs to Support Remediation Decisions, Report prepared for Southern California Gas Company and Sothern California Edison, Report 03-415OI, January 24.

ENVIRON, 2002b. Background Levels of Polycyclic Aromatic Hydrocarbons in Northern California Surface Soil, Report prepared for Pacific Gas and Electric Company and the U.S. Navy, Report 03-9116B and 03-9497A, June 7.

Hart Crowser, 2011a. Washington State Background Soil Concentration Study, Rural Parks, Washington State – DRAFT, Report prepared for the Washington State Department of Ecology, 17330-29, June 7.

Hart Crowser, 2011b. Urban Seattle Area Soil Dioxin and PAH Concentrations Initial Summary Report, Report Prepared for the Washington State Department of Ecology, September.

Hussar, Erika, Sean Richards, Zhi-Qing Lin, Robert P. Dixon, and Kevin A. Johnson, 2012. Human Health Risk Assessment of 16 Priority Polycyclic Aromatic Hydrocarbons in Soils of Chattanooga, Tennessee, USA, Water, Air, and Soil Pollution 223:5535-5548.

Indiana Department of Environmental Management (IDEM), 2014. Background Lead, Arsenic, and Polynuclear Aromatic Hydrocarbons (PAHs) Surface Soil Levels Terre Haute, Indiana, September.

OEHHA, 2005b. Use of California Human-Health Screening Levels (CHHSLs) in Evaluation of Contaminated Properties, January.

TRC, 2008. A Review of the Potential Health and Safety Risks from Synthetic Turf Fields Containing Crumb Rubber Infill, Report prepared for the New York Department of Health and Mental Hygiene, May.

United States Environmental Protection Agency (USEPA), 1993. Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons, EPA/600/R-93/089, July.

United States Geological Survey (USGS), 2003. Concentrations of Polynuclear Aromatic Hydrocarbons and Inorganic Constituents in Ambient Surface Soils, Chicago, Illinois: 2001-02, Water-Resources Investigations Report 03-4105.

USGS, 2013. Geochemical and Mineralogical Data for Soils of the Conterminous United States, U.S. Geological Survey Data Series 801, October 25.

APPENDIX A – HUMAN HEALTH RISK ASSESSMENT

CONCEPTUAL SITE MODEL

A conceptual site model is the representation of processes that control the transport, migration, and potential impacts of COPCs to human and ecological receptors. A simplified conceptual site model is presented to provide a framework for developing guideline values that are protective of human health. The following assumptions are proposed:

- Heavy metals, VOCs, SVOCs, and carcinogenic-PAHs may be present in synthetic turf infill at concentrations that can adversely impact human and health.
- Direct contact exposure via the dermal and ingestion pathways are considered as potential exposure pathways in this analysis.
- The inhalation of VOCs off-gassing from synthetic turf materials is not considered to be a potential exposure pathway in this analysis as the synthetic turf athletic field at the Hillview Middle School is located outdoors.
- Exposure factors will be developed based upon an aggressive soccer player who begins playing soccer at age 4 and plays until the age of 30. The development of the exposure factors will be covered in the next section of this letter report.
- The synthetic turf athletic field is not considered to be a habitat for plants, soil fauna (invertebrates), or wildlife.
- COPCs in stormwater leachate from the synthetic turf athletic field is treated by an on-site bioswale and does not migrate to groundwater or to the San Francisco Bay.

HHRA FOR CARCINOGENIC PAHs AND ARSENIC FOR A SOCCER-SPECIFIC RECREATIONAL USE SCENARIO

A HHRA was developed using the USEPA Risk Assessment Guidance for Superfund (RAGS) methodology (USEPA, 2004) to estimate the additional cancer risk from exposure to carcinogenic PAHs and arsenic for a soccer-specific recreational use scenario via the incidental ingestion and dermal contact pathways. Soccer was chosen for the exposure scenario as organized league play can begin as early as age 4 and exposure frequency and soil adherence factors for soccer play have been previously developed (Holmes (1999); Kissel (1996); and OEHHA (2010)). The inhalation exposure pathway was not considered in this analysis as several previous studies have shown that the concentrations of VOCs, SVOCs, and respirable particulate matter over synthetic turf athletic fields are generally indistinguishable from background levels (OEHHA, 2010; USEPA, 2009).

The following equations were used to estimate the annual additional cancer risk from exposure to carcinogenic PAHs and arsenic in synthetic turf and surface soils during a soccer specific recreational use exposure from ages 4 to 30.

The annual additional cancer risk from incidental ingestion of carcinogenic PAHs and arsenic is:

$$ACR_{oral,i} = \left(\frac{C_{soil} \times RAF_{oral} \times CF \times IR_i \times EF_i \times ED}{BW_i \times AT}\right) \times SF_{oral} \times ADAF_i$$

The annual additional cancer risk from dermal contact with carcinogenic PAHs and arsenic is:

$$ACR_{dermal,i} = \left(\frac{C_{soil} \times RAF_{dermal} \times SA_i \times AF_i \times EF_i \times ED}{BW_i \times AT}\right) \times SF_{oral} \times ADAF_i$$

The total additional lifetime cancer risk determined by summing up the annual additional cancer risk from both incidental ingestion and dermal contact is:

$$ACR_{total} = \sum_{i=4}^{30} ACR_{oral,i} + ACR_{dermal,i}$$

The exposure factors used in this analysis are presented in Table 1 of this report and are described in further detail below.

C_{soil}: Concentrations of Chemicals of Potential Concern in Synthetic Turf and Surface Soils

This is the exposure point concentration in mg/kg of carcinogenic PAHs or arsenic in synthetic turf infill or surface soil. The concentrations of the carcinogenic PAHs are converted into benzo(a)pyrene toxic equivalents (B(a)p-TEQ) using the following relative potency factors (RPFs) (USEPA, 1993):

- benzo(a)pyrene RPF=1.0;
- benzo(a)anthracene RPF=0.1;
- benzo(b)fluoranthene RPF=0.1;
- benzo(k)fluoranthene RPF=0.01;
- chysene RPF=0.001;
- dibenz(a,h)anthracene RPF=1.0; and
- indeno(1,2,3-cd)pyrene RPF=0.1

CF: Conversion Factor

A conversion factor of 10^{-6} kg/mg is used.

RAF_{oral}: Relative Availability Factor (Oral)

The oral relative availability factor (RAF_{oral}) is an adjustment factor to convert the concentration of a specific chemical of concern in soil to the amount absorbed from ingestion. An oral RAF of 0.29 was chosen for benzo(a)pyrene based upon an analysis of twelve studies of PAH absorption from soils (Magee *et al.*, 1996). Although the USEPA has not set an oral RAF for benzo(a)pyrene, the Massachusetts Department of Environmental Protection (MADEP) accepts an oral RAF of 0.3 for use in human health risk assessments for exposure to PAHs in contaminated soils (MassDEP, 2015). The oral RAF for crumb rubber is likely to be less than that for soil as PAHs absorb very strongly to the high organic carbon content in crumb rubber. The USEPA-recommended oral RAF of 0.6 for arsenic in soil was used in this analysis (USEPA, 2012).

RAF_{dermal}: Relative Availability Factor (Dermal)

The dermal relative availability factor (RAF_{dermal}) is an adjustment factor used to convert the concentration of a specific chemical of concern in soil to the amount absorbed via dermal contact. A dermal RAF of 0.02 was chosen for benzo(a)pyrene based upon an analysis of four studies of PAH absorption from soils (Magee *et al.*, 1996). The MADEP has accepted the dermal RAF of 0.02 for use in human health assessments. The EPA-accepted RAF for benzo(a)pyrene in soil is 0.13 and is based upon a study of dermal absorption of benzo(a)pyrene from soil to monkey skin; however, the same

study determined a RAF of 0.014 for human skin (Wester *et al.*, 1990). The dermal RAF for crumb rubber is likely to be less than that for soil as PAHs absorb very strongly to high organic carbon content in crumb rubber; a dermal RAF of 0.0011 was determined for the absorption of benzo(a)pyrene in lamp black to human skin (Stroo *et al.*, 2000). The USEPA-recommended dermal RAF of 0.03 for arsenic was used in this study.

IR_i: Daily Soil Ingestion Rate at the Athletic Playing Field

A daily soil ingestion rate of 100 mg/day for young children (ages less than 6 years) was chosen based upon a reported 95th percentile soil ingestion rate of 106 mg/day when measured over a 365-day period (Stanek and Calabrese, 2000). A daily soil ingestion rate of 50 mg/day for older children and adults was chosen for this analysis based upon a reported upper-75th percentile soil ingestion rate of 49 mg/day (Stanek *et al.*, 1997). The daily soil ingestion rate at the athletic playing field was calculated by multiplying the daily soil ingestion rate by the amount of time spent at the athletic playing field divided by 16 hours per day. This is based upon the assumption that soil ingestion is proportional to the amount of time spent at a given locale, and only occurs during waking hours, which comprise 16 hours per day (OEHHA, 2004). Soil-pica behavior (the recurrent ingestion of unusually high amounts of soil; 1,000 to >5,000 mg/day) and geophagy (the intentional ingestion of earth as a cultural practice; 50,000 mg/day) are not considered in this study.

EF_i: Exposure Frequency

The exposure frequency is number of days per year that the soccer player practices or plays on the athletic playing field. The 95th percentile value for the number of hours played per year for an enthusiastic soccer player was chosen for this analysis (OEHHA, 2010). The number of daily practices/games per year was determined by dividing the total hours played by the US Youth Soccer recommended play lengths (under-6 players practice 0.75 hours, under-8 players practice 1 hour, under-10 players practice 1.25 hours, and older players practice for 1.5 hours) (USYS, 2015).

ED: Exposure Duration

This analysis was performed using age-specific exposure factors with an exposure duration of 1 year for every year from ages 4 to until 30. An initial exposure age of 4 years was chosen as U-5 (age 4) is typically the youngest age group for league play in the United States.

BW_i: Body Weight

This analysis was performed using the USEPA-recommended values for body weight obtained from analysis of the National Health and Nutrition Examination Survey (NHANES) data from 1999-2006 (USEPA, 2008).

AT: Averaging Time

This analysis was performed using the USEPA-recommended averaging time of 25,550 days (70 years).

SF_{oral}: Oral Cancer Slope Factors

This analysis was performed using the USEPA Integrated Risk Information System (IRIS) oral cancer slope factors of 7.3 $(mg/kg\text{-}day)^{-1}$ for benzo(a)pyrene and 1.5 $(mg/kg\text{-}day)^{-1}$ for arsenic.

$ADAF_i$: Age Dependent Adjustment Factor

This analysis was performed using the USEPA-recommended age dependent adjustment factors (ADAFs) for assessing susceptibility of early-life exposure to carcinogens that act via a mutagenic mode of action (USEPA, 2005). An ADAF of 3 was used for soccer players for ages 4 to 16 and an ADAF of 1 for ages 16 to 30.

SA_i: Exposed Body Surface Area

The USEPA-recommended mean surface areas by body part were used in this analysis (USEPA, 2008). Surface areas of the face are assumed to be 1/3 that of the head, forearms are assumed to represent 45 percent of the arms, and lower legs are assumed to represent 40 percent of the legs (USEPA, 2004).

AF_i: Soil Adherence Factor (Weighted)

The adherence factor (AF) describes the amount of solid material that adheres to the skin per unit of surface area. The USEPA recommends that scenario-specific adherence factors be weighted according to the body parts exposed (USEPA, 2004). Adherence factors for three soccer scenarios (Kissel *et al.*, 1996) and two rugby scenarios (Holmes *et al.*, 1999) were normalized to a per hour exposure and then geometrically averaged to generate body part specific adherence factors. For each age, a weighted soil adherence factor is calculated by multiplying the body part specific soil adherence factors by the surface area of the body part and then normalized to the total body surface area.

PROPOSED GUIDELINE VALUES FOR CARCINOGENIC PAHS IN SYNTHETIC TURF INFILL

Although the USEPA range of acceptable risk lies between 1 in 1,000,000 and 1 in 10,000, a risk of 1 in 100,000 is considered generally to be the maximum risk tolerated by state and federal public health agencies. For a soccer-specific recreational use scenario, a target risk level of 1 in 1,000,000 is equivalent to an exposure point concentration of 4.9 mg/kg B(a)p-TEQ and a target risk of 1 in 100,000 is equivalent to an exposure point concentration of 49 mg/kg B(a)p-TEQ. A guideline value of 10 mg/kg B(a)p-TEQ for carcinogenic PAHs in synthetic turf infill is equivalent to a target risk level of 1 in 500,000, a risk level that is more conservative than the 1 in 100,000 risk level used by the State of California to generate Proposition 65 no significant risk levels (NSRLs).

REFERENCES

Holmes, Jr., King K., Jeffry H. Sirai, Karen Y. Richter, and John C. Kissel, 1999. Field Measurement of Dermal Soil Loadings in Occupational and Recreational Activities, Environmental Research Section A 80:148-157.

Kissel, John C., Karen Y. Richter, and Richard A. Fenske, 1996. Field Measurement of Dermal Soil Loading Attributable to Various Activities: Implications for Exposure Assessment, Risk Analysis 16(1):115-125.

Magee, Brian, Paul Anderson, and David Burmaster, 1996. Absorption Adjustment Factor (AAF) Distributions for Polycyclic Aromatic Hydrocarbons (PAHs), Human and Ecological Risk Assessment 2(4):841-873.

Massachusetts Department of Environmental Protection (MassDEP), 2015. Massachusetts Contingency Plan, March.

Office of Environmental Health Hazard Assessment (OEHHA), 2004. Guidance for Assessing Exposures and Health Risks at Existing and Proposed School Sites – Final Report, February.

OEHHA, 2010. Safety Study of Artificial Turf Containing Crumb Rubber Infill Made from Recycled Tires: Measurements of Chemicals and Particulates in the Air, Bacteria in the Turf, and Skin Abrasions Caused by Contact with the Surface, report prepared for California Department of Resources Recycling and Recovery (CalRecycle), DRRR-2010-009, October.

Stanek III, Edward J., Edward J. Calabrese, Ramon Barnes, and Penelope Pekow, 1997. Soil Ingestion in Adults – Results of a Second Pilot Study, Ecotoxicology and Environmental Safety 36:249-257.

Stanek III, Edward J. and Edward J. Calabrese, 2000. Daily Soil Ingestion Rates for Children at a Superfund Site, Risk Analysis 20(5):627-635.

Stroo, Hans F., Ron Jensen, Raymond C. Loehr, David V. Nakles, Anne Fairbrother, and Cris B. Liban, 2000. Environmentally Acceptable Endpoints for PAHs at a Manufactured Gas Plant Site, Environmental Science & Technology 34(18):3831-3836.

United States Environmental Protection Agency (USEPA), 1993. Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons, EPA/600/R-93/089, July.

USEPA, 2004. Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) – Final, EPA/540/R/99/005, July.

USEPA, 2005. Guidance on Selecting Age Groups for Monitoring and Assessing Childhood Exposures to Environmental Contaminants, EPA/630/P-03/003F, November.

USEPA, 2008. Child-Specific Exposure Factors Handbook, EPA/600/R-06/096F, September.

USEPA, 2009. A Scoping-Level Field Monitoring Study of Synthetic Turf Fields and Playgrounds, EPA/600/R-09/135, November.

USEPA, 2012. Recommendations for Default Value for Relative Bioavailability of Arsenic in Soil, OSWER 9200.1-113, December.

United States Youth Soccer (USYS), 2015. Frequently Asked Questions, downloaded from http://www.usyouthsoccer.org/aboutus/FAQ on March 15, 2015.

Wester, Ronald C., Howard I. Maibach, Daniel A.W. Bucks, Lena Sedik, Joseph Melendres, Cheng Liao, and Stephen DiZio, 1990. Percutaneous Absorption of [14C]DDT and [14C]Benz(a)pyrene from Soil, Fundamental and Applied Toxicology 15:510-516.

MILLENNIUM
CONSULTING ASSOCIATES
A MECA Consulting, Inc. Company

Sample Collection Locations

Kelly Park
100 Terminal Avenue
Menlo Park, CA 94025

Project Number	3118.2000
Figure Number	Figure 1
Date	October 2017
Drawn By	DMT

TABLE 1 - Detected Target Analytes Compareed to Guideline Values for the Protection of Human Health

Analyte Type	Metal	Crumb Rubber (mg/kg)	Guideline Value (mg/kg)	Basis for Guideline Value	Result
Metal	Cadmium	0.30	5.2	DTSC-modified RSL	Below
Metal	Chromium (Total)	0.91	36,000	DTSC-modified RSL	Below
Metal	Cobalt	63	660	DTSC CHHSL	Below
Metal	Copper	9.4	3,100	USEPA RSL	Below
Metal	Lead	33	80	DTSC-modified RSL	Below
Metal	Nickel	1.2	490	DTSC-modified RSL	Below
Metal	Zinc	5,600	23,000	USEPA RSL	Below
SVOC	Bis (2-ethylhexyl) Phthalate	66	39	USEPA RSL	Above
SVOC	Diethyl Phthalate	0.025	51,000	USEPA RSL	Below
SVOC	Phenol	0.088	19,000	USEPA RSL	Below
PAH	BaP(TEQ)	1.2	10	Risk-Based Value	Pass

Notes and Abbreviations

BaP(TEQ): Benzo(a)pyrene Toxic Equivalent

CHHSL: California Human Health Screening Level

DTSC: California Department of Toxic Substances Control

mg/kg: milligram per kilogram.

MIBK: 4-Methyl-2-pentanone

PAH: Polycyclic Aromatic Hydrocarbon

RSL: Regional Screening Level

SVOC: Semi-Volatile Organic Compound

USEPA: United States Environmental Protection Agency

VOC: Volatile Organic Compound

TABLE 2 - Additional Cancer Risk for a Soccer Recreational Use Scenario: Comparison of Synthetic Turf With Crumb Rubber Infill to Various Surface Soils

Soil/Infill Type	Description	SOURCE	B(a)p-TEQ (mg/kg)	Arsenic (mg/kg)	ACR (B(a)p-TEQ)	ACR (Arsenic)	ACR Cumulative
Urban Surface Soil	Springfield, MA	Bradley *et al.* , 1994	4.5	9.2	9.6E-07	3.6E-07	1.3E-06
Urban Surface Soil	Boston, MA	Bradley *et al.* , 1994	4.6	5.6	9.8E-07	2.2E-07	1.2E-06
Urban Surface Soil	Chicago, IL	USGS, 2003	2.1	16	4.4E-07	6.2E-07	1.1E-06
Rural Surface Soil	WA State Parks (Open)	Hart Crowser, 2011a	3.4	4.5	7.2E-07	1.8E-07	8.9E-07
Urban Surface Soil	Chattanooga, TN	Hussar *et al.* , 2012	3.0	5.1	6.5E-07	2.0E-07	8.5E-07
Urban Surface Soil	Providence, RI	Bradley *et al.* , 1994	2.9	4.3	6.2E-07	1.7E-07	7.9E-07
Rural Surface Soil	ME Background	AMEC, 2012	1.3	8.5	2.8E-07	3.3E-07	6.1E-07
Urban Surface Soil	ME Background	AMEC, 2012	1.4	7.3	3.1E-07	2.9E-07	6.0E-07
Urban Surface Soil	NJ Piedmont	BEM, 1997	1.1	8.6	2.2E-07	3.4E-07	5.6E-07
Urban Surface Soil	Western NY	EPRI, 2003	1.2	7.5	2.5E-07	3.0E-07	5.5E-07
Urban Surface Soil	NJ - Valley and Ridge	BEM, 1998	0.31	10	6.6E-08	4.1E-07	4.7E-07
Rural Surface Soil	Terre Haute, IN	IDEP, 2014	0.086	8.7	1.8E-08	3.4E-07	3.6E-07
Rural Surface Soil	Deleware	DNREC, 2012	0.460	6.1	9.8E-08	2.4E-07	3.4E-07
Rural Surface Soil	WA State Parks (Forested)	Hart Crowser, 2011a	1.1	2.8	2.3E-07	1.1E-07	3.4E-07
Urban Surface Soil	CA Background (North)	ENVIRON, 2002b	0.14	6.4	2.9E-08	2.5E-07	2.8E-07
Crumb Rubber	**Kelly Park**	**This Report**	**1.20**	**0.07**	**2.6E-07**	**2.8E-09**	**2.6E-07**
Urban Surface Soil	Seattle, WA	WSDOE, 2011	0.14	5.6	3.0E-08	2.2E-07	2.5E-07
Rural Surface Soil	NJ - Valley and Ridge	BEM, 2002	0.031	5.5	6.6E-09	2.2E-07	2.3E-07
Urban Surface Soil	CA Background (South)	ENVIRON, 2002a	0.091	4.9	1.9E-08	1.9E-07	2.1E-07
Rural Surface Soil	NJ - Coastal Plain	BEM, 2002	0.040	1.6	8.5E-09	6.3E-08	7.2E-08
Crumb Rubber	**Hillview Middle School**	**Millennium, 2017**	**0.058**	**0.070**	**1.2E-08**	**2.8E-09**	**1.5E-08**

APPENDIX A – HUMAN HEALTH RISK ASSESSMENT

CONCEPTUAL SITE MODEL

A conceptual site model is the representation of processes that control the transport, migration, and potential impacts of COPCs to human and ecological receptors. A simplified conceptual site model is presented to provide a framework for developing guideline values that are protective of human health. The following assumptions are proposed:

- Heavy metals, VOCs, SVOCs, and carcinogenic-PAHs may be present in synthetic turf infill at concentrations that can adversely impact human and health.
- Direct contact exposure via the dermal and ingestion pathways are considered as potential exposure pathways in this analysis.
- The inhalation of VOCs off-gassing from synthetic turf materials is not considered to be a potential exposure pathway in this analysis as the synthetic turf athletic field at the Hillview Middle School is located outdoors.
- Exposure factors will be developed based upon an aggressive soccer player who begins playing soccer at age 4 and plays until the age of 30. The development of the exposure factors will be covered in the next section of this letter report.
- The synthetic turf athletic field is not considered to be a habitat for plants, soil fauna (invertebrates), or wildlife.
- COPCs in stormwater leachate from the synthetic turf athletic field is treated by an on-site bioswale and does not migrate to groundwater or to the San Francisco Bay.

HHRA FOR CARCINOGENIC PAHs AND ARSENIC FOR A SOCCER-SPECIFIC RECREATIONAL USE SCENARIO

A HHRA was developed using the USEPA Risk Assessment Guidance for Superfund (RAGS) methodology (USEPA, 2004) to estimate the additional cancer risk from exposure to carcinogenic PAHs and arsenic for a soccer-specific recreational use scenario via the incidental ingestion and dermal contact pathways. Soccer was chosen for the exposure scenario as organized league play can begin as early as age 4 and exposure frequency and soil adherence factors for soccer play have been previously developed (Holmes (1999); Kissel (1996); and OEHHA (2010)). The inhalation exposure pathway was not considered in this analysis as several previous studies have shown that the concentrations of VOCs, SVOCs, and respirable particulate matter over synthetic turf athletic fields are generally indistinguishable from background levels (OEHHA, 2010; USEPA, 2009).

The following equations were used to estimate the annual additional cancer risk from exposure to carcinogenic PAHs and arsenic in synthetic turf and surface soils during a soccer specific recreational use exposure from ages 4 to 30.

The annual additional cancer risk from incidental ingestion of carcinogenic PAHs and arsenic is:

$$ACR_{oral,i} = \left(\frac{C_{soil} \times RAF_{oral} \times CF \times IR_i \times EF_i \times ED}{BW_i \times AT}\right) \times SF_{oral} \times ADAF_i$$

The annual additional cancer risk from dermal contact with carcinogenic PAHs and arsenic is:

$$ACR_{dermal,i} = \left(\frac{C_{soil} \times RAF_{dermal} \times SA_i \times AF_i \times EF_i \times ED}{BW_i \times AT}\right) \times SF_{oral} \times ADAF_i$$

The total additional lifetime cancer risk determined by summing up the annual additional cancer risk from both incidental ingestion and dermal contact is:

$$ACR_{total} = \sum_{i=4}^{30} ACR_{oral,i} + ACR_{dermal,i}$$

The exposure factors used in this analysis are presented in Table 1 of this report and are described in further detail below.

C_{soil}: Concentrations of Chemicals of Potential Concern in Synthetic Turf and Surface Soils

This is the exposure point concentration in mg/kg of carcinogenic PAHs or arsenic in synthetic turf infill or surface soil. The concentrations of the carcinogenic PAHs are converted into benzo(a)pyrene toxic equivalents (B(a)p-TEQ) using the following relative potency factors (RPFs) (USEPA, 1993):

- benzo(a)pyrene RPF=1.0;
- benzo(a)anthracene RPF=0.1;
- benzo(b)fluoranthene RPF=0.1;
- benzo(k)fluoranthene RPF=0.01;
- chysene RPF=0.001;
- dibenz(a,h)anthracene RPF=1.0; and
- indeno(1,2,3-cd)pyrene RPF=0.1

CF: Conversion Factor

A conversion factor of 10^{-6} kg/mg is used.

RAF_{oral}: Relative Availability Factor (Oral)

The oral relative availability factor (RAF_{oral}) is an adjustment factor to convert the concentration of a specific chemical of concern in soil to the amount absorbed from ingestion. An oral RAF of 0.29 was chosen for benzo(a)pyrene based upon an analysis of twelve studies of PAH absorption from soils (Magee *et al.*, 1996). Although the USEPA has not set an oral RAF for benzo(a)pyrene, the Massachusetts Department of Environmental Protection (MADEP) accepts an oral RAF of 0.3 for use in human health risk assessments for exposure to PAHs in contaminated soils (MassDEP, 2015). The oral RAF for crumb rubber is likely to be less than that for soil as PAHs absorb very strongly to the high organic carbon content in crumb rubber. The USEPA-recommended oral RAF of 0.6 for arsenic in soil was used in this analysis (USEPA, 2012).

RAF_{dermal}: Relative Availability Factor (Dermal)

The dermal relative availability factor (RAF_{dermal}) is an adjustment factor used to convert the concentration of a specific chemical of concern in soil to the amount absorbed via dermal contact. A dermal RAF of 0.02 was chosen for benzo(a)pyrene based upon an analysis of four studies of PAH absorption from soils (Magee *et al.*, 1996). The MADEP has accepted the dermal RAF of 0.02 for use in human health assessments. The EPA-accepted RAF for benzo(a)pyrene in soil is 0.13 and is based upon a study of dermal absorption of benzo(a)pyrene from soil to monkey skin; however, the same

study determined a RAF of 0.014 for human skin (Wester *et al.*, 1990). The dermal RAF for crumb rubber is likely to be less than that for soil as PAHs absorb very strongly to high organic carbon content in crumb rubber; a dermal RAF of 0.0011 was determined for the absorption of benzo(a)pyrene in lamp black to human skin (Stroo *et al.*, 2000). The USEPA-recommended dermal RAF of 0.03 for arsenic was used in this study.

IR_i: Daily Soil Ingestion Rate at the Athletic Playing Field

A daily soil ingestion rate of 100 mg/day for young children (ages less than 6 years) was chosen based upon a reported 95th percentile soil ingestion rate of 106 mg/day when measured over a 365-day period (Stanek and Calabrese, 2000). A daily soil ingestion rate of 50 mg/day for older children and adults was chosen for this analysis based upon a reported upper-75th percentile soil ingestion rate of 49 mg/day (Stanek *et al.*, 1997). The daily soil ingestion rate at the athletic playing field was calculated by multiplying the daily soil ingestion rate by the amount of time spent at the athletic playing field divided by 16 hours per day. This is based upon the assumption that soil ingestion is proportional to the amount of time spent at a given locale, and only occurs during waking hours, which comprise 16 hours per day (OEHHA, 2004). Soil-pica behavior (the recurrent ingestion of unusually high amounts of soil; 1,000 to >5,000 mg/day) and geophagy (the intentional ingestion of earth as a cultural practice; 50,000 mg/day) are not considered in this study.

EF_i: Exposure Frequency

The exposure frequency is number of days per year that the soccer player practices or plays on the athletic playing field. The 95th percentile value for the number of hours played per year for an enthusiastic soccer player was chosen for this analysis (OEHHA, 2010). The number of daily practices/games per year was determined by dividing the total hours played by the US Youth Soccer recommended play lengths (under-6 players practice 0.75 hours, under-8 players practice 1 hour, under-10 players practice 1.25 hours, and older players practice for 1.5 hours) (USYS, 2015).

ED: Exposure Duration

This analysis was performed using age-specific exposure factors with an exposure duration of 1 year for every year from ages 4 to until 30. An initial exposure age of 4 years was chosen as U-5 (age 4) is typically the youngest age group for league play in the United States.

BW_i: Body Weight

This analysis was performed using the USEPA-recommended values for body weight obtained from analysis of the National Health and Nutrition Examination Survey (NHANES) data from 1999-2006 (USEPA, 2008).

AT: Averaging Time

This analysis was performed using the USEPA-recommended averaging time of 25,550 days (70 years).

SF_{oral}: Oral Cancer Slope Factors

This analysis was performed using the USEPA Integrated Risk Information System (IRIS) oral cancer slope factors of 7.3 $(mg/kg\text{-}day)^{-1}$ for benzo(a)pyrene and 1.5 $(mg/kg\text{-}day)^{-1}$ for arsenic.

$ADAF_i$: Age Dependent Adjustment Factor

This analysis was performed using the USEPA-recommended age dependent adjustment factors (ADAFs) for assessing susceptibility of early-life exposure to carcinogens that act via a mutagenic mode of action (USEPA, 2005). An ADAF of 3 was used for soccer players for ages 4 to 16 and an ADAF of 1 for ages 16 to 30.

SA_i: Exposed Body Surface Area

The USEPA-recommended mean surface areas by body part were used in this analysis (USEPA, 2008). Surface areas of the face are assumed to be 1/3 that of the head, forearms are assumed to represent 45 percent of the arms, and lower legs are assumed to represent 40 percent of the legs (USEPA, 2004).

AF_i: Soil Adherence Factor (Weighted)

The adherence factor (AF) describes the amount of solid material that adheres to the skin per unit of surface area. The USEPA recommends that scenario-specific adherence factors be weighted according to the body parts exposed (USEPA, 2004). Adherence factors for three soccer scenarios (Kissel *et al.*, 1996) and two rugby scenarios (Holmes *et al.*, 1999) were normalized to a per hour exposure and then geometrically averaged to generate body part specific adherence factors. For each age, a weighted soil adherence factor is calculated by multiplying the body part specific soil adherence factors by the surface area of the body part and then normalized to the total body surface area.

PROPOSED GUIDELINE VALUES FOR CARCINOGENIC PAHS IN SYNTHETIC TURF INFILL

Although the USEPA range of acceptable risk lies between 1 in 1,000,000 and 1 in 10,000, a risk of 1 in 100,000 is considered generally to be the maximum risk tolerated by state and federal public health agencies. For a soccer-specific recreational use scenario, a target risk level of 1 in 1,000,000 is equivalent to an exposure point concentration of 4.9 mg/kg B(a)p-TEQ and a target risk of 1 in 100,000 is equivalent to an exposure point concentration of 49 mg/kg B(a)p-TEQ. A guideline value of 10 mg/kg B(a)p-TEQ for carcinogenic PAHs in synthetic turf infill is equivalent to a target risk level of 1 in 500,000, a risk level that is more conservative than the 1 in 100,000 risk level used by the State of California to generate Proposition 65 no significant risk levels (NSRLs).

REFERENCES

Holmes, Jr., King K., Jeffry H. Sirai, Karen Y. Richter, and John C. Kissel, 1999. Field Measurement of Dermal Soil Loadings in Occupational and Recreational Activities, Environmental Research Section A 80:148-157.

Kissel, John C., Karen Y. Richter, and Richard A. Fenske, 1996. Field Measurement of Dermal Soil Loading Attributable to Various Activities: Implications for Exposure Assessment, Risk Analysis 16(1):115-125.

Magee, Brian, Paul Anderson, and David Burmaster, 1996. Absorption Adjustment Factor (AAF) Distributions for Polycyclic Aromatic Hydrocarbons (PAHs), Human and Ecological Risk Assessment 2(4):841-873.

Massachusetts Department of Environmental Protection (MassDEP), 2015. Massachusetts Contingency Plan, March.

Office of Environmental Health Hazard Assessment (OEHHA), 2004. Guidance for Assessing Exposures and Health Risks at Existing and Proposed School Sites – Final Report, February.

OEHHA, 2010. Safety Study of Artificial Turf Containing Crumb Rubber Infill Made from Recycled Tires: Measurements of Chemicals and Particulates in the Air, Bacteria in the Turf, and Skin Abrasions Caused by Contact with the Surface, report prepared for California Department of Resources Recycling and Recovery (CalRecycle), DRRR-2010-009, October.

Stanek III, Edward J., Edward J. Calabrese, Ramon Barnes, and Penelope Pekow, 1997. Soil Ingestion in Adults – Results of a Second Pilot Study, Ecotoxicology and Environmental Safety 36:249-257.

Stanek III, Edward J. and Edward J. Calabrese, 2000. Daily Soil Ingestion Rates for Children at a Superfund Site, Risk Analysis 20(5):627-635.

Stroo, Hans F., Ron Jensen, Raymond C. Loehr, David V. Nakles, Anne Fairbrother, and Cris B. Liban, 2000. Environmentally Acceptable Endpoints for PAHs at a Manufactured Gas Plant Site, Environmental Science & Technology 34(18):3831-3836.

United States Environmental Protection Agency (USEPA), 1993. Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons, EPA/600/R-93/089, July.

USEPA, 2004. Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) – Final, EPA/540/R/99/005, July.

USEPA, 2005. Guidance on Selecting Age Groups for Monitoring and Assessing Childhood Exposures to Environmental Contaminants, EPA/630/P-03/003F, November.

USEPA, 2008. Child-Specific Exposure Factors Handbook, EPA/600/R-06/096F, September.

USEPA, 2009. A Scoping-Level Field Monitoring Study of Synthetic Turf Fields and Playgrounds, EPA/600/R-09/135, November.

USEPA, 2012. Recommendations for Default Value for Relative Bioavailability of Arsenic in Soil, OSWER 9200.1-113, December.

United States Youth Soccer (USYS), 2015. Frequently Asked Questions, downloaded from http://www.usyouthsoccer.org/aboutus/FAQ on March 15, 2015.

Wester, Ronald C., Howard I. Maibach, Daniel A.W. Bucks, Lena Sedik, Joseph Melendres, Cheng Liao, and Stephen DiZio, 1990. Percutaneous Absorption of [14C]DDT and [14C]Benz(a)pyrene from Soil, Fundamental and Applied Toxicology 15:510-516.

TABLE 1 - Exposure Factors Used in the Human Health Risk Assessment Model

Exposure Factor	Variable	Units	Age Range (Years)									
			4 to <5	5 to <6	6 to <7	7 to <8	8 to <9	9 to <10	10 to <11	11 to <12	12 to <13	13 to <14
Benzo(a)pyrene TEQ Concentration	$C_{B(a)p\text{-}TEQ}$	mg/kg	5	5	5	5	5	5	5	5	5	5
Arsenic Concentration	$C_{arsenic}$	mg/kg	0	0	0	0	0	0	0	0	0	0
Body Weight	BW_i	kg	18.6	18.6	31.8	31.8	31.8	31.8	31.8	56.8	56.8	56.8
Surface Area (Head)	SA_{head}	cm^2	1,040	1,040	1,360	1,360	1,360	1,360	1,360	1,490	1,490	1,490
Fraction Exposed (Head)	FE_{head}	unitless	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Surface Area (Arms)	SA_{arms}	cm^2	1,080	1,080	1,370	1,370	1,370	1,370	1,370	2,050	2,050	2,050
Fraction Exposed (Arms)	FE_{arms}	unitless	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45
Surface Area (Hands)	SA_{hands}	cm^2	450	450	540	540	540	540	540	840	840	840
Fraction Exposed (Hands)	FE_{hands}	unitless	1	1	1	1	1	1	1	1	1	1
Surface Area (Legs)	SA_{legs}	cm^2	2,070	2,070	3,010	3,010	3,010	3,010	3,010	4,980	4,980	4,980
Fraction Exposed (Legs)	FE_{legs}	unitless	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Total Exposed Surface Area	SA_i	cm^2	2,107	2,107	2,809	2,809	2,809	2,809	2,809	4,246	4,246	4,246
Annual Play	AP	hours/year	64	64	280	280	280	280	280	280	320	320
Play Length	PL	hours/day	0.75	0.75	1.00	1.00	1.25	1.25	1.50	1.50	1.50	1.50
Exposure Frequency	EF_i	days/year	85	85	280	280	224	224	187	187	213	213
Exposure Duration	ED	years	1	1	1	1	1	1	1	1	1	1
Adherence Factor (Face)	AF_{face}	mg/cm^2	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014
Adherence Factor (Arms)	AF_{arms}	mg/cm^2	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008
Adherence Factor (Hands)	AF_{hands}	mg/cm^2	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024
Adherence Factor (Legs)	AF_{legs}	mg/cm^2	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020
Weighted Adherence Factor	AF_i	mg/cm^2	0.013	0.013	0.017	0.017	0.021	0.021	0.026	0.026	0.026	0.026
Age Dependent Adjustment Factor	$ADAF_i$	unitless	3	3	3	3	3	3	3	3	3	3
Ingestion Rate	IR_i	mg/day	100	100	50	50	50	50	50	50	50	50
Fraction of Time at Field	F_{field}	unitless	0.047	0.047	0.063	0.063	0.078	0.078	0.094	0.094	0.094	0.094
Normalized Ingestion Rate	IR_i	mg/day	4.688	4.688	3.125	3.125	3.906	3.906	4.688	4.688	4.688	4.688
Benzo(a)pyrene Oral Slope Factor	$SF_{o\text{-}B(a)p}$	$(mg/kg\text{-}day)^{-1}$	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
Benzo(a)pyrene Oral RAF	$RAF_{o\text{-}B(a)p}$	unitless	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29
Benzo(a)pyrene Dermal RAF	$RAF_{d\text{-}B(a)p}$	unitless	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Arsenic Oral Slope Factor	$SF_{o\text{-}arsenic}$	$(mg/kg\text{-}day)^{-1}$	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Arsenic Oral RAF	$RAF_{o\text{-}arsenic}$	unitless	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Arsenic Dermal RAF	$RAF_{d\text{-}arsenic}$	unitless	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Averaging Time	AT	days	25,550	25,550	25,550	25,550	25,550	25,550	25,550	25,550	25,550	25,550
Conversion Factor	CF	kg/mg	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06

TABLE 1 - Exposure Factors Used in the Human Health Risk Assessment Model

Exposure Factor	Variable	Units	Age Range (Years)									
			14 to <15	15 to <16	16 to <17	17 to <18	18 to <19	19 to <20	20 to <21	21 to <22	22 to <23	23 to <24
Benzo(a)pyrene TEQ Concentration	$C_{B(a)p\text{-}TEQ}$	mg/kg	5	5	5	5	5	5	5	5	5	5
Arsenic Concentration	$C_{arsenic}$	mg/kg	0	0	0	0	0	0	0	0	0	0
Body Weight	BW_i	kg	56.8	56.8	71.6	71.6	71.6	71.6	71.6	71.6	71.6	71.6
Surface Area (Head)	SA_{head}	cm^2	1,490	1,490	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440
Fraction Exposed (Head)	FE_{head}	unitless	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Surface Area (Arms)	SA_{arms}	cm^2	2,050	2,050	2,820	2,820	2,820	2,820	2,820	2,820	2,820	2,820
Fraction Exposed (Arms)	FE_{arms}	unitless	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45
Surface Area (Hands)	SA_{hands}	cm^2	840	840	990	990	990	990	990	990	990	990
Fraction Exposed (Hands)	FE_{hands}	unitless	1	1	1	1	1	1	1	1	1	1
Surface Area (Legs)	SA_{legs}	cm^2	4,980	4,980	5,920	5,920	5,920	5,920	5,920	5,920	5,920	5,920
Fraction Exposed (Legs)	FE_{legs}	unitless	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Total Exposed Surface Area	SA_i	cm^2	4,246	4,246	5,102	5,102	5,102	5,102	5,102	5,102	5,102	5,102
Annual Play	AP	hours/year	475	475	475	475	475	430	430	430	430	359
Play Length	PL	hours/day	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
Exposure Frequency	EF_i	days/year	317	317	317	317	317	287	287	287	287	239
Exposure Duration	ED	years	1	1	1	1	1	1	1	1	1	1
Adherence Factor (Face)	AF_{face}	mg/cm^2	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014
Adherence Factor (Arms)	AF_{arms}	mg/cm^2	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008
Adherence Factor (Hands)	AF_{hands}	mg/cm^2	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024
Adherence Factor (Legs)	AF_{legs}	mg/cm^2	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020
Weighted Adherence Factor	AF_i	mg/cm^2	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026
Age Dependent Adjustment Factor	$ADAF_i$	unitless	3	3	1	1	1	1	1	1	1	1
Ingestion Rate	IR_i	mg/day	50	50	50	50	50	50	50	50	50	50
Fraction of Time at Field	F_{field}	unitless	0.094	0.094	0.094	0.094	0.094	0.094	0.094	0.094	0.094	0.094
Normalized Ingestion Rate	IR_i	mg/day	4.688	4.688	4.688	4.688	4.688	4.688	4.688	4.688	4.688	4.688
Benzo(a)pyrene Oral Slope Factor	$SF_{o\text{-}B(a)p}$	$(mg/kg\text{-}day)^{-1}$	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
Benzo(a)pyrene Oral RAF	$RAF_{o\text{-}B(a)p}$	unitless	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29
Benzo(a)pyrene Dermal RAF	$RAF_{d\text{-}B(a)p}$	unitless	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Arsenic Oral Slope Factor	$SF_{o\text{-}arsenic}$	$(mg/kg\text{-}day)^{-1}$	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Arsenic Oral RAF	$RAF_{o\text{-}arsenic}$	unitless	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Arsenic Dermal RAF	$RAF_{d\text{-}arsenic}$	unitless	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Averaging Time	AT	days	25,550	25,550	25,550	25,550	25,550	25,550	25,550	25,550	25,550	25,550
Conversion Factor	CF	kg/mg	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06

TABLE 1 - Exposure Factors Used in the Human Health Risk Assessment Model

Exposure Factor	Variable	Units	Age Range (Years)					
			24 to <25	25 to <26	26 to <27	27 to <28	28 to <29	29 to <30
Benzo(a)pyrene TEQ Concentration	$C_{B(a)p\text{-}TEQ}$	mg/kg	5	5	5	5	5	5
Arsenic Concentration	$C_{arsenic}$	mg/kg	0	0	0	0	0	0
Body Weight	BW_i	kg	71.6	71.6	71.6	71.6	71.6	71.6
Surface Area (Head)	SA_{head}	cm^2	1,440	1,440	1,440	1,440	1,440	1,440
Fraction Exposed (Head)	FE_{head}	unitless	0.33	0.33	0.33	0.33	0.33	0.33
Surface Area (Arms)	SA_{arms}	cm^2	2,820	2,820	2,820	2,820	2,820	2,820
Fraction Exposed (Arms)	FE_{arms}	unitless	0.45	0.45	0.45	0.45	0.45	0.45
Surface Area (Hands)	SA_{hands}	cm^2	990	990	990	990	990	990
Fraction Exposed (Hands)	FE_{hands}	unitless	1	1	1	1	1	1
Surface Area (Legs)	SA_{legs}	cm^2	5,920	5,920	5,920	5,920	5,920	5,920
Fraction Exposed (Legs)	FE_{legs}	unitless	0.4	0.4	0.4	0.4	0.4	0.4
Total Exposed Surface Area	SA_i	cm^2	5,102	5,102	5,102	5,102	5,102	5,102
Annual Play	AP	hours/year	359	359	359	359	359	359
Play Length	PL	hours/day	1.50	1.50	1.50	1.50	1.50	1.50
Exposure Frequency	EF_i	days/year	239	239	239	239	239	239
Exposure Duration	ED	years	1	1	1	1	1	1
Adherence Factor (Face)	AF_{face}	mg/cm^2	0.014	0.014	0.014	0.014	0.014	0.014
Adherence Factor (Arms)	AF_{arms}	mg/cm^2	0.008	0.008	0.008	0.008	0.008	0.008
Adherence Factor (Hands)	AF_{hands}	mg/cm^2	0.024	0.024	0.024	0.024	0.024	0.024
Adherence Factor (Legs)	AF_{legs}	mg/cm^2	0.020	0.020	0.020	0.020	0.020	0.020
Weighted Adherence Factor	AF_i	mg/cm^2	0.026	0.026	0.026	0.026	0.026	0.026
Age Dependent Adjustment Factor	$ADAF_i$	unitless	1	1	1	1	1	1
Ingestion Rate	IR_i	mg/day	50	50	50	50	50	50
Fraction of Time at Field	F_{field}	unitless	0.094	0.094	0.094	0.094	0.094	0.094
Normalized Ingestion Rate	IR_i	mg/day	4.688	4.688	4.688	4.688	4.688	4.688
Benzo(a)pyrene Oral Slope Factor	$SF_{o\text{-}B(a)p}$	$(mg/kg\text{-}day)^{-1}$	7.3	7.3	7.3	7.3	7.3	7.3
Benzo(a)pyrene Oral RAF	$RAF_{o\text{-}B(a)p}$	unitless	0.29	0.29	0.29	0.29	0.29	0.29
Benzo(a)pyrene Dermal RAF	$RAF_{d\text{-}B(a)p}$	unitless	0.02	0.02	0.02	0.02	0.02	0.02
Arsenic Oral Slope Factor	$SF_{o\text{-}arsenic}$	$(mg/kg\text{-}day)^{-1}$	1.5	1.5	1.5	1.5	1.5	1.5
Arsenic Oral RAF	$RAF_{o\text{-}arsenic}$	unitless	0.6	0.6	0.6	0.6	0.6	0.6
Arsenic Dermal RAF	$RAF_{d\text{-}arsenic}$	unitless	0.03	0.03	0.03	0.03	0.03	0.03
Averaging Time	AT	days	25,550	25,550	25,550	25,550	25,550	25,550
Conversion Factor	CF	kg/mg	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06

McCampbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 1710634 **Amended:** 10/23/2017

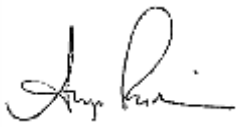
Report Created for: MECA Consulting, Inc.

401 Roland Way, Ste. 250
Oakland, CA 94621

Project Contact: David Teter
Project P.O.: 12874
Project Name: 3118.2000; Crumb Rubber - Kelly Park

Project Received: 10/17/2017

Analytical Report reviewed & approved for release on 10/20/2017 by:



Angela Rydelius
Laboratory Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.

1534 Willow Pass Rd. Pittsburg, CA 94565 ♦ TEL: (877) 252-9262 ♦ FAX: (925) 252-9269 ♦ www.mccampbell.com
CA ELAP 1644 ♦ NELAP 4033 ORELAP

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Glossary of Terms & Qualifier Definitions

Client: MECA Consulting, Inc.
Project: 3118.2000; Crumb Rubber - Kelly Park
WorkOrder: 1710634

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Glossary of Terms & Qualifier Definitions

Client: MECA Consulting, Inc.
Project: 3118.2000; Crumb Rubber - Kelly Park
WorkOrder: 1710634

Analytical Qualifiers

J	Result is less than the RL/ML but greater than the MDL. The reported concentration is an estimated value.
a4	Reporting limits raised due to the sample's matrix prohibiting a full volume extraction.
a13	Reporting limit raised due to low density sample

Quality Control Qualifiers

F10	MS/MSD outside control limits. Physical or chemical interferences exist due to sample matrix.

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1710634
Date Received:	10/17/17 14:30	**Extraction Method:**	SW3060A
Date Prepared:	10/17/17	**Analytical Method:**	SW7199
Project:	3118.2000; Crumb Rubber - Kelly Park	**Unit:**	mg/Kg

Hexavalent chromium by Alkaline Digestion and IC Analysis

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Crumb Rubber/ Kelly Park	**1710634-001A**	**Soil**	**10/17/2017 09:45**	**IC2 17101817.CHW**	**147209**

Analytes	Result	MDL	RL	DF	Date Analyzed
Hexavalent chromium	ND	0.10	0.20	1	10/18/2017 03:49

Analyst(s): AO

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1710634
Date Received:	10/17/17 14:30	**Extraction Method:**	SW3550B/3630C
Date Prepared:	10/17/17	**Analytical Method:**	SW8082
Project:	3118.2000; Crumb Rubber - Kelly Park	**Unit:**	mg/kg

Polychlorinated Biphenyls (PCBs) Aroclors w/ Column Style Clean-up

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Crumb Rubber/ Kelly Park	**1710634-001A**	**Soil**	**10/17/2017 09:45**	**GC40 10181713.d**	**147219**

Analytes	Result	MDL	RL	DF	Date Analyzed
Aroclor1016	ND	0.0051	0.050	1	10/18/2017 12:00
Aroclor1221	ND	0.011	0.050	1	10/18/2017 12:00
Aroclor1232	ND	0.0063	0.050	1	10/18/2017 12:00
Aroclor1242	ND	0.0067	0.050	1	10/18/2017 12:00
Aroclor1248	ND	0.0040	0.050	1	10/18/2017 12:00
Aroclor1254	ND	0.0068	0.050	1	10/18/2017 12:00
Aroclor1260	ND	0.0061	0.050	1	10/18/2017 12:00
PCBs, total	ND	0.0040	0.050	1	10/18/2017 12:00

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	73	55-152	10/18/2017 12:00

Analyst(s): KX

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1710634
Date Received:	10/17/17 14:30	**Extraction Method:**	SW5030B
Date Prepared:	10/19/17	**Analytical Method:**	SW8260B
Project:	3118.2000; Crumb Rubber - Kelly Park	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Crumb Rubber/ Kelly Park	1710634-001A	Soil	10/17/2017 09:45	GC16 10191711.D	147274

Analytes	Result	MDL	RL	DF	Date Analyzed
Acetone	ND	0.078	0.20	1	10/19/2017 13:47
tert-Amyl methyl ether (TAME)	ND	0.0020	0.010	1	10/19/2017 13:47
Benzene	ND	0.0032	0.010	1	10/19/2017 13:47
Bromobenzene	ND	0.0034	0.010	1	10/19/2017 13:47
Bromochloromethane	ND	0.0030	0.010	1	10/19/2017 13:47
Bromodichloromethane	ND	0.0024	0.010	1	10/19/2017 13:47
Bromoform	ND	0.0016	0.010	1	10/19/2017 13:47
Bromomethane	ND	0.0040	0.010	1	10/19/2017 13:47
2-Butanone (MEK)	ND	0.011	0.040	1	10/19/2017 13:47
t-Butyl alcohol (TBA)	ND	0.011	0.10	1	10/19/2017 13:47
n-Butyl benzene	ND	0.0070	0.010	1	10/19/2017 13:47
sec-Butyl benzene	ND	0.0068	0.010	1	10/19/2017 13:47
tert-Butyl benzene	ND	0.0060	0.010	1	10/19/2017 13:47
Carbon Disulfide	ND	0.0034	0.010	1	10/19/2017 13:47
Carbon Tetrachloride	ND	0.0034	0.010	1	10/19/2017 13:47
Chlorobenzene	ND	0.0036	0.010	1	10/19/2017 13:47
Chloroethane	ND	0.0032	0.010	1	10/19/2017 13:47
Chloroform	ND	0.0032	0.010	1	10/19/2017 13:47
Chloromethane	ND	0.0034	0.010	1	10/19/2017 13:47
2-Chlorotoluene	ND	0.0044	0.010	1	10/19/2017 13:47
4-Chlorotoluene	ND	0.0042	0.010	1	10/19/2017 13:47
Dibromochloromethane	ND	0.0022	0.010	1	10/19/2017 13:47
1,2-Dibromo-3-chloropropane	ND	0.0024	0.0080	1	10/19/2017 13:47
1,2-Dibromoethane (EDB)	ND	0.0026	0.0080	1	10/19/2017 13:47
Dibromomethane	ND	0.0028	0.010	1	10/19/2017 13:47
1,2-Dichlorobenzene	ND	0.0028	0.010	1	10/19/2017 13:47
1,3-Dichlorobenzene	ND	0.0036	0.010	1	10/19/2017 13:47
1,4-Dichlorobenzene	ND	0.0036	0.010	1	10/19/2017 13:47
Dichlorodifluoromethane	ND	0.0022	0.010	1	10/19/2017 13:47
1,1-Dichloroethane	ND	0.0034	0.010	1	10/19/2017 13:47
1,2-Dichloroethane (1,2-DCA)	ND	0.0028	0.0080	1	10/19/2017 13:47
1,1-Dichloroethene	ND	0.0034	0.010	1	10/19/2017 13:47
cis-1,2-Dichloroethene	ND	0.0030	0.010	1	10/19/2017 13:47
trans-1,2-Dichloroethene	ND	0.0032	0.010	1	10/19/2017 13:47
1,2-Dichloropropane	ND	0.0028	0.010	1	10/19/2017 13:47
1,3-Dichloropropane	ND	0.0032	0.010	1	10/19/2017 13:47
2,2-Dichloropropane	ND	0.0026	0.010	1	10/19/2017 13:47

(Cont.)

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1710634
Date Received:	10/17/17 14:30	**Extraction Method:**	SW5030B
Date Prepared:	10/19/17	**Analytical Method:**	SW8260B
Project:	3118.2000; Crumb Rubber - Kelly Park	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Crumb Rubber/ Kelly Park	1710634-001A	Soil	10/17/2017 09:45	GC16 10191711.D	147274

Analytes	Result	MDL	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0036	0.010	1	10/19/2017 13:47
cis-1,3-Dichloropropene	ND	0.0030	0.010	1	10/19/2017 13:47
trans-1,3-Dichloropropene	ND	0.0028	0.010	1	10/19/2017 13:47
Diisopropyl ether (DIPE)	ND	0.0028	0.010	1	10/19/2017 13:47
Ethylbenzene	ND	0.0040	0.010	1	10/19/2017 13:47
Ethyl tert-butyl ether (ETBE)	ND	0.0026	0.010	1	10/19/2017 13:47
Freon 113	ND	0.0032	0.010	1	10/19/2017 13:47
Hexachlorobutadiene	ND	0.010	0.010	1	10/19/2017 13:47
Hexachloroethane	ND	0.0050	0.010	1	10/19/2017 13:47
2-Hexanone	ND	0.0050	0.010	1	10/19/2017 13:47
Isopropylbenzene	ND	0.0044	0.010	1	10/19/2017 13:47
4-Isopropyl toluene	ND	0.0062	0.010	1	10/19/2017 13:47
Methyl-t-butyl ether (MTBE)	ND	0.0026	0.010	1	10/19/2017 13:47
Methylene chloride	ND	0.0072	0.010	1	10/19/2017 13:47
4-Methyl-2-pentanone (MIBK)	ND	0.0016	0.010	1	10/19/2017 13:47
Naphthalene	ND	0.0012	0.010	1	10/19/2017 13:47
n-Propyl benzene	ND	0.0058	0.010	1	10/19/2017 13:47
Styrene	ND	0.0028	0.010	1	10/19/2017 13:47
1,1,1,2-Tetrachloroethane	ND	0.0032	0.010	1	10/19/2017 13:47
1,1,2,2-Tetrachloroethane	ND	0.0026	0.010	1	10/19/2017 13:47
Tetrachloroethene	ND	0.0046	0.010	1	10/19/2017 13:47
Toluene	ND	0.0044	0.010	1	10/19/2017 13:47
1,2,3-Trichlorobenzene	ND	0.0014	0.010	1	10/19/2017 13:47
1,2,4-Trichlorobenzene	ND	0.0022	0.010	1	10/19/2017 13:47
1,1,1-Trichloroethane	ND	0.0036	0.010	1	10/19/2017 13:47
1,1,2-Trichloroethane	ND	0.0032	0.010	1	10/19/2017 13:47
Trichloroethene	ND	0.0034	0.010	1	10/19/2017 13:47
Trichlorofluoromethane	ND	0.0032	0.010	1	10/19/2017 13:47
1,2,3-Trichloropropane	ND	0.0038	0.010	1	10/19/2017 13:47
1,2,4-Trimethylbenzene	ND	0.0048	0.010	1	10/19/2017 13:47
1,3,5-Trimethylbenzene	ND	0.0054	0.010	1	10/19/2017 13:47
Vinyl Chloride	ND	0.0030	0.010	1	10/19/2017 13:47
Xylenes, Total	ND	0.0050	0.010	1	10/19/2017 13:47

(Cont.)

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1710634
Date Received:	10/17/17 14:30	**Extraction Method:**	SW5030B
Date Prepared:	10/19/17	**Analytical Method:**	SW8260B
Project:	3118.2000; Crumb Rubber - Kelly Park	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Crumb Rubber/ Kelly Park	**1710634-001A**	**Soil**	**10/17/2017 09:45**	**GC16 10191711.D**	**147274**

Analytes	Result	MDL	RL	DF	Date Analyzed
Surrogates	REC (%)		Limits		
Dibromofluoromethane	128		82-136		10/19/2017 13:47
Toluene-d8	121		92-139		10/19/2017 13:47
4-BFB	114		82-135		10/19/2017 13:47
Benzene-d6	102		55-122		10/19/2017 13:47
Ethylbenzene-d10	107		58-141		10/19/2017 13:47
1,2-DCB-d4	69		51-107		10/19/2017 13:47

Analyst(s): KF Analytical Comments: a13

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1710634
Date Received:	10/17/17 14:30	**Extraction Method:**	SW3550B
Date Prepared:	10/17/17	**Analytical Method:**	SW8270C-SIM
Project:	3118.2000; Crumb Rubber - Kelly Park	**Unit:**	mg/kg

Polynuclear Aromatic Hydrocarbons (PAHs / PNAs) using SIM Mode

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Crumb Rubber/ Kelly Park	**1710634-001A**	**Soil**	**10/17/2017 09:45**	**GC35 10191713.D**	**147145**

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Acenaphthene	ND		0.026	0.10	5	10/19/2017 14:26
Acenaphthylene	**0.056**	J	0.034	0.10	5	10/19/2017 14:26
Anthracene	**0.034**	J	0.029	0.10	5	10/19/2017 14:26
Benzo (a) anthracene	**0.28**		0.017	0.10	5	10/19/2017 14:26
Benzo (a) pyrene	ND		0.027	0.10	5	10/19/2017 14:26
Benzo (b) fluoranthene	**0.59**		0.015	0.10	5	10/19/2017 14:26
Benzo (g,h,i) perylene	**0.97**		0.033	0.10	5	10/19/2017 14:26
Benzo (k) fluoranthene	**0.11**		0.016	0.10	5	10/19/2017 14:26
Chrysene	**1.8**		0.024	0.10	5	10/19/2017 14:26
Dibenzo (a,h) anthracene	ND		0.050	0.10	5	10/19/2017 14:26
Fluoranthene	**1.5**		0.040	0.10	5	10/19/2017 14:26
Fluorene	ND		0.060	0.10	5	10/19/2017 14:26
Indeno (1,2,3-cd) pyrene	ND		0.049	0.10	5	10/19/2017 14:26
1-Methylnaphthalene	ND		0.029	0.10	5	10/19/2017 14:26
2-Methylnaphthalene	ND		0.020	0.10	5	10/19/2017 14:26
Naphthalene	ND		0.016	0.10	5	10/19/2017 14:26
Phenanthrene	**0.15**		0.035	0.10	5	10/19/2017 14:26
Pyrene	**6.2**		0.045	0.10	5	10/19/2017 14:26

Surrogates	REC (%)	Limits	
1-Fluoronaphthalene	117	30-130	10/19/2017 14:26
2-Fluorobiphenyl	114	30-130	10/19/2017 14:26

Analyst(s): REB Analytical Comments: a4

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1710634
Date Received:	10/17/17 14:30	**Extraction Method:**	SW3550B/3640A
Date Prepared:	10/18/17	**Analytical Method:**	SW8270C
Project:	3118.2000; Crumb Rubber - Kelly Park	**Unit:**	mg/Kg

Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Crumb Rubber/ Kelly Park	**1710634-001A**	**Soil**	**10/17/2017 09:45**	**GC21 10181707.D**	**147267**

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Acenaphthene	ND		1.4	2.5	10	10/18/2017 17:11
Acenaphthylene	ND		1.4	2.5	10	10/18/2017 17:11
Acetochlor	ND		2.5	2.5	10	10/18/2017 17:11
Anthracene	ND		1.4	2.5	10	10/18/2017 17:11
Benzidine	ND		2.3	13	10	10/18/2017 17:11
Benzo (a) anthracene	ND		0.50	0.50	10	10/18/2017 17:11
Benzo (a) pyrene	**1.0**		0.025	0.025	10	10/18/2017 17:11
Benzo (b) fluoranthene	**0.71**		0.12	0.12	10	10/18/2017 17:11
Benzo (g,h,i) perylene	ND		1.5	2.5	10	10/18/2017 17:11
Benzo (k) fluoranthene	ND		1.6	2.5	10	10/18/2017 17:11
Benzyl Alcohol	ND		5.1	13	10	10/18/2017 17:11
1,1-Biphenyl	ND		1.5	2.5	10	10/18/2017 17:11
Bis (2-chloroethoxy) Methane	ND		1.4	2.5	10	10/18/2017 17:11
Bis (2-chloroethyl) Ether	ND		0.012	0.012	10	10/18/2017 17:11
Bis (2-chloroisopropyl) Ether	ND		0.012	0.012	10	10/18/2017 17:11
Bis (2-ethylhexyl) Adipate	ND		2.5	2.5	10	10/18/2017 17:11
Bis (2-ethylhexyl) Phthalate	**66**		1.3	2.5	10	10/18/2017 17:11
4-Bromophenyl Phenyl Ether	ND		1.6	2.5	10	10/18/2017 17:11
Butylbenzyl Phthalate	**1.5**	J	1.3	2.5	10	10/18/2017 17:11
4-Chloroaniline	ND		0.012	0.012	10	10/18/2017 17:11
4-Chloro-3-methylphenol	ND		1.2	2.5	10	10/18/2017 17:11
2-Chloronaphthalene	ND		1.6	2.5	10	10/18/2017 17:11
2-Chlorophenol	ND		0.050	0.050	10	10/18/2017 17:11
4-Chlorophenyl Phenyl Ether	ND		1.5	2.5	10	10/18/2017 17:11
Chrysene	**1.8**	J	1.4	2.5	10	10/18/2017 17:11
Dibenzo (a,h) anthracene	ND		0.025	0.025	10	10/18/2017 17:11
Dibenzofuran	ND		1.3	2.5	10	10/18/2017 17:11
Di-n-butyl Phthalate	ND		1.3	2.5	10	10/18/2017 17:11
1,2-Dichlorobenzene	ND		1.2	2.5	10	10/18/2017 17:11
1,3-Dichlorobenzene	ND		1.4	2.5	10	10/18/2017 17:11
1,4-Dichlorobenzene	ND		0.25	0.25	10	10/18/2017 17:11
3,3-Dichlorobenzidine	ND		0.050	0.050	10	10/18/2017 17:11
2,4-Dichlorophenol	ND		0.025	0.025	10	10/18/2017 17:11
Diethyl Phthalate	**0.025**		0.025	0.025	10	10/18/2017 17:11
2,4-Dimethylphenol	ND		0.25	0.25	10	10/18/2017 17:11
Dimethyl Phthalate	ND		0.025	0.025	10	10/18/2017 17:11
4,6-Dinitro-2-methylphenol	ND		1.3	13	10	10/18/2017 17:11

(Cont.)

NELAP 4033ORELAP

Angela Rydelius, Lab Manager

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1710634
Date Received:	10/17/17 14:30	**Extraction Method:**	SW3550B/3640A
Date Prepared:	10/18/17	**Analytical Method:**	SW8270C
Project:	3118.2000; Crumb Rubber - Kelly Park	**Unit:**	mg/Kg

Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Crumb Rubber/ Kelly Park	**1710634-001A**	**Soil**	**10/17/2017 09:45**	**GC21 10181707.D**	**147267**

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND		6.2	6.2	10	10/18/2017 17:11
2,4-Dinitrotoluene	ND		0.25	0.25	10	10/18/2017 17:11
2,6-Dinitrotoluene	ND		1.4	2.5	10	10/18/2017 17:11
Di-n-octyl Phthalate	ND		1.4	5.0	10	10/18/2017 17:11
1,2-Diphenylhydrazine	ND		1.6	2.5	10	10/18/2017 17:11
Fluoranthene	**1.8**	J	1.3	2.5	10	10/18/2017 17:11
Fluorene	ND		1.4	2.5	10	10/18/2017 17:11
Hexachlorobenzene	ND		0.25	0.25	10	10/18/2017 17:11
Hexachlorobutadiene	ND		0.25	0.25	10	10/18/2017 17:11
Hexachlorocyclopentadiene	ND		7.3	13	10	10/18/2017 17:11
Hexachloroethane	ND		1.4	2.5	10	10/18/2017 17:11
Indeno (1,2,3-cd) pyrene	**0.23**		0.12	0.12	10	10/18/2017 17:11
Isophorone	ND		1.2	2.5	10	10/18/2017 17:11
2-Methylnaphthalene	ND		0.25	0.25	10	10/18/2017 17:11
2-Methylphenol (o-Cresol)	ND		1.4	2.5	10	10/18/2017 17:11
3 & 4-Methylphenol (m,p-Cresol)	ND		1.2	2.5	10	10/18/2017 17:11
Naphthalene	ND		0.025	0.025	10	10/18/2017 17:11
2-Nitroaniline	ND		6.2	13	10	10/18/2017 17:11
3-Nitroaniline	ND		5.9	13	10	10/18/2017 17:11
4-Nitroaniline	ND		5.5	13	10	10/18/2017 17:11
Nitrobenzene	ND		1.4	2.5	10	10/18/2017 17:11
2-Nitrophenol	ND		6.4	13	10	10/18/2017 17:11
4-Nitrophenol	ND		4.1	13	10	10/18/2017 17:11
N-Nitrosodiphenylamine	ND		1.6	2.5	10	10/18/2017 17:11
N-Nitrosodi-n-propylamine	ND		0.12	0.12	10	10/18/2017 17:11
Pentachlorophenol	ND		3.2	13	10	10/18/2017 17:11
Phenanthrene	ND		1.4	2.5	10	10/18/2017 17:11
Phenol	**0.088**		0.050	0.050	10	10/18/2017 17:11
Pyrene	**5.7**		1.3	2.5	10	10/18/2017 17:11
Pyridine	ND		2.5	2.5	10	10/18/2017 17:11
1,2,4-Trichlorobenzene	ND		1.4	2.5	10	10/18/2017 17:11
2,4,5-Trichlorophenol	ND		0.12	0.12	10	10/18/2017 17:11
2,4,6-Trichlorophenol	ND		0.12	0.12	10	10/18/2017 17:11

(Cont.)

NELAP 4033ORELAP

Angela Rydelius, Lab Manager

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1710634
Date Received:	10/17/17 14:30	**Extraction Method:**	SW3550B/3640A
Date Prepared:	10/18/17	**Analytical Method:**	SW8270C
Project:	3118.2000; Crumb Rubber - Kelly Park	**Unit:**	mg/Kg

Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Crumb Rubber/ Kelly Park	**1710634-001A**	**Soil**	**10/17/2017 09:45**	**GC21 10181707.D**	**147267**

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Surrogates	REC (%)			Limits		
2-Fluorophenol	76			30-130		10/18/2017 17:11
Phenol-d5	87			30-130		10/18/2017 17:11
Nitrobenzene-d5	76			30-130		10/18/2017 17:11
2-Fluorobiphenyl	77			30-130		10/18/2017 17:11
2,4,6-Tribromophenol	76			16-130		10/18/2017 17:11
4-Terphenyl-d14	90			30-130		10/18/2017 17:11

Analyst(s): REB

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1710634
Date Received:	10/17/17 14:30	**Extraction Method:**	SW3050B
Date Prepared:	10/17/17	**Analytical Method:**	SW6020
Project:	3118.2000; Crumb Rubber - Kelly Park	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Crumb Rubber/ Kelly Park	**1710634-001A**	**Soil**	**10/17/2017 09:45**	**ICP-MS3 032SMPL.D**	**147175**

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Antimony	**0.14**	J	0.094	0.50	1	10/18/2017 11:12
Arsenic	ND		0.14	0.50	1	10/18/2017 11:12
Barium	**3.3**	J	0.97	5.0	1	10/18/2017 11:12
Beryllium	ND		0.072	0.50	1	10/18/2017 11:12
Cadmium	**0.30**		0.058	0.25	1	10/18/2017 11:12
Chromium	**0.91**		0.092	0.50	1	10/18/2017 11:12
Cobalt	**63**		0.056	0.50	1	10/18/2017 11:12
Copper	**9.4**		0.069	0.50	1	10/18/2017 11:12
Lead	**33**		0.094	0.50	1	10/18/2017 11:12
Mercury	**0.0069**	J	0.0050	0.050	1	10/18/2017 11:12
Molybdenum	ND		0.23	0.50	1	10/18/2017 11:12
Nickel	**1.2**		0.072	0.50	1	10/18/2017 11:12
Selenium	ND		0.13	0.50	1	10/18/2017 11:12
Silver	ND		0.055	0.50	1	10/18/2017 11:12
Thallium	ND		0.10	0.50	1	10/18/2017 11:12
Vanadium	**0.56**		0.064	0.50	1	10/18/2017 11:12
Zinc	**5600**		7.0	25	5	10/18/2017 12:20

Surrogates	REC (%)	Limits	
Terbium	81	70-130	10/18/2017 11:12

Analyst(s): JC

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1710634
Date Prepared:	10/17/17	**BatchID:**	147209
Date Analyzed:	10/18/17	**Extraction Method:**	SW3060A
Instrument:	IC2	**Analytical Method:**	SW7199
Matrix:	Soil	**Unit:**	mg/Kg
Project:	3118.2000; Crumb Rubber - Kelly Park	**Sample ID:**	MB/LCS-147209 1710578-001AMS/MSD

QC Summary Report for SW7199 (Hexavalent chromium)

Analyte	MB Result	LCS Result	MDL	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Hexavalent chromium	ND	19.9	0.10	0.20	20	-	99	70-130

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Hexavalent chromium	19.0	19.2	20	ND	94	95	70-130	1.05	20

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1710634
Date Prepared:	10/17/17	**BatchID:**	147219
Date Analyzed:	10/18/17	**Extraction Method:**	SW3550B/3630C
Instrument:	GC40	**Analytical Method:**	SW8082
Matrix:	Soil	**Unit:**	mg/kg
Project:	3118.2000; Crumb Rubber - Kelly Park	**Sample ID:**	MB/LCS/LCSD-147219

QC Summary for SW8082

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
Aroclor1016	ND	0.0051	0.050	-	-	-
Aroclor1016	ND	0.0051	0.050	-	-	-
Aroclor1221	ND	0.011	0.050	-	-	-
Aroclor1232	ND	0.0063	0.050	-	-	-
Aroclor1242	ND	0.0067	0.050	-	-	-
Aroclor1248	ND	0.0040	0.050	-	-	-
Aroclor1254	ND	0.0068	0.050	-	-	-
Aroclor1260	ND	0.0061	0.050	-	-	-
PCBs, total	ND	0.0040	0.050	-	-	-
Surrogate Recovery						
Decachlorobiphenyl	0.05134			0.050	103	57-151

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Aroclor1016	0.141	0.148	0.15	94	98	61-124	4.34	20
Aroclor1260	0.130	0.134	0.15	86	89	53-172	3.26	20
Surrogate Recovery								
Decachlorobiphenyl	0.0399	0.0399	0.050	80	80	57-151	0	20

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1710634
Date Prepared:	10/18/17	**BatchID:**	147274
Date Analyzed:	10/19/17 - 10/20/17	**Extraction Method:**	SW5030B
Instrument:	GC10, GC38	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	3118.2000; Crumb Rubber - Kelly Park	**Sample ID:**	MB/LCS-147274

QC Summary Report for SW8260B

Analyte	MB Result	LCS Result	MDL	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Acetone	ND	0.949	0.039	0.10	1	-	95	48-156
tert-Amyl methyl ether (TAME)	ND	0.0388	0.0010	0.0050	0.050	-	78	56-115
Benzene	ND	0.0489	0.0016	0.0050	0.050	-	98	63-131
Bromobenzene	ND	0.0498	0.0017	0.0050	0.050	-	100	66-127
Bromochloromethane	ND	0.0490	0.0015	0.0050	0.050	-	98	64-124
Bromodichloromethane	ND	0.0451	0.0012	0.0050	0.050	-	90	64-120
Bromoform	ND	0.0331	0.00080	0.0050	0.050	-	66	48-92
Bromomethane	ND	0.0478	0.0020	0.0050	0.050	-	96	25-163
2-Butanone (MEK)	ND	0.166	0.0054	0.020	0.20	-	83	51-133
t-Butyl alcohol (TBA)	ND	0.136	0.0053	0.050	0.20	-	68	52-129
n-Butyl benzene	ND	0.0684	0.0035	0.0050	0.050	-	137	83-200
sec-Butyl benzene	ND	0.0711	0.0034	0.0050	0.050	-	142	81-199
tert-Butyl benzene	ND	0.0632	0.0030	0.0050	0.050	-	127	79-178
Carbon Disulfide	ND	0.0470	0.0017	0.0050	0.050	-	94	64-136
Carbon Tetrachloride	ND	0.0540	0.0017	0.0050	0.050	-	108	66-140
Chlorobenzene	ND	0.0487	0.0018	0.0050	0.050	-	97	73-116
Chloroethane	ND	0.0469	0.0016	0.0050	0.050	-	94	35-147
Chloroform	ND	0.0496	0.0016	0.0050	0.050	-	99	65-130
Chloromethane	ND	0.0463	0.0017	0.0050	0.050	-	93	30-137
2-Chlorotoluene	ND	0.0573	0.0022	0.0050	0.050	-	115	75-152
4-Chlorotoluene	ND	0.0554	0.0021	0.0050	0.050	-	111	71-148
Dibromochloromethane	ND	0.0417	0.0011	0.0050	0.050	-	83	61-106
1,2-Dibromo-3-chloropropane	ND	0.0129	0.0012	0.0040	0.020	-	64	36-120
1,2-Dibromoethane (EDB)	ND	0.0448	0.0013	0.0040	0.050	-	90	67-118
Dibromomethane	ND	0.0435	0.0014	0.0050	0.050	-	87	61-116
1,2-Dichlorobenzene	ND	0.0419	0.0014	0.0050	0.050	-	84	59-106
1,3-Dichlorobenzene	ND	0.0509	0.0018	0.0050	0.050	-	102	75-129
1,4-Dichlorobenzene	ND	0.0484	0.0018	0.0050	0.050	-	97	66-127
Dichlorodifluoromethane	ND	0.0231	0.0011	0.0050	0.050	-	46	13-74
1,1-Dichloroethane	ND	0.0499	0.0017	0.0050	0.050	-	100	65-134
1,2-Dichloroethane (1,2-DCA)	ND	0.0457	0.0014	0.0040	0.050	-	91	57-131
1,1-Dichloroethene	ND	0.0492	0.0017	0.0050	0.050	-	98	62-127
cis-1,2-Dichloroethene	ND	0.0490	0.0015	0.0050	0.050	-	98	66-130
trans-1,2-Dichloroethene	ND	0.0490	0.0016	0.0050	0.050	-	98	60-131
1,2-Dichloropropane	ND	0.0482	0.0014	0.0050	0.050	-	96	63-127
1,3-Dichloropropane	ND	0.0468	0.0016	0.0050	0.050	-	94	68-124
2,2-Dichloropropane	ND	0.0478	0.0013	0.0050	0.050	-	96	63-150

(Cont.)

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1710634
Date Prepared:	10/18/17	**BatchID:**	147274
Date Analyzed:	10/19/17 - 10/20/17	**Extraction Method:**	SW5030B
Instrument:	GC10, GC38	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	3118.2000; Crumb Rubber - Kelly Park	**Sample ID:**	MB/LCS-147274

QC Summary Report for SW8260B

Analyte	MB Result	LCS Result	MDL	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
1,1-Dichloropropene	ND	0.0496	0.0018	0.0050	0.050	-	99	67-134
cis-1,3-Dichloropropene	ND	0.0502	0.0015	0.0050	0.050	-	100	65-138
trans-1,3-Dichloropropene	ND	0.0480	0.0014	0.0050	0.050	-	96	66-124
Diisopropyl ether (DIPE)	ND	0.0451	0.0014	0.0050	0.050	-	90	58-129
Ethylbenzene	ND	0.0527	0.0020	0.0050	0.050	-	105	73-145
Ethyl tert-butyl ether (ETBE)	ND	0.0428	0.0013	0.0050	0.050	-	86	62-125
Freon 113	ND	0.0453	0.0016	0.0050	0.050	-	91	55-116
Hexachlorobutadiene	ND	0.0578	0.0050	0.0050	0.050	-	116	75-178
Hexachloroethane	ND	0.0614	0.0025	0.0050	0.050	-	123	75-152
2-Hexanone	ND	0.0331	0.0025	0.0050	0.050	-	66	41-113
Isopropylbenzene	ND	0.0649	0.0022	0.0050	0.050	-	130	67-172
4-Isopropyl toluene	ND	0.0659	0.0031	0.0050	0.050	-	132	88-171
Methyl-t-butyl ether (MTBE)	ND	0.0412	0.0013	0.0050	0.050	-	82	58-122
Methylene chloride	ND	0.0507	0.0036	0.0050	0.050	-	101	57-140
4-Methyl-2-pentanone (MIBK)	ND	0.0337	0.00080	0.0050	0.050	-	67	42-117
Naphthalene	ND	0.0219	0.00060	0.0050	0.050	-	44	29-65
n-Propyl benzene	ND	0.0644	0.0029	0.0050	0.050	-	129	85-174
Styrene	ND	0.0457	0.0014	0.0050	0.050	-	91	63-126
1,1,1,2-Tetrachloroethane	ND	0.0490	0.0016	0.0050	0.050	-	98	68-131
1,1,2,2-Tetrachloroethane	ND	0.0413	0.0013	0.0050	0.050	-	83	45-121
Tetrachloroethene	ND	0.0533	0.0023	0.0050	0.050	-	107	65-150
Toluene	ND	0.0512	0.0022	0.0050	0.050	-	102	72-135
1,2,3-Trichlorobenzene	ND	0.0283	0.00070	0.0050	0.050	-	57	35-80
1,2,4-Trichlorobenzene	ND	0.0367	0.0011	0.0050	0.050	-	73	45-103
1,1,1-Trichloroethane	ND	0.0488	0.0018	0.0050	0.050	-	98	67-137
1,1,2-Trichloroethane	ND	0.0449	0.0016	0.0050	0.050	-	90	67-117
Trichloroethene	ND	0.0497	0.0017	0.0050	0.050	-	99	62-135
Trichlorofluoromethane	ND	0.0457	0.0016	0.0050	0.050	-	91	56-124
1,2,3-Trichloropropane	ND	0.0455	0.0019	0.0050	0.050	-	91	58-133
1,2,4-Trimethylbenzene	ND	0.0596	0.0024	0.0050	0.050	-	119	78-161
1,3,5-Trimethylbenzene	ND	0.0614	0.0027	0.0050	0.050	-	123	85-170
Vinyl Chloride	ND	0.0452	0.0015	0.0050	0.050	-	90	32-142
Xylenes, Total	ND	0.148	0.0025	0.0050	0.15	-	99	70-137

(Cont.)

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1710634
Date Prepared:	10/18/17	**BatchID:**	147274
Date Analyzed:	10/19/17 - 10/20/17	**Extraction Method:**	SW5030B
Instrument:	GC10, GC38	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	3118.2000; Crumb Rubber - Kelly Park	**Sample ID:**	MB/LCS-147274

QC Summary Report for SW8260B

Analyte	MB Result	LCS Result	MDL	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Surrogate Recovery								
Dibromofluoromethane	0.1448	0.135			0.12	116	108	87-127
Toluene-d8	0.1739	0.137			0.12	139	110	93-141
4-BFB	0.01423	0.0149			0.012	114	119	84-137
Benzene-d6	0.1194	0.111			0.10	119	111	67-131
Ethylbenzene-d10	0.1235	0.118			0.10	123	118	78-153
1,2-DCB-d4	0.08968	0.0830			0.10	90	83	63-109

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1710634
Date Prepared:	10/16/17	**BatchID:**	147145
Date Analyzed:	10/16/17	**Extraction Method:**	SW3550B
Instrument:	GC35	**Analytical Method:**	SW8270C-SIM
Matrix:	Soil	**Unit:**	mg/kg
Project:	3118.2000; Crumb Rubber - Kelly Park	**Sample ID:**	MB/LCS-147145 1710569-001AMS/MSD

QC Summary Report for SW8270C

Analyte	MB Result	LCS Result	MDL	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Acenaphthene	ND	-	0.0026	0.010	-	-	-	-
Acenaphthylene	ND	-	0.0034	0.010	-	-	-	-
Anthracene	ND	-	0.0029	0.010	-	-	-	-
Benzo (a) anthracene	0.006113,J	-	0.0017	0.010	-	-	-	-
Benzo (a) pyrene	ND	0.155	0.0027	0.010	0.20	-	78	23-129
Benzo (b) fluoranthene	ND	-	0.0015	0.010	-	-	-	-
Benzo (g,h,i) perylene	ND	-	0.0033	0.010	-	-	-	-
Benzo (k) fluoranthene	ND	-	0.0016	0.010	-	-	-	-
Chrysene	ND	0.162	0.0024	0.010	0.20	-	81	38-104
Dibenzo (a,h) anthracene	ND	-	0.0050	0.010	-	-	-	-
Fluoranthene	ND	-	0.0040	0.010	-	-	-	-
Fluorene	ND	-	0.0060	0.010	-	-	-	-
Indeno (1,2,3-cd) pyrene	ND	-	0.0049	0.010	-	-	-	-
1-Methylnaphthalene	ND	0.189	0.0029	0.010	0.20	-	95	59-106
2-Methylnaphthalene	ND	0.174	0.0020	0.010	0.20	-	87	54-108
Naphthalene	ND	-	0.0016	0.010	-	-	-	-
Phenanthrene	ND	0.163	0.0035	0.010	0.20	-	82	48-107
Pyrene	ND	0.207	0.0045	0.010	0.20	-	104	40-104
Surrogate Recovery								
1-Fluoronaphthalene	0.4661	0.453			0.50	93	91	63-123
2-Fluorobiphenyl	0.4767	0.424			0.50	95	85	55-127

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Benzo (a) pyrene	NR	NR		ND<0.1	NR	NR	-	NR	-
Chrysene	NR	NR		ND<0.1	NR	NR	-	NR	-
1-Methylnaphthalene	NR	NR		ND<0.1	NR	NR	-	NR	-
2-Methylnaphthalene	NR	NR		ND<0.1	NR	NR	-	NR	-
Phenanthrene	NR	NR		ND<0.1	NR	NR	-	NR	-
Pyrene	NR	NR		ND<0.1	NR	NR	-	NR	-
Surrogate Recovery									
1-Fluoronaphthalene	NR	NR			NR	NR	-	NR	-
2-Fluorobiphenyl	NR	NR			NR	NR	-	NR	-

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1710634
Date Prepared:	10/18/17	**BatchID:**	147267
Date Analyzed:	10/18/17	**Extraction Method:**	SW3550B/3640A
Instrument:	GC21	**Analytical Method:**	SW8270C
Matrix:	Soil	**Unit:**	mg/Kg
Project:	3118.2000; Crumb Rubber - Kelly Park	**Sample ID:**	MB/LCS-147267 1710634-001AMS/MSD

QC Summary Report for SW8270C (Low Level) w/ GPC

Analyte	MB Result	LCS Result	MDL	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Acenaphthene	ND	3.37	0.14	0.25	5	-	67	32-118
Acenaphthylene	ND	3.59	0.14	0.25	5	-	72	32-122
Acetochlor	ND	-	0.25	0.25	-	-	-	-
Anthracene	ND	3.64	0.14	0.25	5	-	73	36-125
Benzidine	ND	1.25	0.23	1.3	5	-	25	4-83
Benzo (a) anthracene	ND	3.91	0.050	0.050	5	-	78	35-117
Benzo (a) pyrene	ND	4.10	0.0025	0.0025	5	-	82	42-138
Benzo (b) fluoranthene	ND	3.71	0.012	0.012	5	-	74	37-125
Benzo (g,h,i) perylene	ND	4.18	0.15	0.25	5	-	84	45-146
Benzo (k) fluoranthene	ND	3.79	0.16	0.25	5	-	76	39-124
Benzyl Alcohol	ND	4.02	0.51	1.3	5	-	80	5-105
1,1-Biphenyl	ND	-	0.15	0.25	-	-	-	-
Bis (2-chloroethoxy) Methane	ND	3.39	0.14	0.25	5	-	68	35-115
Bis (2-chloroethyl) Ether	ND	3.51	0.0012	0.0012	5	-	70	35-105
Bis (2-chloroisopropyl) Ether	ND	4.24	0.0012	0.0012	5	-	85	34-119
Bis (2-ethylhexyl) Adipate	ND	3.65	0.25	0.25	5	-	73	27-117
Bis (2-ethylhexyl) Phthalate	ND	3.83	0.13	0.25	5	-	77	34-124
4-Bromophenyl Phenyl Ether	ND	3.52	0.16	0.25	5	-	70	33-112
Butylbenzyl Phthalate	ND	4.19	0.13	0.25	5	-	84	35-127
4-Chloroaniline	ND	1.68	0.0012	0.0012	5	-	34	12-77
4-Chloro-3-methylphenol	ND	4.08	0.12	0.25	5	-	82	35-123
2-Chloronaphthalene	ND	3.11	0.16	0.25	5	-	62	28-109
2-Chlorophenol	ND	3.57	0.0050	0.0050	5	-	71	38-116
4-Chlorophenyl Phenyl Ether	ND	3.73	0.15	0.25	5	-	75	33-122
Chrysene	ND	3.85	0.14	0.25	5	-	77	37-116
Dibenzo (a,h) anthracene	ND	4.14	0.0025	0.0025	5	-	83	43-141
Dibenzofuran	ND	3.58	0.13	0.25	5	-	71	33-117
Di-n-butyl Phthalate	ND	3.50	0.13	0.25	5	-	70	38-126
1,2-Dichlorobenzene	ND	3.38	0.12	0.25	5	-	68	34-105
1,3-Dichlorobenzene	ND	3.34	0.14	0.25	5	-	67	33-104
1,4-Dichlorobenzene	ND	2.94	0.025	0.025	5	-	59	31-102
3,3-Dichlorobenzidine	ND	1.51	0.0050	0.0050	5	-	30	14-84
2,4-Dichlorophenol	ND	4.09	0.0025	0.0025	5	-	82	31-124
Diethyl Phthalate	ND	3.59	0.0025	0.0025	5	-	72	35-118
2,4-Dimethylphenol	ND	4.24	0.025	0.025	5	-	85	30-120
Dimethyl Phthalate	ND	3.60	0.0025	0.0025	5	-	72	33-118
4,6-Dinitro-2-methylphenol	ND	3.84	0.13	1.3	5	-	77	12-126

(Cont.)

NELAP 4033ORELAP

QA/QC Officer

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1710634
Date Prepared:	10/18/17	**BatchID:**	147267
Date Analyzed:	10/18/17	**Extraction Method:**	SW3550B/3640A
Instrument:	GC21	**Analytical Method:**	SW8270C
Matrix:	Soil	**Unit:**	mg/Kg
Project:	3118.2000; Crumb Rubber - Kelly Park	**Sample ID:**	MB/LCS-147267 1710634-001AMS/MSD

QC Summary Report for SW8270C (Low Level) w/ GPC

Analyte	MB Result	LCS Result	MDL	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
2,4-Dinitrophenol	ND	3.68	0.62	0.62	5	-	74	8-130
2,4-Dinitrotoluene	ND	4.07	0.025	0.025	5	-	81	38-117
2,6-Dinitrotoluene	ND	3.98	0.14	0.25	5	-	80	35-121
Di-n-octyl Phthalate	ND	3.52	0.14	0.50	5	-	70	42-150
1,2-Diphenylhydrazine	ND	3.56	0.16	0.25	5	-	71	0-117
Fluoranthene	ND	3.85	0.13	0.25	5	-	77	38-126
Fluorene	ND	3.61	0.14	0.25	5	-	72	34-118
Hexachlorobenzene	ND	3.20	0.025	0.025	5	-	64	30-130
Hexachlorobutadiene	ND	3.24	0.025	0.025	5	-	65	33-121
Hexachlorocyclopentadiene	ND	2.06	0.73	1.3	5	-	41	8-89
Hexachloroethane	ND	3.29	0.14	0.25	5	-	66	32-106
Indeno (1,2,3-cd) pyrene	ND	4.07	0.012	0.012	5	-	81	43-138
Isophorone	ND	2.97	0.12	0.25	5	-	59	26-92
2-Methylnaphthalene	ND	3.79	0.025	0.025	5	-	76	30-121
2-Methylphenol (o-Cresol)	ND	3.50	0.14	0.25	5	-	70	34-114
3 & 4-Methylphenol (m,p-Cresol)	ND	3.63	0.12	0.25	5	-	73	26-130
Naphthalene	ND	3.33	0.0025	0.0025	5	-	67	33-113
2-Nitroaniline	ND	4.08	0.62	1.3	5	-	82	29-115
3-Nitroaniline	ND	2.79	0.59	1.3	5	-	56	25-93
4-Nitroaniline	ND	4.13	0.55	1.3	5	-	83	31-108
Nitrobenzene	ND	3.67	0.14	0.25	5	-	73	33-122
2-Nitrophenol	ND	4.11	0.64	1.3	5	-	82	32-121
4-Nitrophenol	ND	3.44	0.41	1.3	5	-	69	27-102
N-Nitrosodiphenylamine	ND	-	0.16	0.25	-	-	-	-
N-Nitrosodi-n-propylamine	ND	4.10	0.012	0.012	5	-	82	25-108
Pentachlorophenol	ND	4.83	0.32	1.3	5	-	97	28-134
Phenanthrene	ND	4.10	0.14	0.25	5	-	82	36-123
Phenol	ND	3.56	0.0050	0.0050	5	-	71	33-107
Pyrene	ND	3.74	0.13	0.25	5	-	75	38-124
Pyridine	ND	4.34	0.25	0.25	5	-	87	30-130
1,2,4-Trichlorobenzene	ND	3.51	0.14	0.25	5	-	70	34-121
2,4,5-Trichlorophenol	ND	3.75	0.012	0.012	5	-	75	31-126
2,4,6-Trichlorophenol	ND	3.81	0.012	0.012	5	-	76	32-128

(Cont.)

NELAP 4033ORELAP

QA/QC Officer

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1710634
Date Prepared:	10/18/17	**BatchID:**	147267
Date Analyzed:	10/18/17	**Extraction Method:**	SW3550B/3640A
Instrument:	GC21	**Analytical Method:**	SW8270C
Matrix:	Soil	**Unit:**	mg/Kg
Project:	3118.2000; Crumb Rubber - Kelly Park	**Sample ID:**	MB/LCS-147267 1710634-001AMS/MSD

QC Summary Report for SW8270C (Low Level) w/ GPC

Analyte	MB Result	LCS Result	MDL	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Surrogate Recovery								
2-Fluorophenol	4.315	3.97			5	86	79	31-108
Phenol-d5	4.284	3.96			5	86	79	32-106
Nitrobenzene-d5	3.738	3.69			5	75	74	27-109
2-Fluorobiphenyl	3.548	3.53			5	71	71	26-100
2,4,6-Tribromophenol	4.84	4.49			5	97	90	25-106
4-Terphenyl-d14	3.635	4.05			5	73	81	27-113

(Cont.)

NELAP 4033ORELAP

QA/QC Officer

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1710634
Date Prepared:	10/18/17	**BatchID:**	147267
Date Analyzed:	10/18/17	**Extraction Method:**	SW3550B/3640A
Instrument:	GC21	**Analytical Method:**	SW8270C
Matrix:	Soil	**Unit:**	mg/Kg
Project:	3118.2000; Crumb Rubber - Kelly Park	**Sample ID:**	MB/LCS-147267 1710634-001AMS/MSD

QC Summary Report for SW8270C (Low Level) w/ GPC

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Acenaphthene	NR	NR		ND<2.5	NR	NR	-	NR	-
Acenaphthylene	NR	NR		ND<2.5	NR	NR	-	NR	-
Anthracene	NR	NR		ND<2.5	NR	NR	-	NR	-
Benzidine	NR	NR		ND<13	NR	NR	-	NR	-
Benzo (a) anthracene	NR	NR		ND<0.5	NR	NR	-	NR	-
Benzo (a) pyrene	NR	NR		1	NR	NR	-	NR	-
Benzo (b) fluoranthene	NR	NR		0.71	NR	NR	-	NR	-
Benzo (g,h,i) perylene	NR	NR		ND<2.5	NR	NR	-	NR	-
Benzo (k) fluoranthene	NR	NR		ND<2.5	NR	NR	-	NR	-
Benzyl Alcohol	NR	NR		ND<13	NR	NR	-	NR	-
Bis (2-chloroethoxy) Methane	NR	NR		ND<2.5	NR	NR	-	NR	-
Bis (2-chloroethyl) Ether	NR	NR		ND<0.012	NR	NR	-	NR	-
Bis (2-chloroisopropyl) Ether	NR	NR		ND<0.012	NR	NR	-	NR	-
Bis (2-ethylhexyl) Adipate	NR	NR		ND<2.5	NR	NR	-	NR	-
Bis (2-ethylhexyl) Phthalate	NR	NR		66	NR	NR	-	NR	-
4-Bromophenyl Phenyl Ether	NR	NR		ND<2.5	NR	NR	-	NR	-
Butylbenzyl Phthalate	NR	NR		ND<2.5	NR	NR	-	NR	-
4-Chloroaniline	NR	NR		ND<0.012	NR	NR	-	NR	-
4-Chloro-3-methylphenol	NR	NR		ND<2.5	NR	NR	-	NR	-
2-Chloronaphthalene	NR	NR		ND<2.5	NR	NR	-	NR	-
2-Chlorophenol	NR	NR		ND<0.05	NR	NR	-	NR	-
4-Chlorophenyl Phenyl Ether	NR	NR		ND<2.5	NR	NR	-	NR	-
Chrysene	NR	NR		ND<2.5	NR	NR	-	NR	-
Dibenzo (a,h) anthracene	NR	NR		ND<0.025	NR	NR	-	NR	-
Dibenzofuran	NR	NR		ND<2.5	NR	NR	-	NR	-
Di-n-butyl Phthalate	NR	NR		ND<2.5	NR	NR	-	NR	-
1,2-Dichlorobenzene	NR	NR		ND<2.5	NR	NR	-	NR	-
1,3-Dichlorobenzene	NR	NR		ND<2.5	NR	NR	-	NR	-
1,4-Dichlorobenzene	NR	NR		ND<0.25	NR	NR	-	NR	-
3,3-Dichlorobenzidine	NR	NR		ND<0.05	NR	NR	-	NR	-
2,4-Dichlorophenol	NR	NR		ND<0.025	NR	NR	-	NR	-
Diethyl Phthalate	NR	NR		0.025	NR	NR	-	NR	-
2,4-Dimethylphenol	NR	NR		ND<0.25	NR	NR	-	NR	-
Dimethyl Phthalate	NR	NR		ND<0.025	NR	NR	-	NR	-
4,6-Dinitro-2-methylphenol	NR	NR		ND<13	NR	NR	-	NR	-
2,4-Dinitrophenol	NR	NR		ND<6.2	NR	NR	-	NR	-
2,4-Dinitrotoluene	NR	NR		ND<0.25	NR	NR	-	NR	-

(Cont.)

NELAP 4033ORELAP

QA/QC Officer

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1710634
Date Prepared:	10/18/17	**BatchID:**	147267
Date Analyzed:	10/18/17	**Extraction Method:**	SW3550B/3640A
Instrument:	GC21	**Analytical Method:**	SW8270C
Matrix:	Soil	**Unit:**	mg/Kg
Project:	3118.2000; Crumb Rubber - Kelly Park	**Sample ID:**	MB/LCS-147267 1710634-001AMS/MSD

QC Summary Report for SW8270C (Low Level) w/ GPC

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
2,6-Dinitrotoluene	NR	NR		ND<2.5	NR	NR	-	NR	-
Di-n-octyl Phthalate	NR	NR		ND<5	NR	NR	-	NR	-
1,2-Diphenylhydrazine	NR	NR		ND<2.5	NR	NR	-	NR	-
Fluoranthene	NR	NR		ND<2.5	NR	NR	-	NR	-
Fluorene	NR	NR		ND<2.5	NR	NR	-	NR	-
Hexachlorobenzene	NR	NR		ND<0.25	NR	NR	-	NR	-
Hexachlorobutadiene	NR	NR		ND<0.25	NR	NR	-	NR	-
Hexachlorocyclopentadiene	NR	NR		ND<13	NR	NR	-	NR	-
Hexachloroethane	NR	NR		ND<2.5	NR	NR	-	NR	-
Indeno (1,2,3-cd) pyrene	NR	NR		0.23	NR	NR	-	NR	-
Isophorone	NR	NR		ND<2.5	NR	NR	-	NR	-
2-Methylnaphthalene	NR	NR		ND<0.25	NR	NR	-	NR	-
2-Methylphenol (o-Cresol)	NR	NR		ND<2.5	NR	NR	-	NR	-
3 & 4-Methylphenol (m,p-Cresol)	NR	NR		ND<2.5	NR	NR	-	NR	-
Naphthalene	NR	NR		ND<0.025	NR	NR	-	NR	-
2-Nitroaniline	NR	NR		ND<13	NR	NR	-	NR	-
3-Nitroaniline	NR	NR		ND<13	NR	NR	-	NR	-
4-Nitroaniline	NR	NR		ND<13	NR	NR	-	NR	-
Nitrobenzene	NR	NR		ND<2.5	NR	NR	-	NR	-
2-Nitrophenol	NR	NR		ND<13	NR	NR	-	NR	-
4-Nitrophenol	NR	NR		ND<13	NR	NR	-	NR	-
N-Nitrosodi-n-propylamine	NR	NR		ND<0.12	NR	NR	-	NR	-
Pentachlorophenol	NR	NR		ND<13	NR	NR	-	NR	-
Phenanthrene	NR	NR		ND<2.5	NR	NR	-	NR	-
Phenol	NR	NR		0.088	NR	NR	-	NR	-
Pyrene	NR	NR		5.7	NR	NR	-	NR	-
Pyridine	NR	NR		ND<2.5	NR	NR	-	NR	-
1,2,4-Trichlorobenzene	NR	NR		ND<2.5	NR	NR	-	NR	-
2,4,5-Trichlorophenol	NR	NR		ND<0.12	NR	NR	-	NR	-
2,4,6-Trichlorophenol	NR	NR		ND<0.12	NR	NR	-	NR	-

(Cont.)

NELAP 4033ORELAP

QA/QC Officer

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1710634
Date Prepared:	10/18/17	**BatchID:**	147267
Date Analyzed:	10/18/17	**Extraction Method:**	SW3550B/3640A
Instrument:	GC21	**Analytical Method:**	SW8270C
Matrix:	Soil	**Unit:**	mg/Kg
Project:	3118.2000; Crumb Rubber - Kelly Park	**Sample ID:**	MB/LCS-147267 1710634-001AMS/MSD

QC Summary Report for SW8270C (Low Level) w/ GPC

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Surrogate Recovery									
2-Fluorophenol	NR	NR			NR	NR	-	NR	-
Phenol-d5	NR	NR			NR	NR	-	NR	-
Nitrobenzene-d5	NR	NR			NR	NR	-	NR	-
2-Fluorobiphenyl	NR	NR			NR	NR	-	NR	-
2,4,6-Tribromophenol	NR	NR			NR	NR	-	NR	-
4-Terphenyl-d14	NR	NR			NR	NR	-	NR	-

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1710634
Date Prepared:	10/17/17	**BatchID:**	147175
Date Analyzed:	10/17/17	**Extraction Method:**	SW3050B
Instrument:	ICP-MS2	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/Kg
Project:	3118.2000; Crumb Rubber - Kelly Park	**Sample ID:**	MB/LCS-147175 1710385-003AMS/MSD 1710385-003APDS

QC Summary Report for Metals

Analyte	MB Result	LCS Result	MDL	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Antimony	ND	48.6	0.094	0.50	50	-	97	75-125
Arsenic	ND	46.2	0.14	0.50	50	-	92	75-125
Barium	ND	492	0.97	5.0	500	-	98	75-125
Beryllium	ND	47.6	0.072	0.50	50	-	95	75-125
Cadmium	ND	46.0	0.058	0.25	50	-	92	75-125
Chromium	ND	46.3	0.092	0.50	50	-	93	75-125
Cobalt	ND	45.4	0.056	0.50	50	-	91	75-125
Copper	ND	46.1	0.069	0.50	50	-	92	75-125
Lead	ND	46.4	0.094	0.50	50	-	93	75-125
Mercury	ND	1.14	0.0050	0.050	1.25	-	91	75-125
Molybdenum	ND	48.7	0.23	0.50	50	-	97	75-125
Nickel	ND	46.4	0.072	0.50	50	-	93	75-125
Selenium	ND	45.9	0.13	0.50	50	-	92	75-125
Silver	ND	47.7	0.055	0.50	50	-	95	75-125
Thallium	ND	46.4	0.10	0.50	50	-	93	75-125
Vanadium	ND	46.3	0.064	0.50	50	-	93	75-125
Zinc	ND	463	1.4	5.0	500	-	93	75-125
Surrogate Recovery								
Terbium	481.5	505			500	96	101	70-130

(Cont.)

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1710634
Date Prepared:	10/17/17	**BatchID:**	147175
Date Analyzed:	10/17/17	**Extraction Method:**	SW3050B
Instrument:	ICP-MS2	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/Kg
Project:	3118.2000; Crumb Rubber - Kelly Park	**Sample ID:**	MB/LCS-147175 1710385-003AMS/MSD 1710385-003APDS

QC Summary Report for Metals

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Antimony	49.6	50.7	50	0.68	98	100	75-125	2.17	20
Arsenic	53.6	52.9	50	5.2	97	96	75-125	1.20	20
Barium	684	630	500	120	112	101	75-125	8.30	20
Beryllium	45.1	47.2	50	ND	89	94	75-125	4.66	20
Cadmium	46.6	47.8	50	ND	93	95	75-125	2.44	20
Chromium	97.1	73.2	50	26	141,F10	94	75-125	28.1,F10	20
Cobalt	73.4	51.4	50	8.2	130,F10	86	75-125	35.2,F10	20
Copper	95.3	81.1	50	34	123	95	75-125	16.0	20
Lead	176	134	50	84.72	182,F10	98	75-125	27.4,F10	20
Mercury	1.46	1.37	1.25	0.19	102	94	75-125	6.51	20
Molybdenum	49.6	50.2	50	0.54	98	99	75-125	1.16	20
Nickel	89.9	75.1	50	27	127,F10	97	75-125	18.0	20
Selenium	46.2	47.1	50	ND	92	94	75-125	1.95	20
Silver	47.0	48.1	50	ND	94	96	75-125	2.46	20
Thallium	45.5	47.2	50	ND	91	94	75-125	3.69	20
Vanadium	103	88.6	50	37	131,F10	103	75-125	14.8	20
Zinc	572	562	500	79	99	96	75-125	1.85	20
Surrogate Recovery									
Terbium	507	516	500		101	103	70-130	1.76	20

Analyte	PDS Result	SPK Val	SPKRef Val	PDS %REC	PDS Limits
Chromium	72.9	50	26	93	75-125
Cobalt	54.7	50	8.2	93	75-125
Nickel	76.4	50	27	100	75-125
Vanadium	83.6	50	37	92	75-125

Analyte	DLT Result	DLTRef Val	%D	%D Limit
Antimony	ND<2.5	0.68	-	-
Arsenic	5.10	5.2	1.92	-
Barium	122	120	1.67	-
Beryllium	ND<2.5	ND	-	-
Cadmium	ND<1.2	ND	-	-

(Cont.)

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	MECA Consulting, Inc.	**WorkOrder:**	1710634
Date Prepared:	10/17/17	**BatchID:**	147175
Date Analyzed:	10/17/17	**Extraction Method:**	SW3050B
Instrument:	ICP-MS2	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/Kg
Project:	3118.2000; Crumb Rubber - Kelly Park	**Sample ID:**	MB/LCS-147175 1710385-003AMS/MSD 1710385-003APDS

QC Summary Report for Metals

Analyte	DLT Result	DLTRef Val	%D	%D Limit
Chromium	28.0	26	7.69	20
Cobalt	8.84	8.2	7.80	-
Copper	33.9	34	0.294	20
Lead	84.4	84.72	0.378	20
Mercury	ND<0.25	0.19	-	-
Molybdenum	ND<2.5	0.54	-	-
Nickel	26.6	27	1.48	20
Selenium	ND<2.5	ND	-	-
Silver	ND<2.5	ND	-	-
Thallium	ND<2.5	ND	-	-
Vanadium	39.1	37	5.68	20
Zinc	79.4	79	0.506	-

%D Control Limit applied to analytes with concentrations greater than 25 times the reporting limits.

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1710634 **ClientCode: MECA**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☑ EQuIS ☑ Email ☐ HardCopy ☐ ThirdParty ☑ J-flag
☑ Detection Summary ☑ Dry-Weight

Report to:
David Teter
MECA Consulting, Inc.
401 Roland Way, Ste. 250
Oakland, CA 94621
(925) 808-6700 FAX: (925) 808-6708

Email: dteter@mecaenviro.com
cc/3rd Party: jfeiner@mecaenviro.com;
PO: 12874
ProjectNo: 3118.2000; Crumb Rubber - Kelly Park

Bill to:
Janice Feiner
MECA, LLC
401 Roland Way, Ste. 250
Oakland, CA 94621
jfeiner@mecaenviro.com

Requested TAT: **2 days;**

Date Received: **10/17/2017**
Date Logged: **10/17/2017**

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
1710634-001	Crumb Rubber/ Kelly Park	Soil	10/17/2017 09:45	☐	A	A	A	A	A	A	A					

Test Legend:

1	7199_TTLC_LL_S [J]	2	8082_PCB_ESL_S [J]	3	8082_PCB_SG_S [J]	4	8260B_S
5	8270_PNA_S	6	8270_SCSM_S [J]	7	CAM17MS_TTLC_S	8	
9		10		11		12	

Prepared by: Alexandra Iniguez

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

WORK ORDER SUMMARY

Client Name: MECA CONSULTING, INC. **Project:** 3118.2000; Crumb Rubber - Kelly Park **Work Order:** 1710634
Client Contact: David Teter **QC Level:** LEVEL 2
Contact's Email: dteter@mecaenviro.com **Comments:** **Date Logged:** 10/17/2017

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☑ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1710634-001A	Crumb Rubber/ Kelly Park	Soil	SW6020 (CAM 17)	1	16OZ GJ	☐	10/17/2017 9:45	2 days		☐	
			SW8270C (Low Level SVOCs) with GPC Cleanup			☐		2 days		☐	
			SW8270C (PAHs/PNAs)			☐		2 days		☐	
			SW8260B (VOCs)			☐		2 days		☐	
			SW8082 (PCBs w/ Column Style Clean-up)			☐		2 days		☐	
			SW8082 (PCBs Only)			☐		2 days		☑	
			SW7199 (Hexavalent chromium, Low-Level)			☐		2 days		☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

General COC

RUSH

MAI Work Order # 1710634

McCAMPBELL ANALYTICAL, INC.

1534 Willow Pass Rd. Pittsburg, Ca. 94565-1701

Telephone: (877) 252-9262 / Fax: (925) 252-9269

www.mccampbell.com main@mccampbell.com

CHAIN OF CUSTODY RECORD

Turn Around Time:	1 Day Rush		2 Day Rush	●	3 Day Rush		STD		Quote #		
J-Flag / MDL	●	ESL	●	Cleanup Approved	●			Bottle Order #			
Delivery Format:	PDF	●	GeoTracker EDF		EDD		Write On (DW)		EQuIS		

Report To: David Teter Bill To: Jenice Feiner

Company: Millennium Consulting Associates

Email: dteter@mecaenviro.com Phone: (925) 766-4088

Alt Email: jfeiner@mecaenviro.com Tele: (925) 808-6700 & per email

Project Name: Crumb Rubber - Kelly Park Project #:3116.2000

Project Location: N/A PO # 12874

Sampler Signature:

Analysis Requested

SAMPLE ID Location / Field Point	Sampling Date	Sampling Time	#Containers	Matrix	Preservative	CAM 17 Total	SVOCs Total 8270LL	PAHs Total 8270-SIM	Hexchrome total 7199	PCBs 8082	VOCs 8260
Crumb Rubber/Kelly Park	10/17/2017	09:45	1	O	7	●	●	●	●	●	●

MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

* If metals are requested for water samples and the water type (Matrix) is not specified on the chain of custody, MAI will default to metals by E200.8.

Please provide an adequate volume of sample. If the volume is not sufficient for a MS/MSD a LCS/LCSD will be prepared in its place and noted in the report.

Comments / Instructions

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
Basit	10/17/17	10:55	Basit	10/17/17	1100
Basit	10/17/17	1430	[illegible]	10/17/17	1430

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SW=Seawater, S=Soil, SL=Sludge, A=Air, WP=Wipe, O=Other

Preservative Code: 1=4°C 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=ZnOAc/NaOH 7=None

Temp _____ °C Initials _____

Page ___ of ___

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Sample Receipt Checklist

Client Name:	**MECA Consulting, Inc.**	Date and Time Received	**10/17/2017 14:30**
Project Name:	**3118.2000; Crumb Rubber - Kelly Park**	Date Logged:	**10/17/2017**
		Received by:	Alexandra Iniguez
WorkOrder №:	**1710634** Matrix: Soil	Logged by:	Alexandra Iniguez
Carrier:	Basit Sheikh (MAI Courier)		

Chain of Custody (COC) Information

Chain of custody present?	Yes	☑	No	☐		
Chain of custody signed when relinquished and received?	Yes	☑	No	☐		
Chain of custody agrees with sample labels?	Yes	☑	No	☐		
Sample IDs noted by Client on COC?	Yes	☑	No	☐		
Date and Time of collection noted by Client on COC?	Yes	☑	No	☐		
Sampler's name noted on COC?	Yes	☑	No	☐		
COC agrees with Quote?	Yes	☐	No	☐	NA	☑

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes	☑	No	☐	NA	☐
Shipping container/cooler in good condition?	Yes	☑	No	☐		
Samples in proper containers/bottles?	Yes	☑	No	☐		
Sample containers intact?	Yes	☑	No	☐		
Sufficient sample volume for indicated test?	Yes	☑	No	☐		

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes	☑	No	☐	NA	☐
Sample/Temp Blank temperature	Temp:				NA	☑
Water - VOA vials have zero headspace / no bubbles?	Yes	☐	No	☐	NA	☑
Sample labels checked for correct preservation?	Yes	☑	No	☐		
pH acceptable upon receipt (Metal: <2; 522: <4; 218.7: >8)?	Yes	☐	No	☐	NA	☑
Samples Received on Ice?	Yes	☐	No	☑		

UCMR Samples:

Total Chlorine tested and acceptable upon receipt for EPA 522?	Yes	☐	No	☐	NA	☑
Free Chlorine tested and acceptable upon receipt for EPA 218.7, 300.1, 537, 539?	Yes	☐	No	☐	NA	☑

Comments:

STAFF REPORT

City Council
Meeting Date: **10/25/2017**
Staff Report Number: **17-027-PRC**

Regular Business: **Approve a recommendation to City Council in support of the Bedwell Bayfront Park Master Plan**

This report was amended on 10/24/17 to include the updated Attachment C - Draft Park Master Plan.

Recommendation

City staff recommends the Commission approve a recommendation to the City Council in support of the Bedwell Bayfront Park Master Plan including whether or not the plan should include an outdoor classroom/ seating area, off-leash Dog Park and a model glider area.

Policy Issues

The project is consistent with City policies and 2017 Menlo Park City Council Work Plan item No. 13 – "develop a Bedwell Bayfront Park (BBP) operations and maintenance plan to enhance use, improve access and determine sustainable funding sources for ongoing maintenance." Throughout the planning process the current policy of limiting park use to passive recreation was maintained.

Background

Work began on the master plan in February 2017 and continued for the next 9 months. After an extensive community engagement process including four community meetings and open houses, stakeholder focus groups, intercept events and project surveys, the draft park master plan was presented to the Parks and Recreation Commission during a study session at their meeting on October 11, 2017. A full description of the community engagement efforts and an overview of the draft park master plan is included in the Commission staff report (Attachment A).

The Commission meeting was well attended and received significant public comment and discussion regarding the park master plan. Following a presentation from City staff and the project consultant, Callander Associates, the Commission was asked to provide general feedback on the draft park master plan and recommend any changes based on the community's input. In particular, the Commission was asked to address three components that received marginal support and were not included in the preferred plan: a proposed outdoor classroom seating area, off-leash Dog Park and a model glider area.

During their discussion, Commissioners expressed support for the outdoor classroom concept because it would support the goals of education and park access for children. Previously, an amphitheater was proposed which was not supported but the concept of a less intrusive, nature-friendly meeting space, such as an outdoor classroom, garnered more support. The other idea that received unanimous support by the Commission and those in attendance was the need for a park ranger to enforce park rules and support educational goals. The need for a park ranger has been a constant theme throughout the master plan process.

The off-leash Dog Park amenity was not supported by a majority of the Commission. Commissioners expressed concerns over noise and inconsistency with other passive uses of the park. The amenity received mixed feedback during the community outreach process. Park users who are also dog owners did not feel that the park is an appropriate location but mentioned that new developments in the adjacent areas were including dog runs and other amenities in their developments and didn't feel that having a separate off-leash Dog Park area would solve the off-leash dog problem.

The two proposed amenities that received a significant amount of discussion during the study session were a designated area for hand launched gliders and the kayak launch.

There was mixed support by the Commission for hand gliders, reflective of those attending the meeting. Glider activity, which has been compared to kite flying that is permitted at the park, is in stark contrast to other radio-controlled engine propelled aircraft and drones which are noisy and fly at greater heights and distances. Some Commissioners expressed support for gliders but would like to see pre and post glider bird surveys completed in order to gauge their impact before the activity would be permitted.

The boat and kayak launch is included in the draft master plan based on a majority of community support, supporting data received to date, and other projects Callander Associates and other consultants have completed around the Bay Area. The Commission did not oppose the proposed amenity but wanted additional information from the surrounding Don Edwards Wildlife Refuge before they would support it. The Commission also understood that further investigation would be needed before the activity would be permitted but this went beyond the scope of the project consultant.

Analysis

During the study session, the Commission had a number of questions for City staff and the consultant which included such things as the proposed location of trash and recycle bins in the park, information on Bay Trail surfacing throughout the Bay Area, the kayak launch proposal and examples of what the proposed outdoor classroom would look like. The exhibits (Attachment B) provide the information requested by the Commission.

If the park master plan is approved by Council, it is recommended that improvements be phased in over a period of 15 years for a park plan life of 25 years. Community-supported features will be phased in while prioritizing those improvements that address flooding and improve accessibility to the park.

Phase 1 will be implemented in zero to 5 years and includes addressing deferred maintenance and capital projects, safety items, ADA accessibility and site furnishings including seating, bike racks, dog bag dispensers etc.

Phase 2 will be implemented in 5 to 10 years and includes installation of an automatic gate / entrance system, treated ADA accessible trails located further into the park such as the southern summit and Great Spirit Path, a nature play area, kayak launch and habitat restoration areas, parking improvements and replacement of the restroom building.

Phase 3 will be implemented in 10 to 15 years and includes addressing sea level rise along segments of the entrance road and Bay Trail, solar and methane generation and renovation of the Great Spirt Path art piece.

A complete description of the proposed plan phasing, along with estimated costs are included in Implementation Section 4 of the draft park master plan (Attachment C). The draft park master plan attached to this report does not include the appendix which contains technical reports, cost summaries, meeting

summaries and bibliography. The appendix is available to the Commission upon request and will be included in the draft that will be presented to the City Council on November 14, 2014. A final draft that includes staff comments and Commission recommendations will be available after the City Council adopts the final plan.

City staff recommends the Commission adopt a recommendation to the City Council in support of the Bedwell Bayfront Park Master Plan and decide whether to recommend inclusion of the following components.

1) A proposed outdoor classroom seating area
2) An off-leash Dog Park
3) A model glider area

The master plan will be presented to the City Council for their consideration during regular business on November 14, 2017.

Impact on City Resources

Project costs address current deferred maintenance and capital projects, costs for new activities and enhancements, sea level rise and 100 year flood event, and needed landfill improvements. The estimated capital costs for all park improvements is $12 million to $13 million which will be phased in over a period of 15 years for a park plan life of 25 years. The estimate for annual operations and maintenance costs including salaries, repairs and maintenance and utilities is $500,000 to $600,000. Landfill improvements related to the master plan are approximately $2 million to $4 million. An overview of cost estimates is included in the draft park master plan (Attachment C).

A draft funding strategy for park improvements and ongoing operations and maintenance was provided by Economic & Planning Systems, Inc. (EPS), a project sub consultant for Callander Associates. The executive summary (Attachment D) outlines sample strategies that may be considered at a future date. However, no proposed funding strategies are being considered currently for the Bedwell Bayfront Park Master Plan, as the City needs to complete the overall Parks and Recreation Facilities Master Plan (scheduled to begin in November) in order to prioritize park improvements along with other City parks and recreation facility needs. A comprehensive funding strategy for Bedwell Bayfront Park and other facilities will be addressed at a later date once the overall master plan is completed.

Environmental Review

As a proposed master plan, the project is categorically exempt under Class 6 of the current State of California Environmental Quality Act Guidelines, which allows for information collection, research and resource evaluation activities as part of a study leading to an action which a public agency has not yet approved, adopted or funded. The results of the project will identify environmental reviews and studies required to advance the project.

Public Notice

Public Notification was achieved by posting the agenda, with the agenda items being listed, at least 72 hours prior to the meeting.

Attachments

A. Parks and Recreation Commission Staff Report for October 11, 2017
B. Response to Comments from October 11, 2017 Study Session
C. Draft Park Master Plan
D. EPS Sample Funding Strategy Memo

Report prepared by:
Derek Schweigart
Assistant Community Services Director

CITY OF MENLO PARK

STAFF REPORT

Parks and Recreation Commission
Meeting Date: **10/11/2017**
Staff Report Number: **17-022-PRC**

Study Session: **Bedwell Bayfront Park Master Plan Draft Review**

Recommendation

City staff recommend that the Parks and Recreation Commission receive and provide feedback on the draft park master plan for Bedwell Bayfront Park.

Policy Issues

The Project is consistent with City policies and 2017 Menlo Park City Council Work Plan item No. 13 – Develop a Bedwell Bayfront Park (BBP) operations and maintenance plan to enhance use, improve access and determine sustainable funding sources for ongoing maintenance.

Background

BBP is the City's largest park and the City's only open space on the San Francisco Bay. Consisting of 160 acres, the Park's trails and hills provide great views of the Don Edwards Wildlife Refuge and South Bay. Its hilly terrain now serves as a landmark high point along the edge of the Bay.

Originally a sanitary landfill, construction of BBP on the site began in 1982 and was completed in 1995. Currently, the park is designed as a passive open space with minimal improvements, including bike/pedestrian trails and restrooms. Users enjoy "passive-recreation" through activities that include hiking, running, bicycling, dog walking, bird watching, kite flying and photography.

The park has seen a significant increase in usage over the years as the recreational interests and needs of users and area residents have changed. Through various public forums the City has learned that there is a desire for docent-led educational programs and tours, as well as spaces for interpretive displays and exhibits throughout the park. Other improvements requested by the community include access and connectivity to the Bay for nonmotorized small boats such as canoes, kayaks or sailboards similar to the floating dock at the Palo Alto Baylands Nature Preserve. In response to these requests, the Council included an item in their 2016 and 2017 work plans (No.17 and No. 13 respectively) to develop a park operations and maintenance plan to enhance use, improve access and determine sustainable funding sources for ongoing maintenance.

Staff issued the BBP Master Plan Request for Proposals (RFP) on November 4, 2016. The scope of work presented in the RFP included developing a Master Plan providing a long-term vision and general development guide for the park and its facilities, including how to protect resources, improve amenities to enhance the park user experience, manage visitor use, plan for future park enhancements and develop a financing plan to pay for maintenance and the capital cost of the park. The Master Plan was required to recommend improvements for the next 25 years. After a competitive process, Callander Associates Landscape Architecture was selected as the most qualified consultant based on their expertise in similar projects and their understanding of and approach to the project scope.

In conjunction with the BBP Master Plan RFP, staff issued a Request for Quotes to APTIM (formerly CB&I) for the development of the BBP Master Plan – Technical Evaluation. The primary objective of the Technical Evaluation was to ensure that the proposed improvements developed in the Master Plan are consistent with the operation and maintenance needs of the former landfill. APTIM and Callander Associates Landscape Architecture were required to collaborate on the development of the Master Plan. In addition, APTIM was tasked with identifying the regulatory and industry standard practices for similar park operations in former landfills; evaluating the park's potable water and fire protection systems; and developing a feasibility study for the beneficial reuse of the landfill gas that is currently flared. The findings of the Technical Evaluation will be incorporated in the BBP Master Plan.

At their meeting on February 7, 2017, Council approved the scope of work and authorized the City Manager to enter into agreements with Callander Associates Landscape Architecture for the development of the BBP Master Plan and with APTIM for the technical evaluation of the plan. The staff report that includes the project scope of work is included as Attachment A.

Analysis

Work began on the Master Plan with the creation of the BBP Master Plan Community Outreach Plan that was presented to Council at their meeting February 28, 2017. The extensive community engagement plan was based on the City's Community Engagement Model and includes:

- Project review by the Parks and Recreation Commission and City Council
- Stakeholder coordination
- Interactive workshops and community meetings
- Community newsletter
- On-site posters
- Event promotional booths
- Project website
- Formation of an oversight and outreach committee

Outreach Effort

The oversight and outreach group consisting of City staff, Parks and Recreation and Environmental Quality Commissioners, a Friends of Bedwell Bayfront Park representative, a community member at-large from Belle Haven, a local environmental conservation group representative and a local business representative provided feedback from different segments of the community and were responsible for getting the word out to their respective groups. In addition, the project team worked with agencies that have a direct impact on the park including the South Bay Salt Pond Restoration Project, SAFER Bay, Don Edwards Wildlife Refuge, West Bay Sanitary District and a host of other agencies to address interjurisdictional issues and concerns regarding proposed park improvements. Through the following events and meetings, the project team gathered qualitative data supporting the design direction for the preferred master plan:

Meeting	Date	Purpose
Kick-off Meeting	2/8/17	Kick-off the project and review outreach and strategy
Oversight Group Meeting # 1	3/23/17	Review project goals and open house format materials
Open House # 1	4/8/17	Solicit community input on what users would like to see for BBP
Oversight Group Meeting # 2	6/8/17	Review open house # 1 results and design alternatives

Open House # 2	6/17/17	Solicit community input on the design alternatives
Interagency Meeting	7/12/17	Solicit input on the design alternatives
Open House # 3	8/10/17	Solicit input from members of the Belle Haven neighborhood
Oversight Group Meeting # 3	9/13/17	Review open house # 2 and # 3 results and the draft park plan
Parks and Recreation Commission	10/11/17	Study session on the draft park plan seeking community and commission input
Parks and Recreation Commission	10/25/17	Recommendation on the draft park plan
City Council Meeting	11/14/17	Solicit input and approval of park master plan

Public participation was a priority for the project and three (3) public outreach events have been hosted. Open House # 1 was held on April 8, 2017 at the Senior Center; Open House # 2 was held on June 17, 2017 at Bedwell Bayfront Park; and Open House # 3 was held August 11, 2017 again at the Senior Center with focused marketing geared to the Spanish speaking population in Belle Haven. The community was notified about these input opportunities through an extensive list of activities, including mailers, email blasts, intercept events at the park and throughout the City and indirect methods including on- and off-site posters, newsletter ads, and City webpage updates. Materials included information in both English and Spanish.

Notification Method	Open House # 1	Open House # 2	Open House # 3	PRC/Public Mtg # 4
Update City webpage	✓	✓	✓	✓
Update Facebook page	✓	✓	✓	✓
E-mail blast to stakeholders	✓	✓	✓	✓
E-mail blast to NextDoor	✓	✓		✓
Ad/notice in Belle Haven newsletter*	✓	✓		✓
Direct utility billing*	✓			
On-site marquee / electronic board	✓	✓		✓
On-line survey for Open House*	✓	✓	✓	
E-mail blast to prior attendees		✓	✓	✓
Outreach at community events	✓	✓	✓	
Project outreach on-site	✓	✓		
On-site posters*	✓	✓		✓
Posters at City facilities*	✓	✓	✓	
On-site brochures*	✓	✓		✓
Direct postcard mailing*			✓	

Event Spanish translator*	✓	✓	✓

**Resources available in Spanish*

Community Meetings and Feedback
Open Houses have been a primary input method. To bolster the input received, an on-line survey was created for the first two Open Houses to allow for input by a wider audience.

Open House # 1
Open House #1 was Saturday April 8, 2017 at the Senior Center in Belle Haven from 10 a.m. to 2 p.m. It was a very rainy day, but 50 people attended and 39 people completed a response packet. The packet was the primary collection tool used to gather feedback at this event. The packet asked participants to review materials and respond to questions identifying preferred activities and amenities for the park. A survey based on the open house materials was posted on-line and received 70 responses.

At the event participants were asked to define "passive recreation". Bedwell Bayfront Park was founded as a passive recreation park, but the definition of this meaning ranges in interpretation. The public was asked to respond to a grid of images describing passive recreation from less active to more active. People were also asked to respond to park amenities images indicating preferred amenities to include in the master plan.

A slightly larger number of participants supported a "more active" park (ie. the addition of activities such as fitness equipment) than a "less active" park. Participants also supported preserving the park's natural qualities and keeping a majority of the trails unpaved. Input gathered at Open House # 1, both from the meeting and through the online survey, was utilized to generate concept alternatives. Results from Open House # 1 were summarized and made available at Open House # 2. The input results from Open House # 1 and the first on-line survey are included as Attachment B.

Open House # 2
Open House # 2 took place on Saturday, June 17, 2017 at Bedwell Bayfront Park from 10 a.m. to 2 p.m. In the midst of a heat wave 60 people attended and 56 completed response packets. Participants were asked to review the materials and respond to questions to help identify preferences between two concept plan alternatives.

Plan alternatives varied in design emphasis, amenities, types of uses, and materials used. Participants were asked to select a preferred plan and provide input on features they liked, disliked, or would like to change. This allowed participants to customize the plan by providing comments on park features and describing what they would change about the design, if anything. A third option, or a "Do Nothing" option, was not provided because the design team wanted the public to respond to specific concepts and describe why certain features were desired or not desired, in order to have enough qualitative data to develop a preferred plan. Additionally, a "Do Nothing" approach would not address Council's basic project goals of addressing existing access and infrastructure deficiencies and the future pressures of development in the Bayfront area.

Open House # 3
Open House # 3 was held on Thursday, August 10, 2017 in response to the low participation of Spanish-speaking participants at prior events. A significant percentage of park users speak Spanish and live in the Belle Haven neighborhood, less than 2 miles from the park. The same content from Open House # 2 was utilized for Open House # 3 but materials were translated and two Spanish interpreters participated. Twenty eight people attended the evening meeting, and 19 packets were turned in. The on-line survey, which spanned Open Houses # 2 and # 3, yielded 151 responses.

The community input received indicated a preference for Plan A (42%) over Plan B (32%). 27% of respondents elected not to select a preferred plan, indicating a potential desire for the "Do Nothing" option. A majority of participants (more than 50%) were in favor of preserving existing uses (i.e. walking, jogging, kite flying, biking on paved paths, orienteering, geocaching, and The Great Spirit Path artwork) and providing wheelchair accessible paths and summits. A majority of respondents also supported the addition of amenities such as picnic tables and seating, educational support facilities such as habitat restoration and interpretive signage, and new uses such as nature play and a boat launch. Respondents were split in their support of a fitness course, amphitheater, model gliders, off-leash dog park, and ranger's office building. The input results from Open House # 2, Open House # 3, and the second on-line survey are included as Attachment C.

Draft Park Master Plan

The draft master plan ensures a balance between public access, environmental sustainability and stakeholder input. The plan accommodates amenities and activities that also fit the park's natural and passive recreation aesthetic and includes features that address four main goals:

- Accessibility improvements
- Enhanced educational opportunities
- Environmental protection considerations
- Passive recreation enhancements

Accessibility Improvements: Accessibility improvements provide an inclusive trail system for people of all abilities to experience the park and include widening, (re)paving, and (re)grading pathways to meet the American with Disabilities Act, providing wheelchair access to two of the seven summits, and introducing a treated trail providing the natural look of a dirt trail while meeting ADA standards.

Enhanced Educational Opportunities: Bedwell Bayfront Park is a unique open space because it appears, at first glance, to be a natural environment yet it is built on a capped landfill in a dense urban area. This aspect of the park will be described and celebrated through a series of interpretive signs that tell the story of the landfill, provide explanations about methane capture, and explain the purpose of the flare visible from a portion of the park. Other interpretive signs will discuss the special environmental features of the park such as threatened bird species nesting in the adjacent refuge and how water levels fluctuate in the tidal ponds.

Environmental Protection Considerations: While the park is man-made and came to exist after the closure of the landfill, people often view the park as an environmental gem in the region. The plant and animal species are a large attraction for visitors and their protection must be balanced against the need to provide public access and enjoyment. Habitat restoration was well supported by the community and will consist of planting upland species along Flood Slough. Although the input supported keeping the undesignated shoulder parking along the entrance road, the Plan eliminates this parking and restores it with native planting due to the erosion and storm water pollution it causes.

Passive Recreation Enhancements: The Plan's time horizon of 25 years requires that it address the current population growth and anticipate the future development impacts in the area. The park plan, therefore, continues to support and enhance the variety of existing uses while accommodating future growth by including community-supported amenities and uses:

- Park ranger
- New restroom
- Trees to screen sewage facility
- Picnic tables, seating, bike racks, and trash receptacles

- Non-motorized small boat launch
- Nature play
- Ranger's office building (also for use by volunteers and docents)
- Fitness course

Additional Items for Consideration
The community input results showed mixed support for amphitheater/group seating, an off-leash dog park, and model glider area, so these items were not included in the Draft Park Master Plan. Reasons for considering these elements are outlined below:

An amphitheater/group seating area was proposed to support the park as a place for learning about nature and for students to engage with the natural world. "Amphitheater" is perhaps a misnomer and a better description would be "outdoor classroom". The seating would provide a place for docent-type presentations, for birder groups to stage, and for one to two classroom sized groups of students to gather.

An off-leash dog park was proposed to address the existing issue of park users letting their dogs run off-leash through the park. Concern has been expressed by the adjacent Don Edwards San Francisco Bay National Wildlife Refuge that off-leash dogs entering the marsh environment can endanger wildlife. An on-site off-leash dog park providing dedicated space for dog owners to exercise their dogs, coupled with enforcement from a park ranger to prohibit off-leash dogs elsewhere in the park, could help reduce the potential for dog/wildlife conflicts. The dog park, if provided, would be one acre in size and have separate enclosed spaces for small and large dogs. It would supplement the two other dog parks in Menlo Park at Willow Oaks Park and Nealon Park.

A model glider area was proposed because model glider hobbyists have been flying at the park almost since it opened, and then was stopped in August 2016 with the approval of a City Ordinance banning public use of unmanned aircraft systems at parks. There are relatively few other open spaces available to glider hobbyists. If glider use is allowed at Bedwell Bayfront Park, it should be restricted to hand-launched gliders coupled with enforcement from a park ranger to prevent use of drones and other non-approved types of gliders, and enforce other use restrictions. An Unmanned Aircraft System (UAS) assessment is included as Attachment D.

The draft park master plan map and image boards are provided for reference and are included as Attachment E.

Following a presentation from City staff and the project consultant, Callander Associates, the Parks and Recreation Commission will be asked to provide general feedback on the draft park master plan for Bedwell Bayfront Park. The following questions may help guide the Commission's discussion:

1. Does the draft park plan reflect the community input? What changes should be made to reflect the community input?
2. There was varying support for three components including an amphitheater/group seating, off-leash dog park, and model glider area which are not included in the preferred plan. Is there sufficient support and justification to include any of these components in the preferred plan?
3. Does the Commission have any questions or need additional information in order to approve a recommendation to the City Council at their October 25, 2017 meeting?

Impact on City Resources
City staff is working with Callander Associates to determine overall project costs which include addressing

current deferred maintenance, costs for new activities and enhancements, sea level rise and 100 year flood event, and needed landfill improvements. Project costs will be phased in over a period of 15 years for a park plan life of 25 years. This information will be presented at the Commission's October 25, 2017 meeting.

Environmental Review

The project is categorically exempt under Class 6 of the current State of California Environmental Quality Act Guidelines, which allows for information collection, research and resource evaluation activities as part of a study leading to an action which a public agency has not yet approved, adopted or funded. The results of the project will identify environmental reviews and studies required to advance the project.

Public Notice

Public Notification was achieved by posting the agenda, with the agenda items being listed, at least 72 hours prior to the meeting.

Attachments

A. Council Staff Report February 7, 2017
B. Open House No. 1 and Survey Results
C. Open House No. 2-3 and Survey Results
D. UAS Assessment
E. Draft Park Plan Materials

Report prepared by:
Derek Schweigart
Assistant Community Services Director

STAFF REPORT

City Council
Meeting Date: **2/7/2017**
Staff Report Number: **17-031-CC**

Consent Calendar: **Authorize the City Manager to enter into consultant agreements for the Bedwell Bayfront Park Master Plan project**

Recommendation

Staff recommends that the City Council authorize the City Manager to:

1. Enter into an agreement with Callander Associates Landscape Architecture for the development of the Bedwell Bayfront Park (BBP) Master Plan and appropriate an additional $58,111 from the undesignated fund balance of the General Fund for a total approved budget of $258,111 to cover consultant costs and staff time for the project, and
2. Enter into an agreement with CB&I Environmental & Infrastructure, Inc. (CB&I) for the development of a Technical Evaluation of the Bedwell Bayfront Park Master Plan and appropriate $65,995 from the Landfill Fund for the project.

Policy Issues

The Project is consistent with City policies and 2016 Menlo Park City Council Work Plan item No. 17 – Develop a Bedwell Bayfront Park operations and maintenance plan to enhance use, improve access and determine sustainable funding sources for ongoing maintenance.

Background

BBP is the City's largest park and the City's only open space on the San Francisco Bay. Consisting of 160 acres, the Park's trails and hills provide great views of the refuge and South Bay. Its hilly terrain, specifically designed for passive recreation, now serves as a landmark high point along the edge of the Bay.

Originally a sanitary landfill, construction of BBP on the site began in 1982 and was completed in 1995. Currently, the park is designed as a passive open space with minimal improvements, including bike/pedestrian trails and restrooms. Users enjoy "passive-recreation" through activities that include hiking, running, bicycling, dog walking, bird watching, kite flying and photography.

As reflected consistently in various documents over the years, park usage guidelines include:

1. Preserve the natural amenities of the open space land;
2. Conserve soil, vegetation, water and wildlife;
3. Exclude intensive uses or uses that could degrade the site or adjacent sites;
4. Encourage the following:
    a. Viewing and interpretation of the natural environment;
    b. Passive recreation activities such as hiking, running, cycling, dog-walking, photography, bird watching and similar day recreation use; and
    c. Landscape or wildlife restoration and enhancement programs.

In conjunction with the construction of the park, gas recovery and leachate control projects were also built to ensure that the closed landfill met all regulatory requirements at the time of the installation. The landfill gas recovery system consists of a well field that includes 72 gas extraction wells, a network of pipes embedded just beneath the surface of the landfill cap that collect the gas and a flare that combusts the gas that is collected. The leachate system consists of 9 wells and 16 extraction sumps installed along the perimeter of the landfill for the extraction of the leachate that forms due to the decomposition of the solid waste. The systems are operated to meet regulations set by the Bay Area Air Quality Management District and the Regional Water Quality Control Board.

The park has seen a significant increase in usage over the years and the recreational interests and needs of the users have changed. Through various public forums, the City has learned that there is a desire for docent-led educational programs and tours, as well as spaces for interpretive displays and exhibits throughout the park. Among other ideas presented was a desire to improve access and connectivity to the water in the Bay for non-motorized small boats such as canoes, kayaks or sailboards similar to the floating dock at the Palo Alto Baylands Nature Preserve. In response to these needs, the 2016 City Council workplan included Item No. 17 - Develop a Bedwell Bayfront Park operations and maintenance plan to enhance use, improve access and determine sustainable funding sources for ongoing maintenance.

Analysis

Staff issued the BBP Master Plan Request for Proposals (RFP) on November 4, 2016. The scope of work presented in the RFP includes developing a Master Plan that provides a long-term vision and general development guide for the park and its facilities, including how to protect its resources, improve amenities to enhance the park user experience, manage visitor use, plan for future park enhancements and develop a financing plan to pay for maintenance and the capital cost of the park. The Master Plan shall recommend improvements for the next 25 years.

The BBP Master Plan proposed scope of work consists of:

- Thorough park site investigation and analysis of opportunities and constraints;
- Development of a stakeholder coordination and community engagement plan that includes the potential formation of a steering committee to assist with identification of user needs and interests;
- Evaluation of Americans with Disabilities Act design compliance;
- Development of recommendations for park improvements based on the assessment of the existing conditions, opportunities for improving the site to meet future needs and the goals and objectives of the study;
- Funding analysis that includes an assessment of potential funding sources for the implementation of the proposed improvements;
- Presentations to the Parks and Recreation and Environmental Quality Commissions and City Council.

A panel of staff members reviewed the 9 proposals that were received and invited the 4 most qualified consultants to interview for the project. Interviews were conducted by staff and one member of the Parks and Recreation Commission on January 4 and January 10, 2017. Callander Associates Landscape Architecture was selected as the most qualified consultant based upon their expertise in similar projects and their understanding and approach to the project scope.

In conjunction with the BBP Master Plan RFP, staff issued a Request for Quotes to CB&I for the development of the BBP Master Plan – Technical Evaluation. The primary objective of the Technical Evaluation is to ensure that the proposed improvements developed in the Master Plan are consistent with the operation and maintenance needs of the former landfill. CB&I will work with Callander Associates.

Landscape Architecture through the development of the Master Plan. In addition, CB&I will identify the regulatory and industry standard practices for similar park operations in former landfills; evaluate the park's potable water and fire protection systems; and develop a feasibility study for the beneficial reuse of the landfill gas that is currently flared. The findings of the Technical Evaluation will be incorporated in the BBP Master Plan.

The BBP Master Plan is expected to be completed by November 2017. The project will allow review of plan alternatives by the Parks and Recreation Commission and the City Council, as well as any constraints, recommended improvements and funding strategies which will result in a master plan that is implementable for the future.

Impact on City Resources

The total estimated cost for the BBP Master Plan, inclusive of a 10% contingency and administrative costs, is $258,111. In Fiscal Year 2016-17, $200,000 was approved as part of the Capital Improvement Budget. The budget estimate, however, did not include staff management or a contingency. An appropriation of $58,111 from the undesignated fund balance of the General Fund is being requested as part of the overall project budget.

The total estimated cost for the BBP Technical Evaluation, inclusive of a 10% contingency and administrative costs, is $65,995. The request is to appropriate the total project cost from the BBP Landfill Fund.

Bedwell Bayfront Park Master Plan Project Budget		
	Master Plan	**Technical Evaluation**
Scope of Work	$203,737	$49,995
Contingency (10%)	$20,374	$5,000
Administration Costs	$34,000	$11,000
Total	**$258,111**	**$65,995**

Environmental Review

The project is categorically exempt under Class 6 of the current State of California Environmental Quality Act Guidelines, which allows for information collection, research and resource evaluation activities as part of a study leading to an action which a public agency has not yet approved, adopted, or funded. The results of the project will identify environmental reviews and studies required to advance the project.

Public Notice

Public Notification was achieved by posting the agenda, with the agenda items being listed, at least 72 hours prior to the meeting.

Attachments

A. BBP Master Plan Consultant Scope of Work and Fee
B. BBP Technical Evaluation Consultant Scope of Work and Fee

Report prepared by:
Derek Schweigart
Assistant Community Services Director

Azalea Mitch
Senior Civil Engineer

THIS PAGE INTENTIONALLY LEFT BLANK

Callander Associates
Landscape Architecture
40 YEARS

EXHIBIT A
SCOPE OF SERVICES

This scope of services is based on our project understanding and experience in projects of this type. We remain flexible throughout, knowing that all the requirements of the project cannot be known today. We welcome the opportunity to work with you to modify the scope as warranted. Items shown in ***boldface italics*** are deliverables.

1.0 PROJECT INITIATION

1.01 **Start-up Meeting**: Meet with City staff and others as assembled by the City to discuss the project. Present the project background information and lead a discussion on various topics including: site history, project stakeholders, schedule, process, initial site considerations and other topics. Gather comments, prepare a ***meeting summary*** (including a listing of follow up tasks and responsible parties) and distribute it to the meeting attendees.

1.02 **Project Stakeholder Interviews**: As part of the initial start-up meeting, Economic Planning Systems (EPS) will lead a discussion with department representatives to better understand current funding sources and financing mechanisms. As appropriate, EPS will reach out independently to specific individuals not in attendance.

1.03 **Landfill Coordination**: As part of the start-up meeting, Hailey & Aldrich will meet with City staff and landfill consultant CB&I Environmental & Infrastructure, Inc. to review the gas collection and leachate assessments, developing landfill improvement plans, and discuss coordination of the two projects.

1.04 **CEQA Background Review**: Biotic Resources Group (BRG) will review existing documents and relevant background materials relating to CEQA checklist items. Existing data previously prepared for the project area will be used to the greatest extent feasible. The City's General Plan and other documents pertinent to the park site will be reviewed for the CEQA checklist. Requirements for a Categorical or Statutory Exemption under the CEQA guidelines will be reviewed.

1.05 **Site Investigation**: To combine *site observations* with *site document compilation*. *Site observations* to include visiting the site to note both the physical character of site and use patterns at various times. Site observations to be conducted with a site map in hand to allow for documentation of features and uses by specific location. *Site documentation* to consist of a review and assembly of site record information as available from City archives and other sources.

SAN MATEO
311 Seventh Avenue
San Mateo, CA 94401
T 650.375.1313
F 650.344.3290

SAN JOSE
300 South First Street, Suite 232
San Jose, CA 95113
T 408.275.0565
F 408.275.8047

RANCHO CORDOVA
12150 Tributary Point Drive, Suite 140
Rancho Cordova, CA 95670
T 916.982.4366
F 916.985.4391

Recreate
Educate
Live+Work
Connect
Sustain
www.callanderassociates.com

1.06 **Biological Site Investigation**: BRG will conduct a site visit to document existing resources on the site, including potentially sensitive biological areas.

1.07 **Site Mapping**: Supplement existing topographic survey plan (prepared under the Bedwell Park Fields Study project) with site record information and prepare a site map combining the relevant features into a digital file. File will be reproducible at different scales to facilitate general and site specific plan development.

1.08 **Steering Committee Formation and Outreach Plan**: Identify project stakeholders and prepare ***contacts list***. Develop a ***public outreach plan*** including notification protocols and visioning process to be employed for the duration of the project. All plans and presentation materials to be prepared will have both English and Spanish text. PowerPoint presentations will be English only and Spanish translator services will be provided at community events. Craft a ***Mission Statement*** that embodies the project's goals, 'spirit' and working relationships. Identify the level and purpose of community engagement, set project parameters (define the negotiable and non-negotiable), and identify outreach methods (attendance at community event like the weekly Farmer's Market to get the word out).

1.09 **Unmanned Aircraft Systems (UAS) Review**: As part of the master planning process review available information and previous research provided by the City. At each of the community and stakeholder meetings continue to document input. In addition, research what other similar communities are doing regarding UAS policy. Document findings and present at future presentations of the draft master plan to the Parks and Recreation Commission and City Council in order to provide those groups with information to make an informed decision about policy.

1.10 **Opportunities and Constraints Plan:** Prepare ***opportunities and constraints plan*** to show: existing site conditions, jurisdictional overlays (BCDC, etc.), educational opportunities, potential amenities (seating, kiosks, expanded parking), wildlife viewing areas, circulation and wayfinding, and other elements. As part of the plan make refinements to the previously developed slope diagram (2006 planning effort) and analyze the existing pathway system as it relates to ADA compliance and enhancements.

1.11 **Funding Options Matrix**: EPS will develop a matrix of potential funding sources and financing mechanisms. The list of funding sources will include the name of the funding source, a general description, challenges to implementation in general, and the unique issues of relevance to implementation as part of the Project.

This ***funding matrix*** will be based on prior EPS work, discussions with staff of the relevant departments and agencies, and additional research and analysis.

1.12 **Staff Meeting:** Meet with City staff to preview the materials to be shared and identify changes/additions/deletions to the various documents.

1.13 **Steering Committee Meeting #1**: Meet with the members of the Steering Committee to review the master planning process, goals and objectives, and solicit input. Prepare written ***summary memo***.

1.14 **Community Meeting #1 Materials:** Prepare materials for upcoming community open house including refinements to the opportunities and constraints plan, ***goals and objectives exhibit, process exhibit, program images board, PowerPoint presentation***, graphic ***meeting announcement*** (printing and mailing by city), ***sign in sheets,*** and ***project surveys***.

1.15 **Community Meeting #1 (Open House):** Present the above at a single community meeting to be held on-site or at an agreed upon central location. This and future meetings will be an open house format, held on a weekend, and over a period of four hours to allow community members a greater flexibility in attendance. Comments would be documented in a ***meeting summary*** to be posted to the City's website.

2.0 PLAN DEVELOPMENT

2. 01 **Staff Meeting**: Follow up with staff and discuss next steps.

2. 02 **Master Plan Alternatives:** Prepare two rendered ***plans*** showing alternative developments of the park. Prepare ***estimates of probable construction and operating costs***, with detailed line items of various park elements for each. Prepare an ***outline*** summarizing items to be addressed by the design guidelines.

2. 03 **Refined Funding Matrix**: Building upon earlier work and incorporating feedback from the affected stakeholders, EPS will refine the menu of potential funding sources and financing mechanisms to reflect the most viable options. High-level and relative capacity estimates of each funding source will be refined so as to be able to appropriately align specific improvements to specific funding sources. EPS will identify specific feasibility challenges if necessary.

2. 04 **Staff Review:** Present the alternatives and supporting information in a meeting with City staff. Identify any revisions to the exhibits and confirm the format of the next public meeting.

2. 05 **Steering Committee Meeting #2:** Meet with the members of the Steering Committee to present alternative plans.

2. 06 **Community Meeting #2:** Facilitate a second Open House style public meeting. Identify the preferred park elements.

2. 07 **Draft CEQA Checklist:** BRG will review the preferred park elements to identify potentially significant impacts. The environmental setting will be based on review of existing reports, maps, and information derived during site investigations. If significant impacts are identified, we will confer with the city on possible revisions to avoid or reduce the impact to less-than-significant or to meet requirements for CEQA exemption.

The ***draft CEQA checklist*** will use a format provided by the City, or a format provided by the consultant and approved by the City. For each item in the checklist that is not checked as "No Impact", an explanation will be provided to support if the impact is "significant" or "less than significant". The CEQA checklist/review will be prepared based on the draft master plans, the current General Plan, other existing studies and documents, and site visits conducted in this scope.

2. 08 **Staff Meeting:** Review the community input with City staff and develop an action plan for moving forward.

2. 09 **Interagency Meeting**: Coordinate and conduct a single interagency meeting with BRT in attendance to review project background and alternative designs in order to obtain feedback on the viability of each option from the regulatory agency perspective. Coordinate with City staff to identify agencies and contact information, coordinate invitations, prepare and send package of relevant documents prepared to date, facilitate meeting, and prepare a ***written summary*** of comments and discussion from the meeting.

2. 10 **Draft Master Plan**: Prepare a draft master plan consisting of:

- ***Park Master Plan:*** Prepare a single park master plan incorporating input received to date and showing preferred park elements.
- ***Cost Estimates:*** Prepare an estimate of probable construction costs and an estimate of operating costs reflecting the draft plan.
- ***Funding and Financing Strategy Plan***: EPS will prepare a draft funding and financing plan for inclusion in the Master Plan. This plan will include a description of the funding analysis and funding mechanisms selected and an action plan. Feasibility considerations will be refined and updated. The action plan will recommend funding sources to be adopted and/or amended and any necessary accompanying actions.
- ***Phased Implementation Plan:*** Show recommended phasing to better align costs with the potential availability and timing of identified funding. The phasing plan will be based on 5, 15, and 25 year time frames.
- ***Plan Details:*** Prepare up to three (3) plan enlargements and two (2) elevations/cross sections to better depict the spatial arrangement of the improvements.
- ***Final CEQA Checklist:*** Update the CEQA checklist to reflect the potential impacts associated with the draft master plan.

- ***Design Guidelines****:* Develop guidelines to address the implementation of each park element. Task includes preparation of an updated ***park user map***/ information brochure, consistent with the City's branding standards.
- ***Operations and Maintenance Plan****:* Collaborate with City staff in identifying and quantifying the tasks and level of effort associated with the operations and maintenance of the facility.

2. 11 **Staff Meeting:** Present the Draft Master Plan to City staff and solicit input.

2. 12 **Master Plan Revisions:** Take the input of the Steering Committee and staff and revise the documents.

3.0 PLAN ADOPTION

3.01 **Community Meeting #3/P&R Commission:** Facilitate a third public meeting to present the Master Plan to the public and to the Parks & Recreation Commission.

3.02 **Staff Meeting:** Meet with staff to review the input of the public and Commission and identify plan changes to be made before assembling the draft Master Plan Report and presenting to Council.

3.03 **Master Plan refinements:** Make the revisions as agreed upon in the meeting and assemble into a draft report format.

3.04 **Council Presentation:** Present to Council.

3.05 **Final Master Plan:** Prepare a Final Master Plan report to incorporate the input provided by Council.

4.0 NOT USED

5.0 OPTIONAL SERVICES

5.01 **Community Meeting #4**: Facilitate a fourth Open House style public meeting if requested by the city to further refine the park master plan.

5.02 **Traffic Analysis:** If requested by the city, Hexagon Transportation shall review existing available traffic counts, reports, and analyses provided by the city for the Marsh Road/Bayfront Expressway intersection and provide recommendations for enhancing the intersection and park entrance road lane configuration to mitigate potential traffic conflicts and congestion. Task also includes review of parking demand and recommendations for parking enhancements.

THIS PAGE INTENTIONALLY LEFT BLANK

Callander Associates Landscape Architecture
January 20, 2017

Compensation Summary

Bedwell Bayfront Park Master Plan Project

Overall

Based on the attached "Scope of Services" prepared by Callander Associates and subconsultants, we have prepared the following summary of compensation.

Callander Associates Landscape Architecture, now will be the prime consultant on the project with the following subconsultants:

Economic Planning Systems (EPS)	*financing strategist*	Haley & Aldrich (HA)	*landfill geotechnical engineer*
Biotic Resources Group (BRG)	*environmental consultant*	Manuel Henriquez (MH)	*Spanish translator*
Hexagon Transportation (HEX)	*traffic engineer*		

Fee Basic Services

task		CA	EPS	MH	HA	BRG	HEX	Totals
1.0	project initiation	$31,270	$11,970	$1,200	$3,084	$7,900	$0	$55,424
2.0	plan development	$74,930	$18,050	$800	$1,576	$1,568	$0	$96,924
3.0	plan adoption	$23,261	$4,740	$0	$0	$0	$0	$28,001
	reimbursable expenses (allowance)	$9,300	$300	$0	$110	$350	$0	$10,060
	Subtotal (fees and expenses)	$138,761	$35,060	$2,000	$4,770	$9,818	$0	$190,409

Total Not to Exceed Compensation (Basic Services) **$190,409**

Fee Optional Services

task		CA	EPS	MH	HA	BRG	HEX	Totals
5.01	community meeting #4	$5,828	$0	$0	$0	$0	$0	$5,828
5.02	traffic analysis	$0	$0	$0	$0	$0	$6,000	$6,000
	reimbursable expenses (allowance)	$1,500	$0	$0	$0	$0	$0	$1,500
	Subtotal (fees and expenses)	$7,328	$0	$0	$0	$0	$6,000	$13,328

Total Not to Exceed Compensation (Optional Services) **$13,328**

All reimbursable expenses, including the communication and insurance surcharge noted on the attached Standard Schedule of Compensation dated 2017 (San Jose), would be invoiced as a separate line item. These costs will be itemized on our invoices and compared monthly with the total allowance to assist you in monitoring these costs.

Callander Associates
Landscape Architecture
40 YEARS

Open House #1/On-line Survey #1 Input Summary

Bedwell Bayfront Park Master Plan
April 17, 2017

Responses
Total Returned Open House Packets: 39
Total Online Survey Responses: 86

Goals and Objectives
Evaluate the Goals and Objectives that we have developed and let us know how much you support each goal.

Goal	*Open House #1*			*Online Survey*			*Total*		
	Yes	Maybe	No	Yes	Maybe	No	Yes	Maybe	No
Goal 5	14	10	11	58	16	8	72	26	19
Goal 2	24	10	3	38	27	20	62	37	23
Goal 6	30	4	3	76	6	1	106	10	4
Goal 3	33	5	0	63	18	3	96	23	3
Goal 1	34	4	0	71	14	0	105	4	0
Goal 4	38	1	0	64	15	5	102	6	5

Total: 125

Park Usage Map
Writing directly on the map on the table, please show us where you go in the park, areas that cause concern, and opportunities that you see.

Park Usage Map – Comments from Survey

1	I'd like to see kayak, canoe, paddleboard access to the sloughs, especially as the wetlands are restored around Bedwell. It would be a great way to disperse users, low/no impact, and integrate park with wetlands and nature
2	
3	I marked up the plan
4	We have the hills for aerobic interval training 3 times a week
5	
6	
7	
8	
9	I've been in the main entrance many dozens of times and had no idea the park connected to the Bay Trail. Signage would help!

BURLINGAME
1633 Bayshore Highway, Suite 133
Burlingame, CA 94010
T 650.375.1313
F 650.344.3290

SAN JOSE
300 South First Street, Suite 232
San Jose, CA 95113
T 408.275.0565
F 408.275.8047

GOLD RIVER
12150 Tributary Point Drive, Suite 140
Gold River, CA 95670
T 916.985.4366
F 916.985.4391

Recreate
Educate
Live+Work
Connect
Sustain
www.callanderassociates.com

10	naming of trail and better mapping would be helpful
11	
12	
13	Safety issues pointed out to marie mai who marked up the park map
14	Include some kind of park security so the families feel safe in this kind of unsafe neighborhood
15	Defined parking/biking issues (prevent pollution from cars); more benches on vistas (seating); more native plants where possible
16	
17	
18	
19	Boat access needed (dock or pier and access for loading from car)
20	I would love to see 15-20 acres for mixed disc golf and hiking/jogging use
21	
22	Map is great idea, but hard to read comments. Always need more benches
23	I feel that the park needs improvements but not all the things proposed by the master plan. If we approve master plan we are going to lose the sense of nature. As it is Bedwell park is already providing the community and amazing natural landscape.
24	
25	I tend to stick to outside trail, gotta get those steps. However, there were great ideas for benches or look-out sites along the different trails
26	
27	
28	
29	Let's figure out funding to maintain park as-is. These funding ideas are too small in scope
30	
31	
32	On map
33	
34	Some fixing of paths that flood or get super muddy. All the rest is great!
35	I use the park as a place to walk the dog, get some exercise, and clear my head. It is peaceful, "raw", organic nature is what makes this place special; Love that the community all get along (in my experience)
36	I like walking around on the hills for more exercise; I'm reluctant to say 'yes' to any development because things get damaged, vandalized, not maintained, and it looks bad and reflects negatively on the area. Damaged picnic tables, graffitied benches, work fencing - view area structures
37	
38	Walking dog, talking with friends, being alone
39	I use the park in two ways: running - 1) all over the park, once a month, 2) orienteering (organized event) all over the park once a year

Park Usage Map – Comments From Map

Location on Map	Public Comment	Reaction to Comment
Sewage Flow Equalization Facility	Maybe visitor center here?	
	Smelly, noisy	
	Native trees to block the sewage	✓
	Some (homeless) camping	
Redwood City Salt Ponds	More people this western edge of park	
	Loop, 2 mi loop	✓✓
	Bench/seating	
	It often smells in this area	
	Super muddy	
	More native trees in general	
Flood slough	Water bird watching	✓
	walk	✓✓✓✓✓✓
	run	✓✓✓
	bike	✓✓✓✓
	dog walk	✓✓✓✓✓
	up & down hills interval training	✓✓✓
	I like the lack of signage because it makes the walk a bit of an exploration	
	navigational challenge - signs would be good	✓✓
	permanent orienteering posts (4X4 post)	✓
	bus, passenger vans use park waiting area	
	traffic congestion	
Marsh Rd/Bayfront expwy	support native shrub garden (like Ulistac)	
	bird watching - everywhere	yes! ✓✓
	"happy w/ park as is"	yes! Yes! Challenge would be not to mess it up ✓✓
	off leash dog area (certain times) would be nice (disagree)	I vote yes!
Don Edwards Wildlife Refuge	views good	✓
	would like gazebo in this corner	
	maybe a little less visited	

	use/good traffic in this area	
	art in disrepair	
	boulders moved/overgrown, needs work	
	need bench here	
	main glider field	
	land birds field	
	burrowing owl habitat	
	floods	
	amphitheater effect	
	use/good traffic on path, good for bike	
	opportunity for educational signage for restoration project	
	separate mountain biking for peds	
	trails need improvement	
	need more paths	
	benches for view	
	support trail connection	this would be nice
	keep grass low for visibility	keep tall while still green and not fire hazard, tall grass for bird habitat
	path narrowed - hard to see	these are a nice change from a wider path
	potential links	
	birders/Audubon	
	would like better trail maps to help locate birdsighting	yes!
3 - bay trail connection	user conflict w/ cars	don't make this a parking area
4 - information kiosk	wall to prevent oil/fluids leaking to bay	can this be managed without walls?
	block to prevent pollution/erosion into water	
	need separate path for vehicles	
	safety issue in peds/bikes going behind cars backing out	
	gate and secure perimeters to make room for families	no! no! no! disagree - keep it open and as is - not fenced in ✓✓
	add dog poop bag/trash can stations	yes!!
	lighting?	no
	"name" trails	agree :) ✓✓
	trees could use trimming	
	regional park use, not just a city/community park	

	Bair Island - restored and allows paddle boarding - refuge!	

User Survey

Question #1: How old are you?

Options	*Open House #1*	*Online Survey*	*Total*
Under 16	0	1	1
16 to 20	0	0	0
21 to 30	4	1	5
31 to 55	13	34	47
55+	21	36	57

Total: 111

Question #2: Where do you live?

Options	*Open House #1*	*Online Survey*	*Total*
None of the above	3	12	15
In Redwood City of East Palo Alto	8	16	24
East of Highway 101, in Menlo Park	11	6	17
West of Highway 101, in Menlo Park	16	38	54

Total: 111

Question #3: How far is your home from the park?

Options	*Open House #1*	*Online Survey*	*Total*
More than 10 miles	2	5	7
5 to 10 miles	3	11	14
1 mile	9	9	18
2 to 5 miles	24	47	71

Total: 111

Question #4: How often do you visit the park?

Options	*Open House #1*	*Online Survey*	*Total*
Rarely/Never	0	3	3
Yearly	2	11	13
Daily	6	2	8
Monthly	9	26	35
Weekly	21	29	50

Total: 110

Question #5: When do you primarily visit the park?

Options	*Open House #1*	*Online Survey*	*Total*
Never	0	2	2
Weekends	8	20	28
Weekdays	9	12	21
Both	21	38	59

Total: 111

Question #6: When you visit the park, how long do you stay?

Options	*Open House #1*	*Online Survey*	*Total*
More than 4 hours	0	0	0
Less than 1 hour	4	5	9
2 to 4 hours	8	22	30
1 hour	26	45	71

Total: 111

Question #7: By what means do you get to the park most often?

Options	*Open House #1*	*Online Survey*	*Total*
Other	0	2	2
Transit	0	2	2
Bike	6	4	10
Walk	7	4	11
Auto	35	60	95

Total: 111

Question #8: What do you like most about the park? (select up to three)

Options	*Open House #1*	*Online Survey*	*Total*
Other	5	10	15
Location	15	39	54
Distance/Convenience	16	29	45
Solitude	21	22	43
Wildlife/Nature	29	40	69
Scenery/Views	31	58	89

Total: 114

Question #9: What is the most important thing to improve at the park?

1	
2	Paved parking
3	Protection of surrounding wildlife preserves
4	Passive, low cost, OSE (?)
5	Protect the Bay from the sea level rise erosion of the landfill
6	Improve the trails
7	Trails; basic maintenance
8	Safety, nature awareness
9	Would love to see a few benches, more education, native plants
10	Habitat protection
11	Get native vegetation for habitat
12	Security
13	Safety
14	Block sewage area with natural trees, add more native trees, add more walkable trails
15	Parking/trails. Years of use/rain has left need for repairs. Pollution from cars goes straight into soil
16	maintain wildlife/nature; more native trees
17	Entrance poor; increase safety
18	Security; enforcement of rules - need ranger
19	Boat access to water and pier
20	Disc golf
2	

1	
22	Repairs to parking, roadways, fencing, bathrooms so they are always functioning
23	Trails
24	Keep dogs on leash
25	Trails and upgrading
26	
27	Parking, trails, garbage containers, dogs on leash
28	
29	Muddy areas
30	
31	Paths, restore wildlife
32	Lighting, parking, trails
33	Safety, more benches
34	The paths (get too muddy after rain)
35	Safe primary trails; safe parking areas
36	The sewage treatment facility
37	
38	Add off-leash dog park; paved paths
39	Signs
40	Trash. Restrooms. Recology mess when they pick up garbage. More trash recepticles. Better and less muddy parking.
41	On-site Ranger presence is the most important inprovement necessary.
42	Bring back the ranger on patrol, as the park used to have, to enforce rules (e.g. dogs to be on leash), deter littering and vandalism, and offer a sense of security to users.
43	parking
44	Encourage and support wildlife. Put up some education bulletins to inform people about what nature has to offer and how to respect and treat the environment.
45	The proximity to the waste station.

46	Bay Trail Connection
47	some benches to rest
48	A more balanced, native ecosystem.
49	Making it more attractive and user friendly
50	Parking areas and potential methane recapture. Perhaps some wildflower seeds. I love the daisies, but can't figure out why poppies haven't taken hold.
51	1) Create/extend bike trail, 2) rest room on other side of park
52	Add more trees if possible
53	hiking trails
54	Protect from graffiti/vandalism. Restore Spirit Path.
55	A few benches or seating areas at parking lots would be nice. Maintaining the orienteering course.
56	safe parking and restrooms
57	Stop the increase of geese and the poop they leave all over. More trails that will stay passable - i.e. no large pools of water - when it rains.
58	Picnic areas, recreational fields
59	More support of the primary city demographics -- family use
60	I haven't been so I don't know. How's the parking?
61	garbage
62	dog shit
63	I think that the city should leave one area unmowed so that meadow larks can nest, ditto for burrowing owls (both seem gone now, though they were plentiful in the past). We need not mow every single inch!
64	access smell
65	Allow diversity of interests, including scheduled and/or regulated sUAV (drones and fixed-wing aircraft) flying, in strictly defined areas of the park.
66	Water. Maybe more places to sit.
67	restore habitats, wetlands
68	maintain trails
69	parking, awareness,
7	I would like to see an off leash dog area, more trash bins.

0	
71	I think the old rock art installation is past its prime and should be removed
72	Make it a place where there is something to do other than walk or jog. Such as an outdoor amphitheater where there can be music festivals now and again.
73	I would love to see an off-leash area for dogs or to make the entire park off leash.
74	Improve some trails that get eroded or muddy in winter
75	trails, public art like wind chimes. the public park trail in Belmont on the water has the same characteristics.
76	Off-leash dog areas.
77	Facilities, including educational areas to learn about the wildlife, and bathrooms.
78	I'd love to see a dog park
79	ADD public use grass playing fields for anytime public use
80	parking areas and it would be ideal to have safe bike routes into the park from Marsh Road.
81	Parking
82	Sense of place: improved signage, wayfinding
83	Signs to discourage littering Programs for school age kids to learn about bay ecology
84	more benches and picnic tables would be nice
85	Parking
86	Restore non-motorized sailplane soaring. "Free the gliders" and allow them again like.
87	Walkways, roadways that are used for walking.
88	More garbage cans would be helpful. Also paving along the roads so we can park on pavement instead of mud.
89	communication/compassion
90	Preservation of beauty. Removal of large drone(quads, hex, powered toys: trucks, cars dune buggies) usage. Inclusive use of low noise RC recreation to isolated areas nonintrusive of hikers.
92	I rather like it the way it is. It has a nice "less developed" feel to it. (But it shouldn't be allowed to deteriorate, either.) Hmm. Perhaps more trash cans - I've been there when most of the provided bins were full or nearly full.
93	Clear rules posted and proper enforcement

94	Parking in area A. The shoulders of the access driveway. Making people walking dogs keep them on leashes!
95	allow model airplane to be flown
96	Safety to pedestrians.

Question #10: Is there anything you definitely do not want to see at the park?

1	Developed sports fields, fences, etc.
2	Anything un-natural: no visual distractions except birds and quiet people enjoying nature
3	A lot of change
4	
5	Do not prohibit dogs
6	
7	All-terrain vehicles; motorized activities (e.g. drones)
8	Drones, Gliders, Dog park
9	Motorized vehicles or equipment that would disturb wildlife or serenity
10	Active recreation, instructive structures
11	Concerts, loud gatherings
12	Thefts, broken car windows
13	
14	Too many people/animals, no trash
15	Development of major structures or fields (large changes)
16	Increased pollution
17	Drones; anything motorized
18	More development; use by drones/mechanical
19	No dirt bike courses for races or skateboards
20	
21	Drones, permanent sports fields
22	Anything motorized (other than actual cars) that frightens wildlife
23	Most of the things on the Master Plan will destroy what we enjoy at the park
24	Drones, RC aircrafts/gliders, anything motorized
25	Sports fields! Possibly dog parks, undecided
26	Art or sports fields
27	Increased noise
28	
29	Dog park enclosure, drones

30	
31	No food trucks
32	Pay to enter
33	
34	I don't want too much added
35	active' recreation facilities (ball fields, golf)
36	Sports fields, commercial uses (rentals, food)
37	Everything
38	Golf course, soccer fields, concessions
39	developed' recreation - play fields, bbq, etc.

Question #11: Do you have a favorite passive recreation park that you visit? What attracts you to that park?

1	
2	Not a park; we hike with Mid-Pen and the Sierra Club
3	Edgewood park, very simple
4	
5	I generally go to areas closer to skyline, now that I live in West Menlo. I used to go to Bedwell almost daily when I lived near Marsh Rd.
6	
7	The Stanford dish; love the solitude, scenery, trails
8	Observe wildlife, walk
9	Bedwell Bayfront and Windy Hills - opportunity for exercise and views
10	Bird-watching
11	Kite flying
12	Its large size
13	The only 'flat land' large open area on the peninsula for thermal gliders
14	Edegwood, tons of trees/high quality center/parking
15	this is my favorite park/ the space has many reasons to attract visitors
16	Edgewood - wildlife/nature
17	Walk behind Facebook is my morning walk - it's quiet!
18	This one - solitude/views/birds
19	Bike path at Palo Alto shoreline
20	Views
21	Flood park/oak trees
22	BBP is the only quiet park within my range
23	Silence, nature, and open space
24	Peace and quiet, views of the Bay

25	Shoreline
26	Shoreline park - the water activities, the house/museum, and the café
27	Dish, close
28	
29	Bedwell
30	The trees and view
31	PA - by duck pond. Rock paving keeps mud off
32	
33	Views, solitude
34	Bayfront is my favorite, walking my dog
35	Bedwell; location, community
36	Yes, bedwell - the openness and the idea that it is close to what the area would look like if it wasn't developed
37	Peace
38	Huddart park; hiking, solitude
39	Arastradero open space preserve (PA); nature, solitude, trails
40	Wunderlick, Edgewood Park. Good hiking, pretty, quiet.
41	?
42	openness and quiet and birds
43	The hill on Valaparaiso to walk up and around it - Called Sharon Park (I think)
44	Solitude, exercise - saltlands, views
45	Bixbee park, land art
46	San Antonio Regional Park. Electric gliders are allowed there.
47	Rancho San Antonio. Beautiful scenery, lots of wild life, family friendly, safe, great hiking trails for various levels, decent parking. The little farm is great for education and an attraction for kids too. It's a great place to go alone or meet up with people! Picnic areas are great too.
48	Bayfront park. I like that I can take the dog for a walk, ride my mountain bike, and get there without driving (especially once Facebook builds that extra pedestrian bridge across).
49	This is it
50	Wunderlich, beautiful trees and trails
51	Arastradero in Palo Alto. Hiking, biking and dog friendly trails, nature and habitat
52	This park. The location is convenient although a better/safer bike route would be great.
53	Hiking
54	greenery, views, solitude I enjoy Edgewood (great trails and views), and open space preserves like Pulgas Ridge because I can bring my dog.
55	Cuesta Park (Mountain View)
56	Los Altos Open Space Preserve, San Antonio. The working farm and the Wildcat Loop.
57	birds
58	love seeing kites, hobby airplanes
59	Huddart Park; hiking and nature
60	hiking

	dog walking
61	Baylands Park, Sunnyvale. This park allows sUAV flying. Most weekends there are from 25-50 ticket-buying hobbyists flying there.
62	The Bay Area has many fine passive recreation parks where you can hear the animals and wind blowing.
63	just walking with the dog on leash
64	Rancho San Antonio - miles of trails, flora and fauna
65	beaches on the coastside
66	Wunderlich, hiking, nature, peace
67	Windy hill. Beautiful views
68	Coyote Hills. Higher Hills - better views
69	no
70	Bedwell is my favorite. I like having hills, nature to walk through and trees for shade, plus available parking and very convenient location.
71	I have enjoyed bring my kids to fly kites when they were little. I have enjoyed walking the trails with my dog, too
72	more wildflowers and landscaping
73	Stulzsaft. Off-leash areas, trees, and stream.
74	running or riding bikes, open area and views of the bay.
75	running
76	Windy Hill (MROSD) - also relatively close, access to nature, good rigorous hiking, and great views
77	coyote Hills walking near bay nature expansive, peaceful views
78	RC glider flying
79	It was Bedwell Bayfront Park until last year (2016) when flying gliders was banned :-(
80	the large flying areas
81	Russian Ridge. Views, nature.
82	Bidwell. Mussel rock
83	Baylands park in Sunnyvale is a great place to hike and fly small electric R/C. It has a small play field and many picnic table / party areas with bbq grills.
84	Rancho San Antonio, allow model airplane flight.
85	Milagra Ridge in San Bruno. Closest scenic dog walking from my house.

Question #12: How would you describe the park usage?

Options	*Open House*	*Online Survey*	*Total*

	#1		
Too many people use the park	3	0	3
Not enough people use the park	5	16	21
About the right amount of people use the park	30	53	83

Total: 108

Question #13: How safe/comfortable do you feel when you are at the park?

Options	*Open House #1*	*Online Survey*	*Total*
I do not feel safe	2	1	3
Somewhat safe	3	20	23
Very safe	15	38	53
Extremely safe	18	12	30

Total: 110

Question #14: What concerns do you have for using the park? (select up to three)

Options	*Open House #1*	*Online Survey*	*Total*
Accessibility	2	12	14
Personal safety	3	16	19
Other	8	26	34
Vandalism	11	28	39
Car theft	13	18	31
Park maintenance	22	39	61

Total: 114

Question #15: What activities do you normally participate in when you visit the park?

Options	*Open House #1*	*Online Survey*	*Total*
Biking	6	4	10
Other	7	12	19
Dog walking	12	12	24
Bird watching	21	7	28
Hiking/walking/jogging	35	34	69

Total: 110

Question #16: How did you hear about the project? (check all that apply)

Options	*Open House #1*	*Online Survey*	*Total*
Mailed notice in utility bill	1	3	4
Newsletter	1	6	7
Off-site poster	1	1	2
Facebook	1	4	5
Word of mouth	3	22	25
Public Presentation/Farmer's Market	4	6	10
Other	9	8	17
On-site poster/brochure	13	8	21
E-mail	13	48	61

Total: 110

Question #17: Is there anything else you'd like to share about Bedwell Bayfront Park?

I have been coming for over 20 years to get out by the Bay and walk with friends and family

I love this special park!!

I would like the burrowing owls to return

A rare treasure preserve what makes it special while raising awareness of wildlife and uniqueness

Maintenance is quite poor, the park is overgrown, signage is in disrepair. I think the assumption that the park must generate its own income is faulty. As with other public amenities, this should be funded through the general fund
This park is a major migration stop for birds and falls within an Audubon-designated IBA (Important Bird Area). Bird-watchers consider this park to be one of the gems in San Mateo County.
If they have an area similar to Ulistac in santa Clara, it would be a neat attraction to the park

Construction of an area for children

Safety issue to pedestrians at the last parking lot

Add more native greenery! Needs more trees/security wall near entrance because scary people in park sometimes

The park has had years of neglect, the trees need some trimming and trails/roads need repair. For a wildlife refuge, oil and car fluids drip into soil and into the Bay

Could enhance signage; improve entrance; enforce dogs on leash; have regular bird walks - increase educational opportunities; offer kayak ramp at back pier
A treasure of undeveloped space for walking/bird watching - we need unstructured areas for children to explore/run/play

It is very special in large part because it is unique in MP and surrounded by refuge

Is the best park with 160 acres for the community; I know the park needs improvements, but not all the improvements by Master Plan
Don't develop it!

It would be nice to see upgrades to the park but somehow keep it as peaceful as it is now. It isn't over crowded and it is serene!

It would be wonderful to have a ranger or some supervision at the park

It's perfect as-is; remember the population using the park. Let's keep park available to all. No exclusive uses. Need more creative fund raising ideas.

Please engage low-income people in Belle Haven area (door knocking, univision announcement)

If the park is developed to have more 'active' uses, it would be nice to keep them near the front of the park along Bayfront Expy., that way we can maintain more of the natureal habitats and the solitude that currently exists

This is a remarkable community asset and a great success story. Less will be more as you seek to 'improve' this facility
I love the diversity I see in the park. Different ethnicities use it at different times of day. Lota

I love bedwell and use it a lot. I know it needs freshening but basically it is very good. I like the diverse nature of people using it

As the building continues in Menlo Park, especially around this Park, we need, even more, a place to get away and restore ourselves. This is the ONLY place to go to hike, to see the beauty that exists around us.
Again, the Park is a quiet gem and should remain that way.
no
Please patrol more often- especially to control unleashes dogs. It is getting worse because of lack of enforcement. Today there were four unleashed dogs and one was disturbing nesting birds which I believe is a federal offense
Friends of Bedwell Bayfront Park is a by invitation only special interest group. It is not open to the general public.
I love this park. It might be nice to have fitness classes out there once in awhile, but I would err on the side of not changing existing access to passive recreation.

It is great park, we should make it better.
It's a nice place for plein-air painting as well
great central meeting spot for friends along the peninsula, from San Carlos to Sunnyvale. Quick easy access during the week and on weekends. Never too crowded. Great for quick dog walk or bike ride
Many people seem to come during the day to just sit in their cars and talk by phone or enjoy a view from their car. This is also an important function.
No
To many loose dogs
I love the diversity of park users -- many Latino folks who live on the east side of 101. And the diversity of age groups.
I think if a fee were charged for the right to fly sUAV devices (drones or fixed-wing aircraft), usage would increase significantly, and the money could be used for park improvements, to the benefit of all.
Great place!
it would be nice if there were a bigger exhibit on original inhabitants
I love this park!!
I like the park but am also aware of the pressure on open space especially with all the new apartments being built in Redwood City. This will have an impact on Menlo Park
it is very underutilized
It's a great park.
It deserves our care and protection from commercial activity
no
I fear that this public process is setting up the public to expect IMPROVEMENT at the park, when in fact the City does not have funds to continue the existing low level of maintenance that is currently funded. I'd like to see an honest discussion about funding the park through the general fund.
I like the diversity of people it attracts. I also enjoy seeing folks walking their dogs. Some dogs are very cute and comical. It's good exercise, fun, and lowers stress.
Please re-allow gliders to soar there again. As was done without incident for 20+ years until some drone operators caused trouble. Please do not lump sailplane gliders together with drones.
I would like it to remain mostly undeveloped and natural as possible.
It use to be waste disposal site.. We've been flying gliders there for years with out a problem. When the motorized planes and drones showed up. The problems began
The park should be for the use of many people with different activities. NOT a singular type of use.
I have participated in Kite day. Are Kite flying and electric RC aircraft considered "active" or "passive" activities? I am in favor of allowing both, largely because neither requires the construction of facilities or fields that I think would disrupt the feel of the park. (Shouldn't question 27 have allowed multiple answers?)
Bedwell has been a great place to hike, fly kites and until recently, fly small electric R/C. When I would fly I would get pleasant questions about what I was flying and how I got started in the hobby. I never saw misuse of R/C at the park and the R/C community that would gather pretty much knew who was there and what their R/C interests were. Surrounding the park is designated wildlife refuge and I would never do anything to harm that . While the park has many dangers associated with it, being landfill and I understand poisons have been used to keep a rodent problem under control. I would be more concerned about us humans than the wildlife that may inhabit parts of

the park. I would gladly pay a parking fee or seasonal fee to enjoy the park with proper enforcement of rules if I could also enjoy my hobby of small electric R/C (line of site I designated areas only). I do not believe this should be a destination for R/C, but rather a gathering place for a few enthusiasts at any given time.
The use of the term "passive activities" is incorrect. The original meaning of a "passive park" was one were there was little or no park infrastructure other than trails and open spaces--e.g. baseball diamonds, tennis courts, soccer fields.....
allow model airplane flight

Inspiration Boards

Park Character/Mood

Options	*Open House #1*			*Online Survey*			*Total*		
	Y	M	N	Y	M	N	Y	M	N
Ceremonial	6	6	19	6	15	34	12	21	53
Refined	9	2	20	8	13	36	17	15	56
Whimsical	11	12	9	10	19	27	21	31	36
Active	14	10	7	31	15	11	45	25	18
Spiritual	14	13	5	25	20	10	39	33	15
Rugged/Adventurous	17	7	7	25	17	14	42	24	21
Colorful	19	8	5	31	21	4	50	29	9
Comfortable	20	7	1	36	17	2	56	24	3
Secluded	23	9	1	33	18	9	56	27	10
Natural	31	1	0	58	4	0	89	5	0
Ecological/Preserve	32	3	0	42	12	5	74	15	5

Total: 102

Park Amenities

Options	*Open House #1*			*Online Survey*			*Total*		
	Y	M	N	Y	M	N	Y	M	N
EV Charging Station	8	11	16	5	26	29	13	37	45
Public Art	14	10	12	15	21	24	29	31	36
Outdoor Classroom/Amphitheater	14	11	9	16	26	19	30	37	28
Education Center	17	10	9	13	21	24	30	31	33
Non-Reservable Picnic Areas	19	8	7	38	11	13	57	19	20
Enhance Existing Restroom	25	9	1	38	19	4	63	28	5
Bike Parking	27	10	1	39	18	5	66	28	6
Seating/Viewing areas	29	8	1	39	17	6	68	25	7

Drinking Fountain/Bottle Filler	31	5	2	40	17	2	71	22	4
Dog Pick-up Bag Dispensers	31	4	0	47	11	5	78	15	5
Trash/Recycling Containers	34	4	0	54	4	2	88	8	2

Total: 104

Park Activities

Options	*Open House #1*			*Online Survey*			*Total*		
	Y	M	N	Y	M	N	Y	M	N
Disc Golf	1	12	24	10	20	33	11	32	57
Radio-Controlled Drones	5	6	28	11	11	42	16	17	70
Dirt Bike Course	5	6	27	7	12	41	12	18	68
Off-Leash Dog Park	8	6	23	22	13	28	30	19	51
Electric Motor-Assisted Gliders	10	7	21	19	16	28	29	23	49
Biking - Paved	12	9	15	24	25	14	36	34	29
Fitness	14	9	14	24	25	14	38	34	28
Hand-Launched Gliders	14	14	10	29	18	16	43	32	26
Group Exercise	15	10	12	18	28	16	33	38	28
Orienteering/Geocaching	18	14	5	23	21	15	41	35	20
Water Activities (slough side only)	18	10	10	26	20	17	44	30	27
Nature Play	21	12	2	39	17	5	60	29	7
Biking - Unpaved	29	6	3	28	22	11	57	28	14
Kite Flying	30	4	2	51	8	3	81	12	5
Photography	33	2	2	57	5	1	90	7	3
On-Leash Dog walking	33	4	1	56	5	3	89	9	4
Bird Watching	37	1	0	53	7	1	90	8	1
Walking/Hiking/Jogging	39	0	0	63	0	0	102	0	0

Total: 104

Park Services/Programs

Options	*Open House #1*			*Online Survey*			*Total*		
	Y	M	N	Y	M	N	Y	M	N
Private Events	7	10	18	13	16	33	20	26	51
Bike Repair Station	7	11	19	8	26	28	15	37	47
Material Distribution Center	8	11	17	4	20	37	12	31	54
Concessions/Rentals	9	6	23	7	15	40	16	21	63
Nature/Summer Camp	11	20	4	17	31	14	28	51	18

Public Events	17	15	6	13	16	33	30	31	39
Docent-Led Tours	20	13	4	26	20	14	46	33	18
Classes/Education Programs	24	9	3	18	29	13	42	38	16
Ranger Service	27	5	5	29	24	8	56	29	13

Total: 103

Options for Revenue Generating Activities

Options	*Open House #1*			*Online Survey*			*Total*		
	Y	M	N	Y	M	N	Y	M	N
Parking/Entrance Fee	5	9	25	7	17	38	12	26	63
Concessions (food, equipment rentals)	10	6	21	13	12	36	23	18	57
Reservation-Based Picnic Areas	10	11	17	18	15	28	28	26	45
Naming Rights	18	8	12	25	20	16	43	28	28
Solar Generation/Net Zero	23	5	7	34	17	12	57	22	19
Donations/On-Site Recognition	24	11	3	33	20	9	57	31	12
Methane Capture	32	5	1	35	19	7	67	24	8

Total: 103

How do you define "Passive Recreation?"

Options	*Open House #1*	*Online Survey*	*Total*
Option 1	0	2	2
Option 5	3	12	15
Option 4	6	11	17
Option 2	9	17	26
Option 3	13	23	36

Total: 104

Inspiration Boards - Comments

Location on Map	Public Comment	Reaction to Comment
Park Amenities	Seating/viewing areas	★
	Public art	★
	Dog pick up bag dispensers	★★★
	Drinking fountain/station	★
	Others?	Maintain restrooms, trash receptacles (yes! ★), Partner with local schools for

		art, place around park ex. Stones painted on can be used for a wall or other (good idea), all of them except art
		educational signage
Park Character/Mood	Others?	keep bedwell natural except for paved parking (yes! Yes! Yes!)
		keep it open space/natural, habitat, passive use- open views (yes!)
		boating access!
		2 paths - 1 for biking, 1 walking
		no more buildings
		keep it natural or secluded
		invite artists to create throughout the park (short term art installations
		disagree. Classes ok
		quiet Extremely important
Park activities	Walking/hiking/jogging	yes, yes, yes!, don't care
	Biking - paved	no, no, no!
	Biking - unpaved	yes please! On outer perimeter track only, don't care
	Dirt-bike course	no! no! absolutely not!
	Kite flying	don't care, yes, yes, yes
	Bird watching	yes :) yes!
	On-leash dog walking	yes! Sure!
	Off leash dog park	no!
	Photography	yes! Sure!
	Others?	dirt bike course sounds good - need separation between bikes and walkers - there have been incidents
		no - keep bikes on existing trails
		yes on-leash dogs
		off-leash dog area with signage directing people to use leashes in the rest of the park & why (wildlife) (yes! No off leash)
		no dog park! Yes dog park! Yes dog park!
		allow mountain biking throughout! We can peacefully coexist
	Hand-launched model gliders	no! yes!
	Motor-assisted plane	no! yes!!! Yes yes
	Radio-controlled drones	no no yes no yes, we come here to see birds not drones

	Disc golf	no no yes, yes for my dad
	Fitness	no no
	Orienteering/geocaching	no no yes yes
	Water activities	no no yes yes no
	Group exercise	meh, don't care
	Nature play	yes! Meh, don't care
	Others?	yes, a place to put s.m. paddleboards and kayaks, yes, disrupts shore birds, yes sup/kayak non-motorized
		sailing
		yes w/ low income pricing and community resident discount
		fitness pan canoe
		would it be possible to designate hours or a day per week of month for drones/aircraft? (no drones, rc airplanes or gliders)
		fishing pier (ban regulations?)
Park services/programs	Ranger service	definitely! Yes please! Meh, don't care
	Class/education programs	yes! Yes ✓
	Docent-led tours	yes! Yes ✓✓✓✓
	Public events	NO no no no, I will have to go, so no
	Private events	no no no maybe, if they pay for maint of the park, no, leaves marks, residue, chain leg hacks, etc, no
	Concessions/rentals	no yes no yes yes
	Material distribution center	no no no no
	Bike repair	no no, bike repair station
	Others?	concessions w/ locally run vendor - rotate every 6 months with a new vendor
		permit food trucks during weekdays (?) what would problems be? Increase trash food garbage
Options for revenue generating activities	Parking entrance fee	perhaps/no - low income people can't afford no, agree no
	Concessions (food, rentals)	no no no, yes yes yes
	Donations/on site recognition	possibly - need more info
	Naming rights	!! It's been named - Bedwell Bayfront Park
	Private/corporate events	no no no, no - keep open access to quiet

		contemplation!!
	Reservation-based picnic areas	too formal? No, this would be okay in "quarry" area
	Methane capture	yes yes yes!
	Energy generation/net zero	yes please yes
	Others?	annual parking pass - designated parking area
		food concession/sn
		put solar panels on building and city roofs
		no corporate events that limit access.

Flip Chart Notes

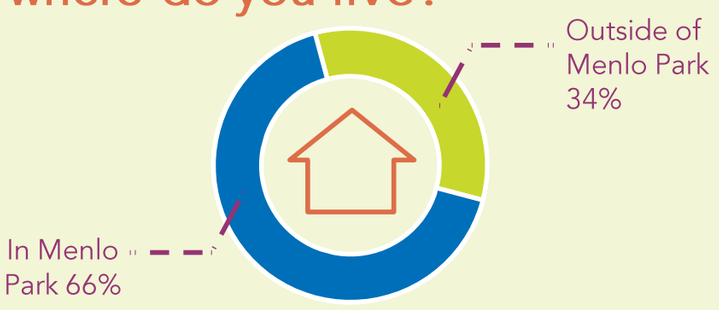
Public Comment	Reaction to Comment
Mobile interpretive center	
Cell phone app for educational purposes instead of physical building.	
Very concerned about the encroachment of ANY form of active recreation	
increase passive recreation and educational opportunities	I agree with above, also agree, I agree!

-END-

RESULTS ARE IN

Main Take-Away: Based on the input below, there is support for the park plan to explore additional activities and amenities.

where do you live?



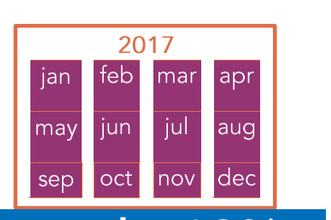
how would you describe the park?

who participated?

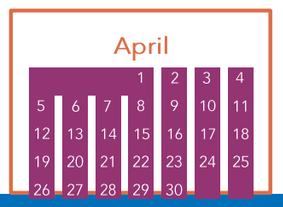
39 OPEN HOUSE

70 ONLINE SURVEY

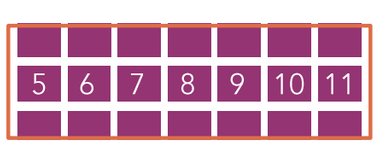
how often do you visit the park?



yearly 12%



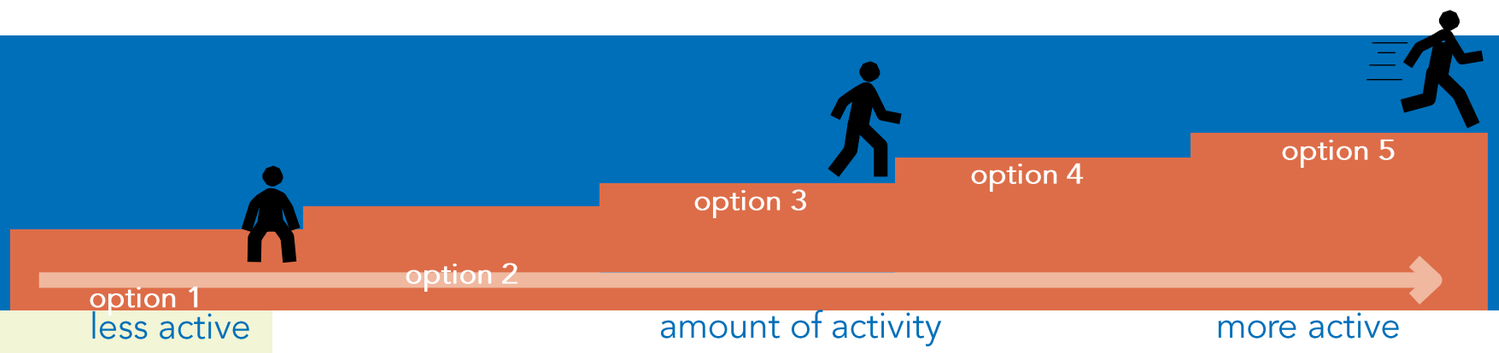
monthly 32%



weekly 46%

daily 8%

HOW DO YOU DEFINE PASSIVE RECREATION?

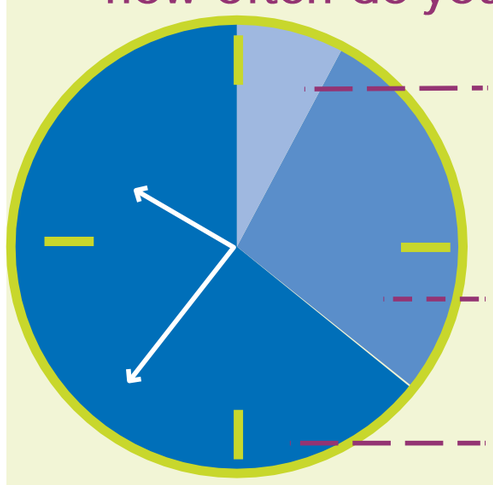


option 4 + option 5 = 32%

option 1 + option 2 = 30%

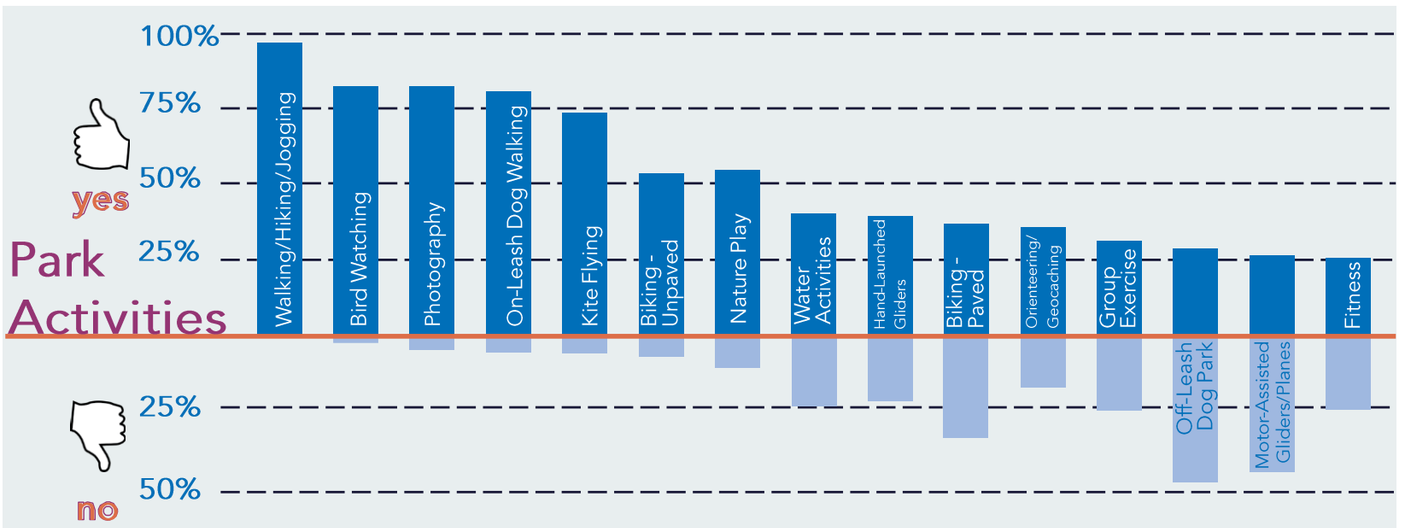
more participants are in favor of more active activities

When you visit the park, how often do you stay?

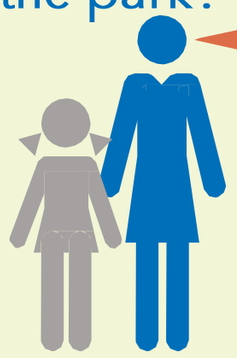


Park Amenities

Park Activities

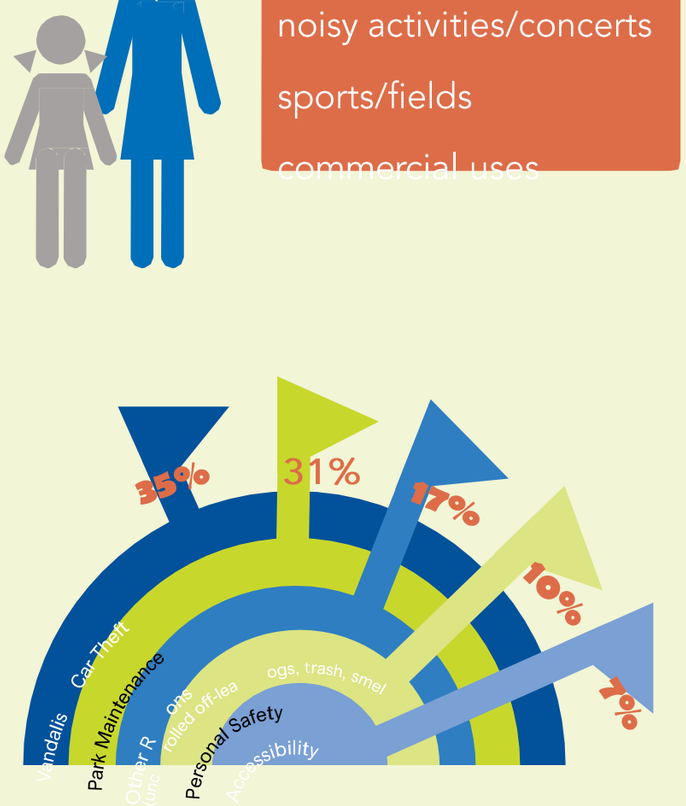


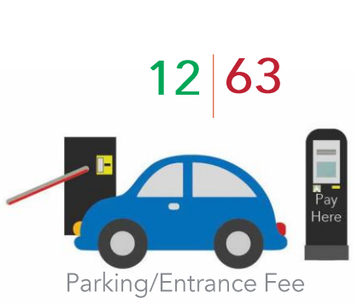
Is there anything you definitely do not want to see at the park?



- drones
- noisy activities/concerts
- sports/fields
- commercial uses

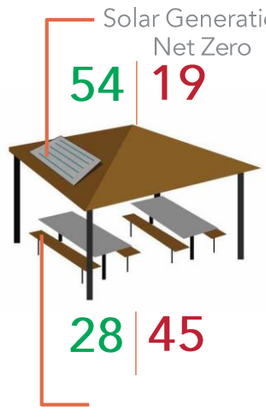
what concerns do you have for using the park?





Parking/Entrance Fee

Private/Corporate Events



Naming Rights

Support for Revenue Generating

Concessions (food,equipment rentals)

GOALS AND OBJECTIVES

GOAL 1 Inclusive outreach process

GOAL 3 Increase park opportunities

GOAL 4 Protect habitat and landfill

GOAL 5 Radio controlled aircraft research

GOAL 6 Sustainable funding

Donations/
On-Site Recognition

Reservation-Based
Picnic Areas

Options
yes
no

GOAL
2
Respect
Measure J

less support

Bedwell Bayfront Park

17014OutreachInforgraphics.indd

Callander Associates Landscape Architecture

40 YEARS

Combined Open House #2/Open House #3/Online Survey Input Summary

Bedwell Bayfront Park Master Plan

September 15, 2017

Responses

Open House #2 total returned packets: 56
Open House #3 total returned packets: 19
Total Online Survey responses: 151
Total Spanish responses: 4
Potential duplicate responses: 16
Total responses: 226

User Survey

Question #1: How old are you?

Options	*Open House #2*	*Open House # 3*	*Online Survey*	*Total*
Under 16	0	0	0	0
16 to 20	0	0	2	2
21 to 30	1	1	14	16
31 to 55	19	8	64	91
55+	35	10	65	110

Total: 219

Question #2: Where do you live?

Options	*Open House #2*	*Open House #3*	*Online Survey*	*Total*
None of the above	8	1	19	28
In Redwood City of East Palo Alto	14	4	19	37
East of Highway 101, in Menlo Park	7	11	21	39
West of Highway 101, in Menlo Park	2	2	86	113

Total: 217

Question #3: How far is your home from the park?

Options	*Open House #2*	*Open House #3*	*Online Survey*	*Total*
More than 10 miles	1	0	9	10
5 to 10 miles	14	7	6	27
1 mile	8	8	33	49

BURLINGAME
1633 Bayshore Highway, Suite 133
Burlingame, CA 94010
T 650.375.1313
F 650.344.3290

SAN JOSE
300 South First Street, Suite 232
San Jose, CA 95113
T 408.275.0565
F 408.275.8047

GOLD RIVER
12150 Tributary Point Drive, Suite 140
Gold River, CA 95670
T 916.985.4366
F 916.985.4391

Recreate
Educate
Live+Work
Connect
Sustain
www.callanderassociates.com

2 to 5 miles	32	9	97	138

Total: 224

Question #4: How often do you visit the park?

Options	*Open House #2*	*Open House # 3*	*Online Survey*	*Total*
Rarely/Never	2	0	12	14
Yearly	12	4	29	45
Daily	13	2	9	24
Monthly	12	5	46	63
Weekly	24	7	49	80

Total: 226

Question #5: When you visit the park, how long do you stay?

Options	*Open House #2*	*Open House # 3*	*Online Survey*	*Total*
More than 4 hours	0	0	0	0
Less than 1 hour	4	0	18	22
2 to 4 hours	8	6	46	60
1 hour	26	11	81	118

Total: 200

Evaluate the Program Statement that we have developed and let us know how much you support each part.

Statement	*Open House #2*			*Open House #3*			*Online Survey*			*Total*		
	Y	M	N	Y	M	N	Y	M	N	Y	M	N
Statement 1 - Respect	13	2	0	48	3	1	110	12	9	171	17	10
Statement 2 - Acknowledge	11	5	2	34	10	8	88	32	11	133	47	21
Statement 3 - Support	13	2	2	24	15	12	69	33	29	106	50	43
Statement 4 - Address	15	2	0	40	11	2	99	23	9	154	36	11
Statement 5 - Provide	12	5	1	31	13	7	74	36	21	117	54	29
Statement 6 – Future	11	5	1	33	13	4	76	36	19	120	54	24
Statement 7 - Funding	5	7	6	28	8	15	49	46	36	82	61	57

Comments

support through taxes not money generating activities; park not really suitable for picnics, parties etc - there is Flood Park and others in City for that; ranger needed - or better patrol of off lead dogs
asphalt paths need maintenance, spirit path is not kept up, major puddles 4 months a year need to be filled, this is a dog poop park worst in the area, dogs off leads the majority of the time, need ranger
next generation: best if provide outdoor/nature experiences only - no picnics, playgrounds, etc.; small amphitheater in trees ok
community garden - perhaps with addition of organic practices
I support the focus on next generation education in strategic
leave the park as it is, maintenance and tactful improvements (benches etc.) but don't turn it into PA Baylands
my overall preference is to keep the park as it is, with only necessary modifications
find funds without creating mechanisms in the park "???" city bite the bullet and fund it
let's not add more to this quiet escape! No drones, playgrounds, fitness equip (go to downtown manicured parks)
consider separate issue from shoreline issue, should have a simple parks master plan for all Menlo Park, not a separate one that takes Bedwell in isolation
Menlo Park residents need a master plan for all it's parks
Support model gliders as there are no other locations to do this
I would like to see Bedwell Park remain. First of all an open space, wild, natural where nature is the main attraction. People like it because it has a wild feel about it. Hopefully apart from trail improvements and more trash bins, nothing much

needs to be done. It's a great place to meditate and enjoy nature and relax. Do not turn it into a "city" park. Thanks
Statement 7: In way that is aligned with promoting nature, stillness and reflection
Identify key values perhaps 1) native preservation = light of environment/population changes, 2/ enhance user experience of "the place", 3) family focused, more kids accessible areas/play zone, 4) beyond food r ???, a spiritual retreat for native meditation, yoga etc.
City should support like it does all other city parks, stafford park 7.0 mi, stuesaftt park 10.6 mi
trails need to be fixed/winter time paths are full of water, more police patrols because cars are broken into, restrooms need to add on some trails
mas cuidado con los perros y la popo, necesitamos un bano mas y felicidades en el nuevo proyecto (being more mindful of dog poop, an additional bathroom, congratulations on the new project)
maybe a donation box; request volunteer maintenance groups
Statement 5: not sure what this means, they will be stuvairs what we leave - create
would not use if there was a charge to the park
please do not allow tractor trailers; at night when there's no surveillance people dump garbage and furniture; more police patrol - especially at night
I am more than glad and feel fortunate by having this park close to my home, and that it was left as passive recreational place and "not" turned into a "golf park". For only a small group of people that might not leave in the area.
poner un bano o dos por el parque (put 1 or 2 bathrooms in the park)
poner other bano 1 o 2 en diferented lugarer del parque (put another bathroom 1

or 2 in different parts of the park)
leave it alone & bring back burrowing owls
use existing soil mixed with risen binder
the park should be funded by the general fund, as are other parks; maintain what's here. Don't make this a bust, noisy urban park - it is our only urban open space.
no cobrar la entrada al parque y poner mas banos en el parque...leventar popo de los perros (do not charge to enter the park, more bathrooms, pick up after your dog)

Please tell us which concept plan you prefer.

	Open House #2	*Open House #3*	*Online Survey*	*Total*		
A	21	4	63	88	42%	slight preference for A
B	17	3	50	70	32%	¼ "do nothing"
Neither	10	11	38	59	27%	
				Total: 217		

How can the concept be improved? Please evaluate the list of attributes below and let us know if you would like to keep it as shown, remove it, or keep it but with modifications.

Alternative	*Open House #2*			*Open House #3*			*Online Survey*			*Total*		
	keep	remove	modify	k	r	m	k	r	m	k	r	m
Restroom	6	1	4	38	2	5	107	1	5	151	4	14
Orienteering/Geocaching	4	3	3	29	8	4	77	23	13	110	34	20
Great Spirit Path	5	2	3	37	8	3	92	14	7	134	24	13
Bay Trail	5	0	3	38	3	5	69	27	17	112	30	25
Accessible paths	7	1	3	36	4	4	76	18	19	119	23	26

Accessible summit	6	3	3	34	9	1	84	16	13	124	28	17
Path/trail surfacing	8	1	2	32	4	7	65	23	25	105	28	34
Trees to screen sewage facility	8	0	3	35	7	2	96	8	9	139	15	14
Habitat restoration	11	1	0	36	3	3	98	7	8	145	11	11
Picnic tables	8	3	2	23	15	17	68	24	21	99	42	40
Fitness course	4	7	1	20	21	1	56	48	9	80	76	11
Educational trail loops	5	3	2	27	12	2	84	18	11	116	33	15
Amphitheater/group seating	2	7	4	16	24	6	49	46	18	67	77	28
Play Area	2	8	2	14	22	8	72	30	11	88	60	21
Off-leash dog-park	5	8	1	12	27	6	50	50	13	67	85	20
Model glider	5	4	3	22	17	3	48	58	17	75	79	13
Boat launch	3	8	2	22	23	2	63	41	9	88	72	13
Building	3	6	2	16	16	7	59	36	18	78	58	27
Parking, paved	6	2	2	31	10	1	74	30	9	111	42	12
Parking, gravel	4	4	3	38	5	2	87	11	15	129	20	20
Parking, undesignated	4	4	2	29	7	4	80	20	13	113	31	19

Total: 169

Comments
too developed; improve existing, path needs to be improved so can use in winter; trees if have $
lower cost to not need fees; improve, get rid of puddles
reinstate great spirit path; restroom building only
orienteering not wanted;
small amphitheater, make sure play area fits with rustic nature of park
prefer minimum maintenance on existing trail; keep path as is as much as possible; a few small tables with wide trees; parking as existing as far as possible
modify as little as possible; a few picnic tables; no dog park
orienteering is already here; what habitat?; just a few picnic tables

minimize summits; picnic tables should be close to parking; perimeter focused educational trail loops, no pay stations
keep path trail surfacing as natural as possible
no motorized model glider; no more parking than current; keep everything as is
keep as is
keep as is, continue to allow bikes
keep it wild, just keep park available to dogs
picnic tables would cause a lot of trash; small and not obtrusive amphitheater; a small ramp for kayaks or canoes would be ok, no motor boats
remove all parking along slough
building sponsored by an organisation that is aligned with supporting passive recreation
add upgrades; add trees for shade; add shade for sun and rain; need a sponsoring arts or theatre group;LEED certified, multi-use; for nonprofit meetings, education sminars, "pay to rent" model; do not do pay parking please
too much stuff and not enough pure open space
no tables people leave garbage behind; dogs must be on leash
don't know what this is; don't care; 9-10 is ok
not sure
please consider at least an emergency response boat launch/water access. Menlo park fire has response to water emergencies on the bay for the safety of the public. Thank you.

maintain high degree of informal parking; more
less asphalt, path B; don't take away parking; add large amphitheater; add destination play
charge the parking (problem: people park here & then go to work/ride sharing); please no charge to people who just come for a walk
model glider allowed

Additional pasteboard comments

Shaded vista areas, conducive reflection (a destination to walk to and then linger)
people feed skunks, feral cats, is problematic
2nd restroom on east side would be good - people relieving themselves because it's too far to walk back to parking lot
a lot of people do not pick up after their dogs
should build soccer fields, could put 16 or so out by the burrowing owls habitat, fewer trails, less pavement
less development
for walkers
no buildings, no dog park, keep as natural open space, no admission fee, keep open to people of all incomes
bicycles - create a route that's marked if pedestrians and cyclists ahre then cyclist need to give alert and slow down
bicycles will change the character of this park to the detriment of this open space. Bike elsewhere - there are many other places to bike!
keep the bike's access
no entrance fee or parking fee
like that bedwell Is different - don't need every amenity
plant more trees and create shaded areas
not much vehicle access in park
slope restoration signs to keep new footprints from being formed
keep native
better traffic mgmt
water bottle fountain
minimize paved trails
it seems like the proposed, unnecessary changes, are mostly designed to justify the city staff's jobs rather than support the broad environmental needs to preseve habitat and the environment. The proposals just duplicate what is available in other MP city parks.
love the notion to expand and deepen user's experiences while respecting the land and account for surrounding changes (ps disagree with comments above)
emphasize local fauna and flora; maintain natural beauty for nature walks, education children, no softball, badminton, etc. yes to picnic tables & benches, passive activities only, no fee!
no drones

love the park as is. Children need to appreciate nature and parks as it without forcing activities. I see families enjoying the park and exercise together.
this is the only quiet natural open space we have. Keep as is. (yes!)
this park has least amount of shade and picnic/break areas
park is lovely as is, hot paths need maintenance
leave as is. City pay for maintenance as it does its other parks
parking: need easy parking, turn around areas, parking safety concern- cars getting broken into, unobstructed views, shoulder parking needed...

-END-

UNMANNED AIRCRAFT SYSTEM (UAS) ASSESSMENT

Overview

On August 23, 2016, the Menlo Park City Council approved Section 8.28.130.5 to prohibit all model aircraft in the City's parks, including Bedwell Bayfront Park. The ordinance prohibits *"motor-driven vehicles or models, including drones and unmanned aircraft systems, except in designated areas, and except for the use of drones by public safety personnel for emergency operations"*. No areas in any of the City's parks are currently approved for model aircraft use under the exception clause of this ordinance; however, it was stated by the City Council that the master plan process for Bedwell Bayfront Park would allow an opportunity to consider establishing a designated area for model aircraft. Factors to be considered include: the comfort and safety of park visitors, risk to wildlife in the park and the surrounding wildlife refuge area, risk to manned aircraft due to the park's proximity to the Palo Alto and San Carlos airports, permit requirement, establishment of rules for model aircraft operation, and feasibility of rules enforcement.

Background

Model aircrafts come in all types and sizes, from the tiniest indoor free-flight hand thrown glider models to ¼-scale aircraft powered by 2-cycle internal combustion engines. Typical radio-controlled (RC) model aircraft range from unpowered gliders and electric motor assisted gliders to motor/propeller driven airplanes and helicopters. Within a 36-mile radius of Menlo Park there are currently 8 privately owned model aircraft flying fields associated with the Academy of Model Aeronautics (AMA) chartered clubs and 6 public parks or schoolyards (some associated with chartered AMA clubs) where some types of model aircraft flying are permitted. The AMA is a non-profit organization that promotes model aviation as a recognized sport and recreational activity. The public parks that specifically allow and regulate some types of model aircraft include Rancho San Antonio Open Space Preserve in Santa Clara County, Windy Hill Open Space Preserve in Portola Valley, Coyote Hills Park in Newark and Mission Peak Regional Park in Fremont.

Usage History

Hobbyists began flying model gliders at Bedwell Bayfront Park as early as 1986, shortly after the park was opened and before trees matured. The breeze that sets up consistently in the afternoons from early Spring through late Fall is forced into updrafts in front of the various small hills in the park. Flying gliders on these updrafts is called "slope gliding". Motor-driven model aircraft and gliders that use thermals to stay aloft have mostly been flown at the large meadow area. Most of the model aircraft hobbyists flying motor driven models tended to station themselves at the southern edge of the central meadow. Hand-launched gliders and motor assisted gliders, as well as a few gliders launched by "hi-start" (stretched rubber tubing and string serving as a glider slingshot) were mostly flown from the northern edge of the

meadow. This is because the prevailing breeze generally blows from north to south and gliders naturally follow the breeze to keep up with passing thermals.

Public Outreach Input

For purposes of discussion and comparison at the community meetings for the Bedwell Bayfront Park master planning process, UAS were divided into three categories: hand-launched model gliders, motor-driven model gliders, and drones. The three differ in their range, potential for noise generation, flight pattern potential, and required pilot operating input. The public input results showed some community support for hand-launched model gliders, with a majority of respondents against motor-driven model gliders and drones. The findings below therefore are focused only on the potential for hand-launched model gliders to be flown at Bedwell Bayfront Park. Potential use restrictions were not shared nor discussed with the public.

Findings

General glider use as it relates specifically to Bedwell Bayfront Park include:

- The range a glider can go is dependent on the capabilities of the pilot, the glider design, and the weather.
- The meadow is a good flying area because it is large and open, it does not have any paths that cross through it, and it is large enough to define a flying zone. At the launch of a glider, it takes seconds for the glider to reach 100-feet in elevation, which is significant in providing a vertical clearance zone or buffer between gliders in flight and park users below. By keeping the gliders in the meadow, they are visible, and the pilot can land the plane if a pedestrian is spotted around the area of the meadow.
- Landings are often the slowest part of the flight, while the launch is the quickest. Thermal climbs are faster, and the glider can reach a speed of about 15mph. The control of the glider is dependent on the pilot, but control of the glider is not impacted by the size of the plane.
- In the past, a park ranger informed glider users to stay out of the middle of the meadow to limit the amount of foot traffic through the middle that might disrupt local wildlife. Glider pilots can launch from the north edge and can control the glider landing location, without having to walk into the meadow's interior.
- Gliders flown over nesting birds can result in abandoned nests. Gliders should not be allowed to fly over the adjacent wildlife refuge.

Potential Use Restrictions

To minimize potential conflicts with wildlife and other park users, glider use at Bedwell Bayfront Park, if allowed, should have use restrictions that could include:

- Hand-launched model gliders only are allowed. Motor-propelled model gliders, multi-copters, helicopters, and 'drones' are prohibited.
- Glider use should be allowed at the park only if accompanied by a park ranger, who can enforce the use restrictions.
- Prior to allowing glider use, a qualified ornithologist should conduct a nesting bird survey of the large meadow area and areas within 100-feet of the meadow to document the baseline condition. A follow-up comparison survey should be conducted in the first year of glider use. If any birds nesting in the immediate vicinity are observed being significantly disturbed by glider activity, then the glider activity should be curtailed. If no such effects are observed, no further mitigation would be needed.
- Glider flying over the adjacent San Francisco Bay Don Edwards National Wildlife Refuge is prohibited.
- Gliders shall be flown line of sight and restricted to the confines of the large meadow area. Gliders should not be allowed to fly over other areas of the park.
- Gliders shall be limited in weight and size (ie. 16 ounces in weight and 6 feet in wingspan).
- The number of gliders allowed to be flown at any single moment should be restricted (ie. 5 gliders maximum).
- Pilots shall maintain a 100 foot buffer between their gliders and other park users.
- Pilots should be members of AMA, follow AMA flight rules and safety code, and have recommended liability insurance coverage. Requiring a permit to fly would be a means to ensure membership and coverage requirements have been met.

Draft Park Plan

Attachment E

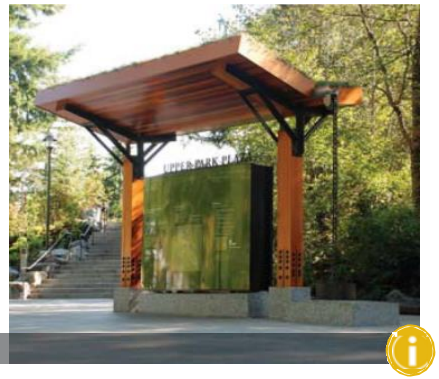
- Nature Play
- Kayak Launch
- Habitat Restoration/ Stormwater Management
- 2ANGERŸ/FÚCE
- Summit View Point
- Picnic Table
- Fitness Station
- Seating
- Parking, Paved
- Parking, Gravel
- Interpretive Signage
- Information Kiosk
- Dog Dispenser
- Bike Racks Drinking
- Fountain
- Trash/Recycling Bins
- Restroom

Park Plan Image Board

Park Amenities

Information Kiosk


Kiosk



Wayfinding


Directional Signage

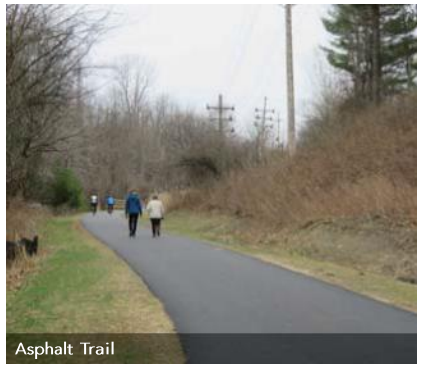
Informational Signage

Interpretive Signage

Interpretive

Surfacing Materials


Existing Gravel Trail

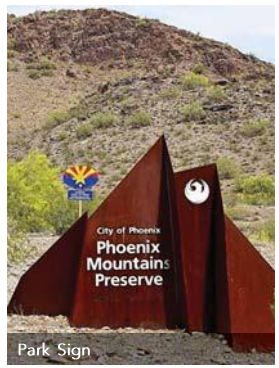

Asphalt Trail


Gravel Parking Areas


Natural-Looking Treated Trail Pavement

Park Entrance


Automatic Access Control



Park Sign


Turn-Around

Park Plan Image Board

Park Amenities

Seating


Durable Seating Options


Single/Small Group Picnicking


Summit View Point


Ranger Office/Restroom


Bike Rack


Trash/Recycling Containers


Great Spirit Path Renovation ("OULDERÝINÝ4EATEDÝ0AVEMENT)

Drinking Fountain


Stairway

Park Plan Image Board

Restoration

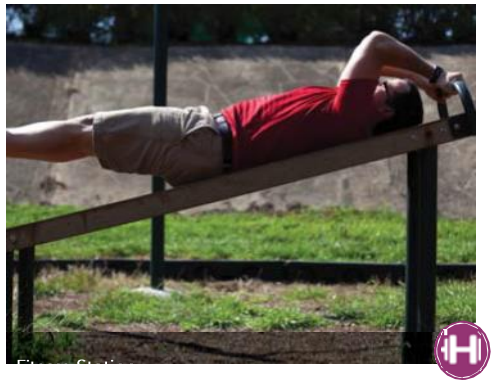
Restoration


Native Plantings/Stormwater

Recreation

Park Activities


Nature Play




Kayak Launch

Bedwell Bayfront Park MASTER PLAN

Parks and Recreation Commission, October 25, 2017

Response to Comments from October 11, 2017 Study Session

CITY OF MENLO PARK

Exhibit A

The trash/recycle bins and the dog bag dispensers are located along the asphalt-paved accessible trail, with the addition of a trash disposal at the picnic area in the northeast corner and at the kayak launch. All trash disposals are accessible for maintenance pick-up.

Trash = ☐

Dog dispenser= ☐

- Nature Play
- Kayak Launch
- Habitat Restoration/ Stormwater Management
- Ranger Office
- Summit View Point
- Picnic Table
- Fitness Station
- Seating
- Parking, Paved
- Parking, Gravel
- Interpretive Signage
- Information Kiosk
- Dog Dispenser
- Bike Racks
- Drinking Fountain
- Trash/Recycling Bins
- Restroom

Exhibit B

There are numerous segments of the Bay Trail around the Bay Area constructed of gravel or dirt. The Bay Trail website provides a map that shows the surfacing material of the trail and serves as a navigational resource (baytrail.org/baytrailmap).

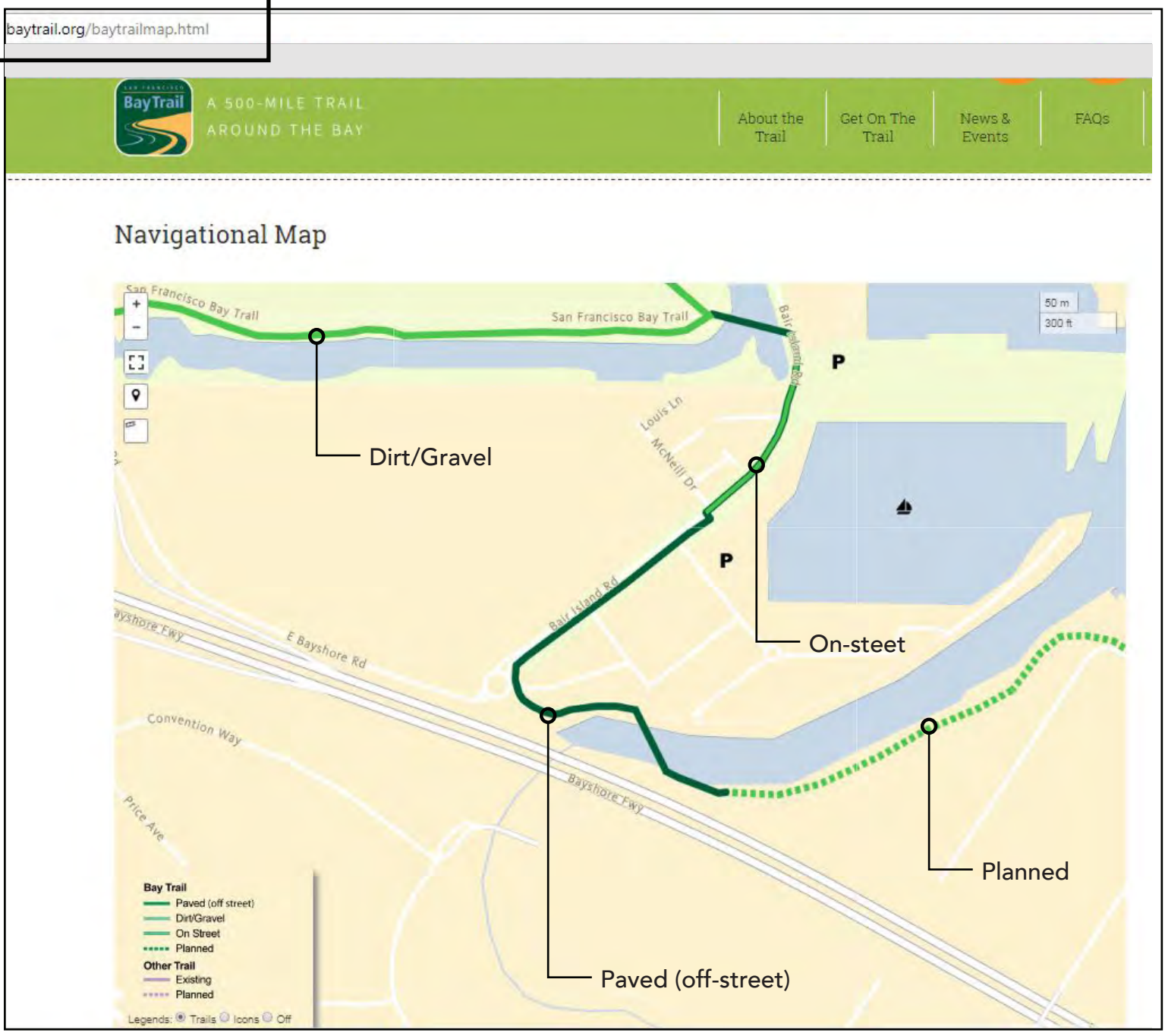


image: Bay Trail

Bedwell Bayfront Park MASTER PLAN

Parks and Recreation Commission, October 25, 2017

Response to Comments from October 11, 2017 Study Session

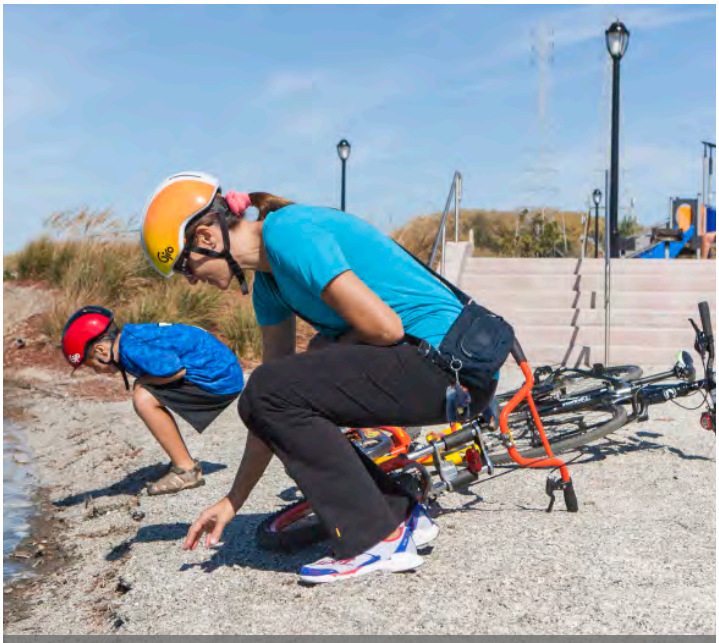
CITY OF MENLO PARK

Exhibit C

Additional information was requested about the kayak launch. Sections 1, 2, and 3 provide greater detail about the kayak launch and additional information from research findings.

Section 1

Images of kayak launch examples similar to vision for Bedwell Bayfront Park.



local example (One Marina, Redwood City)

beach launch example

regulatory signage example

Water Trail example

Section 2 Refuge Stance

- "The refuge is not taking a position on the kayak launch for Bedwell Bayfront Park" because it does not directly front nor impact the refuge lands.
- If a kayak launch is approved, the refuge would like to be involved and work with the City to develop materials to help educate the public.
- Flood Slough is not part of the refuge (Waters of the United States of America) and the public is allowed by law to use the slough, if the property owner allows it.
- The refuge is primarily concerned with unwanted docking (people landing and walking onto sensitive areas. Education and signage would be needed to improve public awareness.

image: San Francisco Bay Area Water Trail

Section 2 (continued)

United States Department of the Interior

FISH AND WILDLIFE SERVICE
San Francisco Bay National Wildlife Refuge Complex
1 Marshlands Road
Fremont, California 94555

19 July 2017

Re: Bedwell Bayfront Park Master Plan Project

To Whom It May Concern:

We are writing this letter in response to the proposed Master Plan for Bedwell Bayfront Park. As you have noted in the documents, the park is surrounded on three sides by Don Edwards San Francisco Bay National Wildlife Refuge (Refuge). The Refuge was established in 1974 to preserve the natural resources of the South Bay, which includes protection of breeding waterbirds and shorebirds, and recovery efforts for endangered species such as the Western Snowy Plover and Ridgeway's Rail.

We support efforts that encourage and enhance the public's ability to experience the outdoors and engage with our natural world. We encourage the City to consider the important natural resources that are found on adjacent Refuge lands during this planning process, as such we appreciate the opportunity to review the park conceptual plans and comment. We feel that two components of the plan warrant comment from the Refuge.

First is the concept of a dog park. Off-leash dog is an existing problem that has been observed to regularly occur at Bedwell Bayfront Park. When dogs enter the marsh environment this can be very detrimental for the endangered wildlife that uses this habitat. We would cautiously support the idea of a dog park with the hope that having a place to legally allow dogs off leash would reduce the amount off-leash dog use in the remainder of the park. For such an assumption to be accurate, there would likely need to be more enforcement of the off-dog leash rules than is currently done.

The second is the concept of a glider area. We are unclear exactly what this refers to, but making the assumption that these are non-motorized hand-held gliders, if this idea moves forward we would encourage signage that educated users about the impacts that gliders would have if they entered the marsh and needed to be retrieved, and the impact that low flying objects can have on birds in the adjacent ponds.

The Refuge appreciates the opportunity to comment on the plans for Bedwell Bayfront Park, and looks forward to working with the City in the future to encourage positive recreational opportunities and reduce the detrimental recreation impacts caused by off-leash dog use. Thank you for your consideration and if you have any questions, please feel free to contact me at (510) 792-0222 ext 125 or email jared_underwood@fws.gov .

Sincerely,

Jared G. Underwood
Refuge Manager
Don Edwards San Francisco Bay National Wildlife Refuge

letter: Don Edwards San Francisco Bay National Wildlife Refuge

Section 3 Would people get stuck in the mud flats?

- In all scenarios, waterway users need to be aware of tidal patterns


Flood Slough at low tide

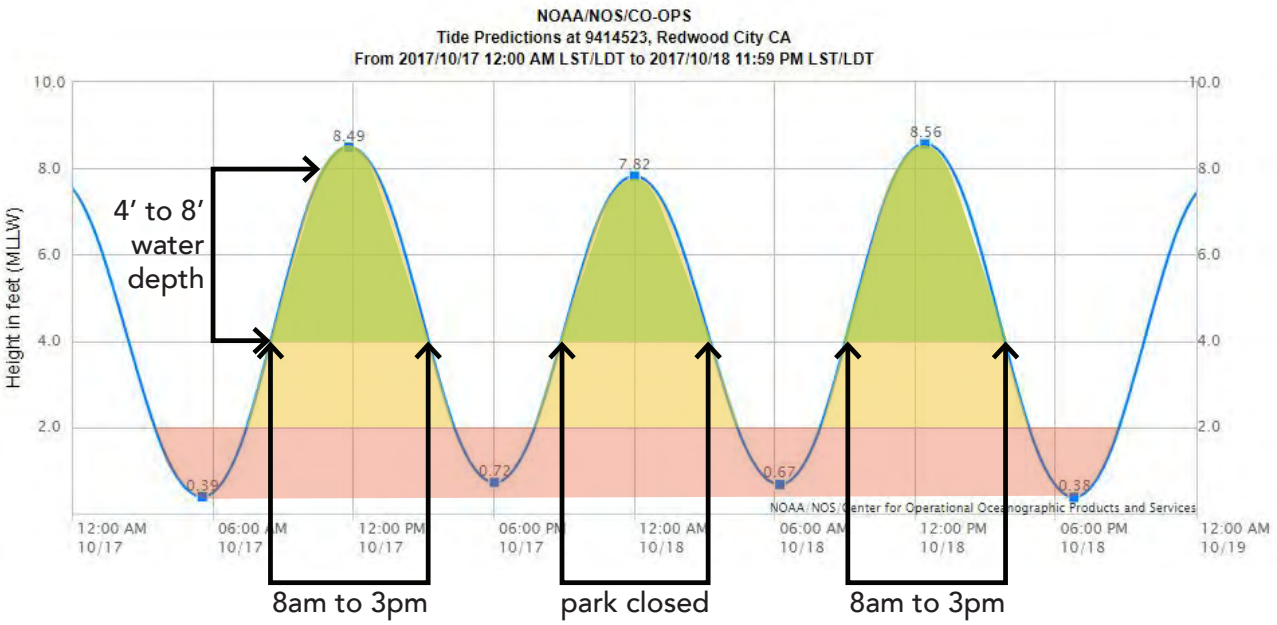

Flood Slough at high tide

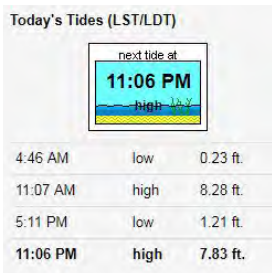
- Signage with tidal information posted can help mitigate the issue.
- Bathymetry (underwater depth) of Flood Slough and rate of siltation would be some of the elements to be studied prior to implementation.

Optimal

Caution

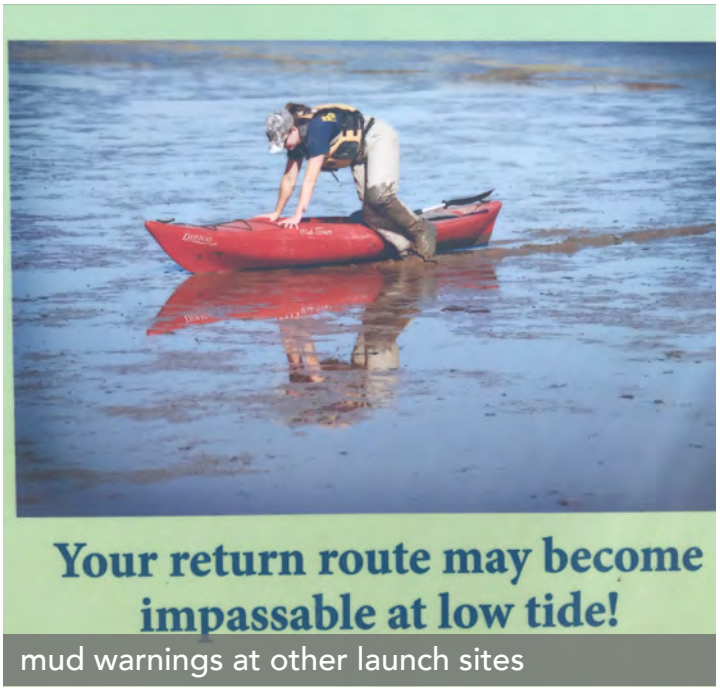
Not advised/ inaccessible





Section 3 (continued)

- There have been rescues made near Bedwell Bayfront Park, as well as at Alviso slough in San Jose and Eden Landing in Hayward due to low water levels.
- Signage helps inform users of fluctuating water levels.



mud warnings at other launch sites

tide chart

regulatory signage - wildlife

regulatory signage - use requirements

Bedwell Bayfront Park MASTER PLAN

Parks and Recreation Commission, October 25, 2017

Response to Comments from October 11, 2017 Study Session

CITY OF MENLO PARK

Exhibit D

Additional imagery helps show the aesthetic and materials proposed for the outdoor classroom.

log bench

rock/boulder

fallen tree

tree stump

CITY OF MENLO PARK

BEDWELL BAYFRONT PARK

Draft Master Plan

October 2017

Callander Associates Landscape Architecture

Accepted By:
Menlo Park City Council
XXX, 2017

City of Menlo Park
701 Laurel St.
Menlo Park, CA 94025
Ph: (650) 330-6600

The future use of the site is intended to be a Bay front park for passive recreation including nature walks...picnicking, day hiking and meadow sports, as well as just plain enjoyment of the silence, the fresh breeze and the view.

— Mike Bedwell's March 27, 1974 letter to the US Army Corps of Engineers

Executive Summary

The purpose of the Bedwell Bayfront Park master plan is to provide the City of Menlo Park with a vision to guide the development of the park for the next 25 years. The park was originally envisioned and designed to be a passive recreation park. Through a public outreach process that was completed for the project in 2017, this key characteristic of the park remains an important guiding principle. In addition, the community indicated that access to nature, scenic views, and proximity to the Bay are important considerations.

The resulting park master plan provides a graphic roadmap to guide the park's future and features recommendations for additional access and expanded passive recreation uses. Priority improvements to be implemented at an initial phase include roadway and restroom renovations in response to sea level rise, providing an accessible trail network, and improving wayfinding and signage throughout the park. The park funding plan will help ensure that the park improvements and amenities will be fiscally sustainable and maintained. The plan also responds to the request by City Council to research and provide regulatory recommendations for the use of model gliders at the park.

This report summarizes the master planning process, and contains the following sections:

Introduction: Explains the project purpose, summarizes the goals and objectives, and provides some background on the evolution of the site.

Planning Process: Provides an assessment of the existing site conditions, details about outreach methods and process, and a summary of input received from staff and public.

Master plan: Explains the park master plan, park features, and design guidelines.

Implementation: Provides a summary of the estimated cost and related tasks for implementation and maintenance of the park master plan.

Appendix: Includes meeting summaries, outreach materials and input results, design alternative graphics, a detailed cost estimate, and other supplemental project information.

Table of Contents

1 Introduction

Background

Since its inception, Bedwell Bayfront Park has been the jewel of the City of Menlo Park's parks and open space system. Revered for its various habitats, Bay views, and passive recreation opportunities, this closed landfill site has become even more important with the influx of housing and office developments in the area. Figure 1 is a park area map that illustrates the park's association with nearby development projects, transportation systems, and other open spaces.

The park is at a critical juncture. Improvements are needed to provide for a growing population and respond to a changing shoreline. Sustainable

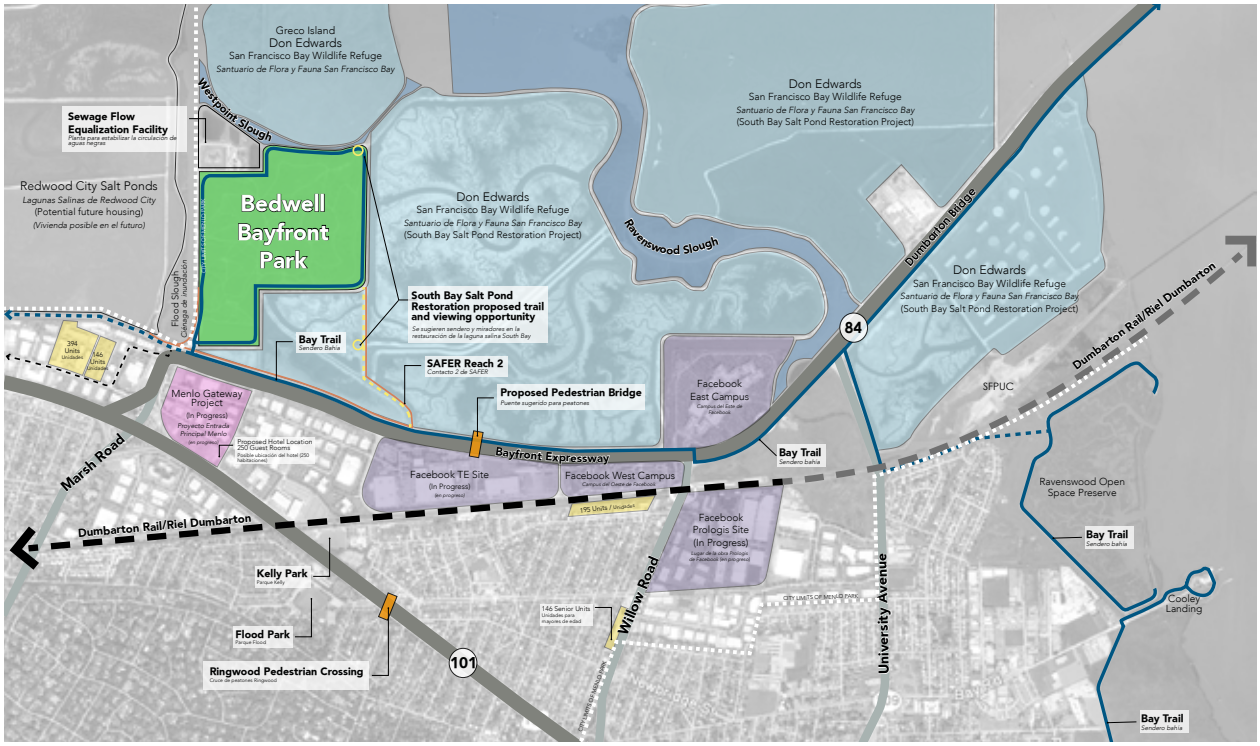


Figure 1 *Park Area Map*

funding sources are needed to fund both short term improvements and long term maintenance and operations.

The maintenance fund initially set up for the park has been steadily depleted. Without significant action, the fund would be depleted by 2020, leaving the park without funding, even for basic maintenance services such as trash disposal. The City recognized the critical need to identify sustainable funding sources to meet maintenance and operations requirements and to provide for the rapidly changing city-scape as populations and development increase around the park. In addition to plan design and funding mechanisms, the master planning process also set out to review and consider an amendment to Menlo Park Municipal Code Section 8.28.130.5, which addresses the use of drones and UAS (Unmanned Aircraft Systems) at Bedwell Bayfront Park.

A planning effort was commissioned by the City in 2017 to develop a community-supported master plan. A comprehensive public outreach process was developed to determine use and design priorities for the site and evaluate funding options and strategies. Two design alternatives were initially developed, based on feedback obtained at a community open house. The park master plan developed is based on feedback obtained at the second and third community open house, through a collaborative effort with local interests groups and agencies, and with direction received from the Parks and Recreation Commission.

passive recreation

wildlife + viewing

landfill operations

Figure 2 *Main park functions*

Site History

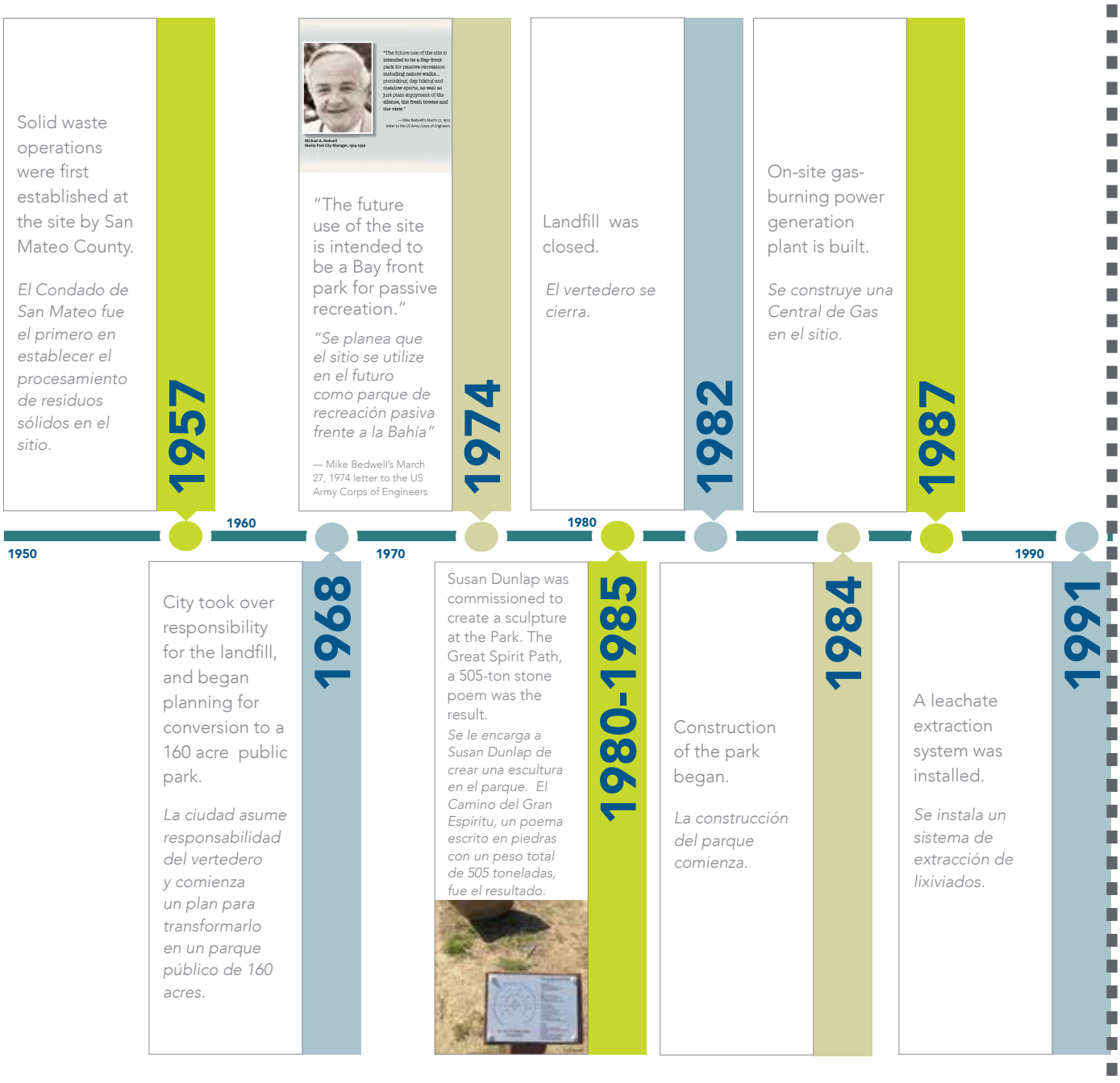


Figure 3 *Timeline with events that have helped shape the park's evolution*

1995

Construction of the park was completed.

Se termina la construcción del parque.

2005

Friends of Bedwell Bayfront Park was formed to to ensure the park receives more permanent protection as open space.

Se crea la Sociedad de Amigos de Bedwell Bayfront Park para garantizar que el parque reciba una protección más permanente como espacio al aire libre.

2006

Measure J ballot measure was placed before voters and explored the possibility of active recreational uses at the park which might generate income for maintenance. It was voted down.

La Propuesta J, que examina el posible uso de recreación activa en el parque lo cual puede generar ingresos para el mantenimiento, se somete a votación. Se rechaza la propuesta.

2011

Because the Park Maintenance Fund was being depleted and projected to run out of funds, staff eliminated ranger service.

El personal elimina el servicio de guardabosques porque el fondo de mantenimiento del parque disminuía y se proyectaba un agotamiento total del fondo.

2013

The power plant was decommissioned due to lower landfill gas production, the age of the equipment, and increasingly stringent air quality standards. A new flare was built in 2013 and the landfill gas is combusted in compliance with the BAAQMD permit.

La Planta Eléctrica se retira del servicio debido a la baja producción de gas de vertedero, la antigüedad del equipo y las rigurosas medidas de la calidad del aire. Se construye un nuevo quemador de gas en 2013 que cumple con los requisitos del permiso BAAQMD.

2016

Drones and radio-controlled aircraft are no longer permitted at the park, per ordinance 8.28.130.

Conforme a la Ordenanza 8.28.130. los drones y aeronaves controladas por radio ya no se permiten en el parque.

2017

Master planning process for Bedwell Bayfront Park gets underway.

Se pone en marcha la creación de un plan maestro para Bedwell Bayfront Park.

1990 2000 2010 2020

Goals and Policies

Goals and policies from other City documents have been reviewed to help inform the generation of goals and objectives for the Bedwell Bayfront Park Master plan. These documents provide guiding principles that align with the integrity and vision of Bedwell Bayfront Park and provide points of inspiration for the development of project goals and objectives.

Documents that provide associated principles with the park master plan's goals and objectives include:

- Land Use and Circulation Elements Goals, Policies, and Programs from the Draft General Plan update, ConnectMenlo
- Open Space/Conservation, Noise and Safety Goals, Policies, and Programs from the 2013 General Plan
- M-2 Area Zoning
- Comprehensive Bicycle Development Plan

The project directly supports the following goals and policies identified in the ConnectMenlo Land Use element update in the General Plan:

Goal LU-1: Promote the orderly development of Menlo Park and its surrounding area.

- Policy LU-1.1 Land Use Patterns. Cooperate with the appropriate agencies to help assure a coordinated land use pattern in Menlo Park and the surrounding area.
- Policy LU-1.2 Transportation Network Expansion. Integrate regional land use planning efforts with development of an expanded transportation network focusing on mass transit rather than freeways, and encourage development that supports multimodal transportation.
- Policy LU-1.5 Adjacent Jurisdictions. Work with adjacent jurisdictions to ensure that decisions regarding potential land use activities near Menlo Park include consideration of City and Menlo Park community objectives.

Goal LU-6: Preserve open-space lands for recreation; protect natural resources and air and water quality; and protect and enhance scenic qualities.

- Policy LU-6.1 Parks and Recreation System. Policy LU-6.1 Parks and Recreation System. Develop and maintain a parks and recreation system that provides areas, play fields, and facilities conveniently located and properly designed to serve the recreation needs of all Menlo Park residents.
- Policy LU-6.3 Public Open Space Design. Promote public open space design that encourages active and passive uses, and use during daytime and appropriate nighttime hours to improve quality of life.
- Policy LU-6.6 Public Bay Access. Protect and support public access to the Bay for the scenic enjoyment of open water, sloughs, and marshes, including restoration efforts, and completion of the Bay Trail.
- Policy LU-6.7 Habitat Preservation. Collaborate with neighboring jurisdictions to preserve and enhance the Bay, shoreline, San Francisquito Creek, and other wildlife habitat

and ecologically fragile areas to the maximum extent possible.

- Policy LU-6.8 Landscaping in Development. Encourage extensive and appropriate landscaping in public and private development to maintain the City's tree canopy and to promote sustainability and healthy living, particularly through increased trees and water-efficient landscaping in large parking areas and in the public right-of-way.
- Policy LU-6.9 Pedestrian and Bicycle Facilities. Provide well-designed pedestrian and bicycle facilities for safe and convenient multi-modal activity through the use of access easements along linear parks or paseos.
- Policy LU-6.11 Baylands Preservation. Allow development near the Bay only in already developed areas.

Goal LU-7: Promote the implementation and maintenance of sustainable development, facilities and services to meet the needs of Menlo Park's resident, businesses, workers, and visitor.

- Policy LU-7.1 Sustainability. Promote sustainable site planning, development, landscaping, and operational practices that conserve resources and minimize waste.
- Policy LU-7.6 Sewage Treatment Facilities. Support expansion and improvement of sewage treatment facilities to meet Menlo Park's needs, as well as regional water quality standards, to the extent that such expansion and improvement are in conformance with other City policies.
- Policy LU-7.7 Hazards. Avoid development in areas with seismic, flood, fire and other hazards to life or property when potential impacts cannot be mitigated.
- Policy LU-7.8 Cultural Resource Preservation. Promote preservation of buildings, objects, and sites with historic and/or cultural significance.
- Policy LU-7.9 Green Building. Support sustainability and green building best practices through the orientation, design, and placement of buildings and facilities to optimize their energy efficiency in preparation of State zero-net energy requirements for residential construction in 2020 and commercial construction in 2030.

The project directly supports the following goals and policies identified in the ConnectMenlo Circulation element update to the General Plan:

Goal CIR-1: Provide and maintain a safe, efficient, attractive, user-friendly circulation system that promotes a healthy, safe, and active community and quality of life throughout Menlo Park.

- Policy CIRC-1.4 Education and Encouragement. Introduce and promote effective safety programs for adults and youths to educate all road users as to their responsibilities.
- Policy CIRC-1.6 Emergency Response Routes. Identify and prioritize emergency response routes in the citywide circulation system.
- Policy CIRC-1.7 Bicycle Safety. Support and improve bicyclist safety through roadway maintenance and design efforts.
- Policy CIRC-1.8 Pedestrian Safety. Maintain and create a connected network of safe sidewalk and walkways within the public right of way ensuring that appropriate facilities, traffic control, and street lighting are provided for pedestrian safety and convenience, including for sensitive populations.

Goal CIR-2: Increase accessibility for and use of streets by pedestrians, bicyclists, and transit riders.

- Policy CIRC-2.1 Accommodating All Modes. Plan, design and construct transportation projects to safely accommodate the needs of pedestrians, bicyclists, transit riders, motorists, people with mobility challenges, and persons of all ages and abilities.
- Policy CIRC-2.7 Walking and Biking. Provide for the safe, efficient, and equitable use of streets by pedestrians and bicyclists through appropriate roadway design and maintenance, effective traffic law enforcement, and implementation of the City's Transportation Master plan (following completion; until such time the Comprehensive Bicycle Development Plan, Sidewalk Master plan and the El Camino Real/Downtown Specific Plan represent the City's proposed walking and bicycling networks).
- Policy CIRC-2.8 Pedestrian Access at Intersections. Support full pedestrian access across all legs of signalized intersections.
- Policy CIRC-2.9 Bikeway System Expansion. Expand the citywide bikeway system through appropriate roadway design, maintenance, effective traffic law enforcement, and implementation of the City's Transportation Master plan (following completion; until such time the Comprehensive Bicycle Development Plan and the El Camino Real/Downtown Specific Plan represent the City's proposed bicycle network).

Goal CIR-3: Increase mobility options to reduce traffic congestion, greenhouse gas emissions, and commute travel time.

- Policy CIRC-3.1 Vehicle-Miles Traveled. Support development and transportation improvements that help reduce per service population (or other efficiency metric) vehicle miles traveled.
- Policy CIRC-3.2 Greenhouse Gas Emissions. Support development, transportation improvements, and emerging vehicle technology that help reduce per capita (or other efficiency metric) greenhouse gas emissions.

Goal CIR-4: Improve Menlo Park's overall health, wellness, and quality of life through transportation enhancements.

- Policy CIRC-4.1 Global Greenhouse Gas Emissions. Encourage the safer and more widespread use of nearly zero-emission modes, such as walking and biking, and lower emission modes like transit, to reduce greenhouse gas emissions.
- Policy CIRC-4.2 Local Air Pollution. Promote non-motorized transportation to reduce exposure to local air pollution, thereby reducing risks of respiratory diseases, other chronic illnesses, and premature death.
- Policy CIRC-4.3 Active Transportation. Promote active lifestyles and active transportation, focusing on the role of walking and bicycling, to improve public health and lower obesity.
- Policy CIRC-4.4 Safety. Improve traffic safety by reducing speeds and making drivers more aware of other roadway users.

Goal CIR-6: Provide a range of transportation choices for the Menlo Park community.

- Policy CIRC-5.5 Dumbarton Corridor. Work with SamTrans and appropriate agencies to reactivate the rail spur on the Dumbarton Corridor with appropriate transit service from Downtown Redwood City to Willow Road with future extension across the San Francisco Bay.
- Policy CIRC-5.6 Bicycle Amenities and Transit.

Encourage transit providers to improve bicycle amenities to enhance convenient access to transit, including bike share programs, secure storage at transit stations and on-board storage where feasible.

The project directly supports the following goals and policies identified in the 2013 Open Space/Conservation, Noise General Plan:

Goal OSC1: Maintain, protect and enhance open space and natural resources.

- OSC1.1 Natural Resources Integration with Other Uses. Protect Menlo Park's natural environment and integrate creeks, utility corridors, and other significant natural and scenic features into development plans.
- bOSC1.2 Habitat for Open Space and Conservation Purposes. Preserve, protect, maintain and enhance water, water-related areas, plant and wildlife habitat for open space and conservation purposes. OSC1.3 Sensitive Habitats. Require new development on or near sensitive habitats to provide baseline assessments prepared by qualified biologists, and specify requirements relative to the baseline assessments.
- OSC1.4 Habitat Enhancement. Require new development to minimize the disturbance of natural habitats and vegetation, and requires revegetation of disturbed natural habitat areas with native or non-invasive naturalized species.
- OSC1.6 South Bay Salt Pond Restoration Project and Flood Management Project. Continue to support and participate in Federal and State efforts related to the South Bay Salt Pond Restoration Project and flood management project. Provide public access to the Bay for scenic enjoyment and recreation opportunities as well as conservation education opportunities related to the open Bay, the sloughs, and the marshes.
- OSC1.8 Regional Open Space Preservation Efforts. Support regional and subregional efforts to acquire, develop and maintain open space conservation lands.
- OSC1.10 Public Education and Stewardship. Promote public education, environmental programs, and stewardship of open space and natural resources conservation.
- OSC1.14 Protection of Conservation and Scenic Areas. Protect conservation and scenic areas from deterioration or destruction by vandalism, private actions or public actions.

Goal OSC2: Provide parks and recreation facilities.

- OSC2.1 Open Space for Recreation Use. Provide open space lands for a variety of recreation opportunities, make improvements, construct facilities and maintain programs that incorporate sustainable practices that promote healthy living and quality of life.
- OSC2.6 Pedestrian and Bicycle Paths. Develop pedestrian and bicycle paths consistent with the recommendations of local and regional trail and bicycle route projects, including the Bay Trail.
- OSC2.7 Conservation of Resources at City Facilities. Reduce consumption of water, energy, landfilled waste, and fossil fuels in the construction, operations and maintenance of City owned and/or operated facilities

Goal N1: Achieve acceptable noise levels.

- N1.9 Transportation Related Noise Attenuation. Strive to minimize traffic noise through land use policies, traffic-calming methods to reduce traffic speed, law enforcement and street improvements, and encourage other agencies to reduce noise levels generated by roadways, railways, rapid transit, and other facilities.

- N1.10 Nuisance Noise. Minimize impacts from noise levels that exceed community sound levels through enforcement of the City's Noise Ordinance. Control unnecessary, excessive and annoying noises within the City where not preempted by Federal and State control through implementation and updating of the Noise Ordinance.

Goal S1: Assure a safe community.

- S1.1 Location of Future Development. Permit development only in those areas where potential danger to the health, safety and welfare of the residents of the community can be adequately mitigated.
- S1.2 Location of Public Improvements. Avoid locating public improvements and utilities in areas with identified flood, geologic and/or soil hazards to avoid any extraordinary maintenance and operating expenses. When the location of public improvements and utilities in such areas cannot be avoided, assure that effective mitigation measures will be implemented.
- S1.21 Flood and Tsunami Hazard Planning and Mapping. Consider the threat of flooding and tsunamis in planning and management practices to minimize risk to life, environment and property and maintain up-to-date tsunami hazard zones maps and flood maps as new information is provided by FEMA and other regional agencies. Modify land use plans in areas where tsunamis and flooding are hazards, and permit only uses that will sustain acceptable levels of damage and not endanger human lives in the event of inundation.
- S1.28 Sea level rise. Consider sea level rise in siting new facilities or residences within potentially affected areas.

The project directly supports the proposed M-2 Area Zoning update to the General Plan:

M-2 zoning is a zoning district that allows 'General Industrial District.' In the General Plan, this is reflected by a 'Limited Industry' designation. Figure xx shows a map of the M-2 Area Potential Zoning Map and the relationship to Bedwell Bayfront Park. The association between the park and the surrounding area provides information that helps define the development identity of the park's neighborhood and the anticipated use patterns along the park's frontage. The new mixture of zoning districts in close proximity to the park is anticipated to influence accessibility to the park and the volume of park users.

The project directly supports the following goals and policies identified in the Comprehensive Bicycle Development Plan:

The Comprehensive Bicycle Development Plan provides a broad vision, strategies, and actions for the improvement of bicycling in Menlo Park. The Bay Trail follows the perimeter of Bedwell Bayfront Park, and is complemented at the park by other paved and unpaved bicycle facilities. The Comprehensive Bicycle Development plan identifies opportunities to strengthen the City's bicycle network by constructing goals and policies that expand and enhance the existing bikeway network. Several goals and policies align with objectives for Bedwell Bayfront Park and include:

Goal 1: Expand and Enhance Menlo Park's Bikeway Network.

- Policy 1.1. Complete a network of bike lanes, bike routes, and shared use paths that serve

all bicycle user groups, including commuting, recreation, and utilitarian trips.

Goal 2: Plan for the Needs of Bicyclists.

- Policy 2.1. Accommodate bicyclists and other non-motorized users when planning, designing, and developing transportation improvements.

Goal 3: Provide for Regular Maintenance of the Bikeway Network.

- Policy 3.1. Develop a program to routinely repair and maintain roads and other bikeway network facilities, including regular sweeping of bikeways and shared use pathways.

Goal 4. Encourage and Educate Residents, Businesses and Employers in Menlo Park on Bicycling.

- Policy 4.2. Develop local adult and youth bicycle education and safety programs, such as the League of American Bicyclists courses. Consider partnering with other local jurisdictions, such as the City of Palo Alto, that already have education programs in place.
- Policy 4.9 Promote bicycling as a healthy transportation alternative.

Project Goals and Objectives

The goals and objectives for the Bedwell Bayfront Park Master plan capture the main character and purpose of the park as a significant open space for Menlo Park and the Bay Area. Development of the goals and objectives include an assessment of projects and documents that have a geographic and/or ideological relationship with the park. As a result, goals and objectives, a project mission statement, and program statements have been developed to capture the identity and trajectory of Bedwell Bayfront Park.

GOAL 1 Utilize an open and inclusive community outreach process to refine goals and objectives and develop a roadmap to guide park improvements over the next 25 years.

GOAL 2 Respect prior decisions (Measure J) made regarding exclusion of active recreation on site.

GOAL 3 Enhance park's value as a unique community asset by increasing passive recreation and educational opportunities.

GOAL 4 Protect existing sensitive habitats and landfill systems.

GOAL 5 Provide Council with research on appropriate uses of non-motorized and radio controlled aircraft at other public sites and public input on issue.

GOAL 6 Work to identify sustainable funding sources to support short term improvements and long term maintenance and operations.

Mission Statement

Since its inception, Bedwell Bayfront Park has been the jewel of the Menlo Park parks and open space system. Revered for its various habitats, Bay views, and passive recreation opportunities, this closed landfill site has become even more important with the influx of housing and office developments in the area. The park is at a critical juncture. Improvements are needed to provide access for the growing population. Sustainable funding sources are needed to fund both short term improvements and long term maintenance and operations.

Program Statement

A program statement for the project was created to summarize the priorities and public input that was received throughout the planning process into one summary document. The program statement includes primary objectives of the master plan for the park and guidance for future implementation efforts.

Respect the emphasis on "passive recreation" on which the park was founded

- Support existing park uses: bird watching, walking, jogging, bike riding on Bay Trail, kite flying, orienteering, and geocaching.

Acknowledge the need to provide for a growing population and respond to a changing shoreline

- Evaluate parking capacity and opportunity to accommodate a bike share program from Belle Haven.
- Increase and improve general park amenities (drinking fountains, seating, eating areas, bike racks).
- Plan for a future with sea level rise.

Support, enhance and expand activities that are complementary to passive recreation experiences

- Consider new uses: water access, hand launched radio controlled model gliders, fitness equipment, nature play, bike riding on unpaved trails, and off-leash dog park.
- Support on-site youth work program (on-site job skills, youth development, and learning).Evaluate options for providing indoor gathering space for use by: concessions vendor; volunteers/ park ranger/ docents, and as a meeting pavilion.
- Enable methane capture for energy generation and photovoltaics to achieve "net zero energy" building.
- Improve wayfinding/directional signage. Provide mileage markers along trail.

Address deferred maintenance and existing facility deficiencies

- Renovate the Great Spirit Path art piece
- Replace steep, eroding paths (ie. 3:1 slope) with stairs.
- Replace existing restroom and raise existing infrastructure (ie; entrance road, parking, Bay Trail) to address sea level rise.
- Upgrade landfill gas and leachate collection and monitoring systems.

Provide a comfortable, friendly, safe and more accessible user experience

- Improve the Marsh Rd intersection to make it safer for pedestrians and bicycles to access the park from

surrounding neighborhoods. Enhance the park entrance to make it a more pleasant experience.
- Increase public access to summits and points of interest by providing all-weather, accessible trail surfaces.
- Separate uses (bikes/pedestrians/vehicular) to minimize potential conflicts.

Acknowledge that future stewards of the park start with today's youth

- Create educational opportunities, particularly for school-age children.
- Consider educational trail loops, group seating areas, and support for summer camps.
- Emphasize learning about marsh habitats and landfill systems, to reflect the park's unique history and location.
- Use "green" building methods when possible.

Identify and integrate revenue generation mechanisms into the park structure, to ensure the long-term sustainability of the park

- Consider revenue sources for both short term capital improvements and long-term maintenance requirements.
- Create revenue structure that acknowledges park use by both City residents and non-City residents.

2 Planning Process

Existing Conditions

The master planning process took place in 2017 and consisted of community engagement events and collaborative partnerships with the City of Menlo Park and various community groups. The planning process for developing the master plan included evaluating the existing conditions of the site to determine the park's needs and opportunities.

Preliminary steps included a site assessment, which included researching the park's history and reviewing park-related documents. Latter stages of the planning process included conducting outreach events to collect community input, developing preliminary and preferred concept plans, and providing an approved comprehensive document that includes a park master plan, funding plan, design guidelines, and this summary report.

Figure 4 is an existing conditions map, which illustrates observations of specific features within the park's boundaries. This map incorporates landfill infrastructure information, physical park attributes (i.e. tree canopies and pathway types), and experiential attributes, such as noise and wind direction. The map also shows flooding potential and habitat areas. The map helps illustrate significant features in the park and the immediate area to best understand current park conditions.

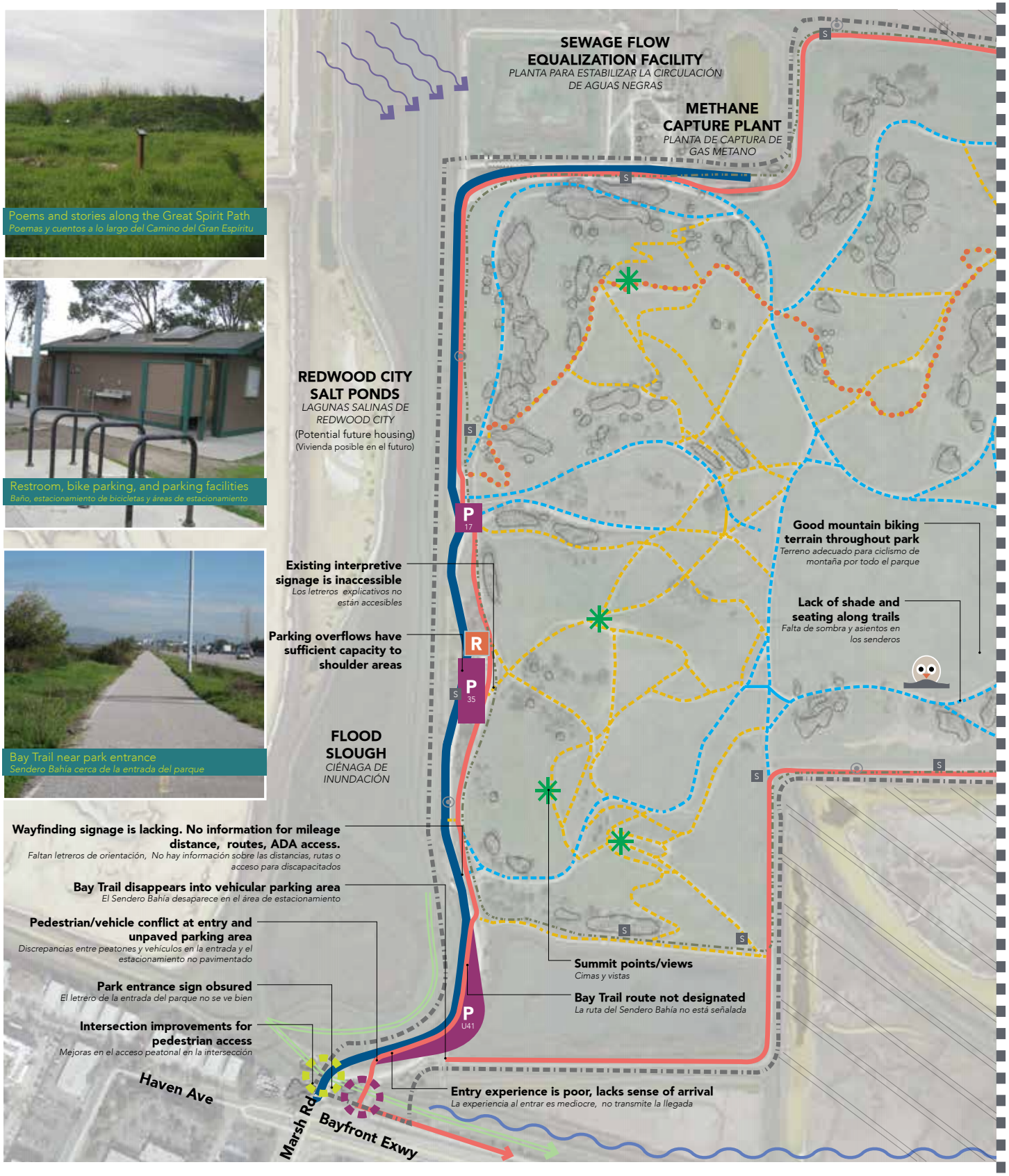
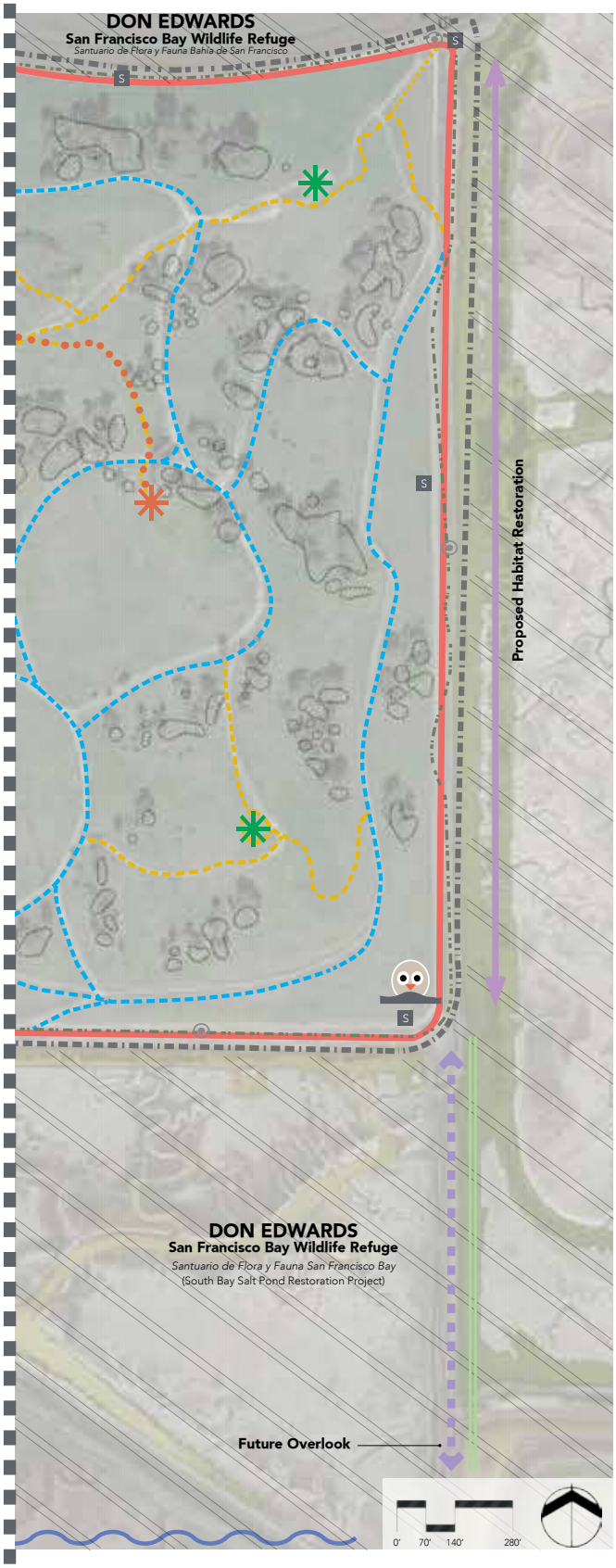


Figure 4 *Existing conditions map*



Legend / *Signos*

- Project limits — *Límites del proyecto*
- Tree canopy — *Follaje arbóreo*
- Paved parking (# stalls) — *Estacionamiento pavimentado (#espacios)*
- Unpaved parking (# stalls) — *Estacionamiento no pavimentado (#espacios)*
- Restroom — *Baños*
- Primary pedestrian/bicycle access point — *Punto de entrada para peatones y ciclistas*
- Vehicular access — *Entrada de vehículos*
- Point of interest — *Puntos de interés*
- Great Spirit Path — *El Camino del Gran Espíritu*
- Roadway — *Carretera*
- Bay Trail — *Sendero Bahía*
- Roadway noise — *Ruido de la carretera*
- Windy — *Parte ventosa*
- Burrowing owl habitat — *Hábitat de Búho Llanero*

Pathways / *Caminos*

- Gravel/paved trail — *Camino pavimentado*
- Unpaved trail — *Camino no pavimentado*
- Proposed trail — *Sendero sugerido*
- Proposed levee/floodwall — *Dique/muro de contención sugerido*

Landfill features / *Características del Vertedero*

- Subsurface piping — *Tubería subterránea*
- Extraction well — *Pozo de extracción*
- Leachate extraction sump — *Pozo de extracción de lixiviados*
- Groundwater monitoring well — *Pozo de control de aguas subterráneas*
- Limit of future sea level rise — *Área bajo agua debido a una subida del nivel del mar de 3'-0" en el futuro*
- Protected/sensitive habitat — *Hábitat susceptible/protegido*

Existing Site Images

Figure 5 *Images taken during a site visit to assess existing conditions*

Site Assessment

The existing site conditions at the park were evaluated through the review of documents, site visits to the park, and conversations with local interest groups. Discussions with interest groups helped the design team learn about the park's landfill operations, local wildlife species, and concurrent planning projects around the area, such as SAFER Bay and the Salt Pond restoration projects. Due to the park's unique location and construction, it was also important to assess the park's traffic patterns to monitor park usage, the park's relationship with the adjacent refuge and waterbodies, and prior uses of the park, such as glider use and area allotment required. The next section looks at an assessment of these topics.

Traffic Assessment

A traffic count was obtained in mid-March to evaluate the number of visitors over a week's time. Counts were taken each day for a week, from Tuesday March 14 to Monday March 20; counts were taken during a time with no holidays to avoid skewed counts due to irregular visitation patterns. The traffic counts showed the number of cars to enter and exist each hour of the day (between 6 am and 8 pm). These numbers help illustrate turnover rates and time/day preference for park use.

On average, the park sees 859 cars a day. The highest volume day was on Saturday with 972 visits and the lowest volume was on Monday with 625 visits. These counts and traffic patterns helped inform parking demand requirements and roadway design.

Several concurrent traffic design plans were also evaluated to understand the entrance into Bedwell Bayfront Park. There are proposed improvements at Haven Avenue and Marsh Road, near the entrance into Bedwell Bayfront Park, as well as improvements near the park's entrance at Bayfront Expressway and Marsh Road. A review of both plans shows that a green bike lane next to the crosswalks at the park's entrance and along Haven Avenue and a new crosswalk on the east side of the Marsh Road/Bayfront Expressway intersection is proposed. These improvements compliment the master plan design and provide additional pedestrian and bicycle access to the park. Enhanced pedestrian and bicycle facilities for travel to the park are assumed to help manage increased vehicular travel due to nearby development, maintaining current parking demands. A complete documentation of the traffic assessment

and the concurrent traffic design plans can be found in the appendix.

Environmental Assessment

A biological assessment was conducted in late March to evaluate the feasibility of recreational uses for the park. The assessment A biological assessment was conducted in late March to evaluate the feasibility of recreational uses for the park. The assessment included preparation of an Initial Study (IS) checklist. The checklist is typically used to determine if a proposed project may have a significant effect on the environment [CEQA Guidelines Section 15063 (a)]. For this project, the checklist was used as an informational planning tool to assist the project team in development of the park master plan. The checklist included looking at environmental factors that would be potentially affected by the master plan improvements and considered the park's structure as a landfill and surrounding land uses (i.e. open space (Don Edwards San Francisco Bay National Wildlife Refuge), Redwood City salt ponds, sewage flow equalization facility, and commercial and residential uses south of State Route 84.)

The environmental factors that would be potentially affected by this project, involving at least one impact that is "Less than Significant with Mitigation Incorporated" includes:

- Biological Resources
- Hydrology/Water Quality
- Transportation/Traffic

A complete documentation of the environmental assessment and the proposed recommendations to mitigate significant impacts can be found in the appendix.

Biological Resources

Two wildlife species that are both State and Federally Endangered are known to occur nearby: Ridgeway's rail occurs on Greco Island, and salt-marsh harvest mouse has been found in parts of Flood Slough. Focused surveys for wildlife were not conducted; however, the predominance of non-native plants within the majority of the park, limits the value of the site for breeding birds. In addition, the need to occasionally control deep burrowing animals from penetrating the 6-foot deep cap on the old landfill, limits the potential for burrowing owls to breed on the site, although they are occasional transient visitors. The tidal pond is likely too small of a habitat area to support a population of salt-marsh harvest mouse, and the tidal pond did not appear to have adequate areas for this species' upland refugia they need to escape high tides. No other special status species are expected to regularly inhabit or breed within the park; however, there have been

occasional sighting of special status birds during migrations.

Hydrology/Water Quality

Surface runoff from the project site currently percolates into the ground near the landfill collection system, collects as seasonally ponded water, or sheet flows toward Flood Slough or other portions of San Francisco Bay. There are no storm drain systems within the park. Development of new recreational facilities, including additional paved parking lots would potentially result in an increase in the rate and volume of surface runoff; however, the master plan includes stormwater treatment areas adjacent to the parking lots and paved trails. These stormwater treatment areas will manage the quantity and quality of storm water run-off before it enters San Francisco Bay.

Transportation/Traffic

The proposed project is not expected to include any roadway improvements which would substantially increase traffic hazards. During construction, truck traffic entering and exiting the site access road(s) could result in a temporary intermittent impact to the motor vehicle, pedestrian and bicycle use on local roads and arterials, but this would be less than significant with implementation of a construction-period traffic management plan. Non-motorized radio-controlled gliders could cause potential conflicts when flown in close proximity to park users using multi-use trails and small group picnic areas. Measures are recommended to avoid/reduce hazards between gliders and the various park users. It should be noted that prior glider use did not result in any known incidents.

Landfill Assessment

An active landfill gas collection and control system (GCCS) has been installed and operating at the former landfill since late 1980's. The GCCS consists of approximately 75 landfill gas (LFG) extraction wells installed vertically within the waste mass connected to a network of LFG collection piping which route extracted LFG to an onsite LFG flare for combustion. The flare station is located on the east side of the property and blowers are used to impart a vacuum on all the gas extraction wells via buried piping network. Due to the age of the GCCS, many of the vertical wells have become inundated with water or have been damaged due to forces of landfill settlement. Additionally, horizontal buried piping that conveys LFG to the flare station have also settled similarly and have collected water, thereby blocking the flow of LFG to the flare station. In 2014 through 2016, the City's LFG consultant conducted a thorough evaluation of the GCCS and prepared a list of recommendations to improve LFG recovery efforts.

These recommended improvements include:

- Decommissioning damaged LFG extraction wells
- Installation of replacement LFG extraction wells
- Replacement of watered-in piping
- Addition of pneumatic pumps within vertical extraction wells for dewatering and increased LFG extraction

In addition to the LFG recovery improvements, the City requested their LFG consultant to evaluate several technologies to determine the feasibility of utilizing residual LFG supplies for beneficial use as "biogas". Beneficial uses of biogas from landfills typically includes power generation using the heating content of the LFG, generation of compressed natural gas (CNG) for use in vehicle fleets, the direct use of biogas in boilers, or the direct injection of biogas into the local natural gas pipeline. Considering the age of the landfill, and the diminishing supply of biogas, only power generation and CNG were evaluated in a feasibility study for the remaining biogas. The evaluation is currently in progress.

Unmanned Aircraft System (UAS) Assessment

On August 23, 2016, the Menlo Park City Council approved Section 8.28.130.5 to prohibit all model aircraft in the City's parks, including Bedwell-Bayfront Park. The ordinance prohibits "motor-driven vehicles or models, including drones and unmanned aircraft systems, except in designated areas, and except for the use of drones by public safety personnel for emergency operations". No areas in any of the City's parks are currently approved for model aircraft use under the exception clause of this code; however, it was stated by the City Council that the master plan for Bedwell Bayfront Park would allow an opportunity to consider establishing a designated area for model aircraft. Factors to be considered include: the comfort and safety of all park visitors, risk to wildlife in the park and the surrounding wilderness area, risk to manned aircraft, permit requirement, establishment of rules for model aircraft operation, and feasibility of rules enforcement.

Model aircrafts come in all types and sizes, from the tiniest indoor free-flight hand thrown glider models to ¼-scale aircraft powered by 2-cycle internal combustion engines. Typical radio-controlled (RC) model aircraft range from unpowered gliders and electric motor assisted gliders to motor/propeller driven airplanes and helicopters. Within a 36-mile radius of Menlo Park there are currently 8 privately owned model aircraft flying fields associated with AMA charted clubs and 6 public parks or schoolyards (some associated with chartered AMA clubs) where some types of model aircraft flying are permitted. The public parks that specifically allow and regulate some types

of model aircraft include Rancho San Antonio Open Space Preserve in Santa Clara County, Windy Hill Open Space Preserve in Portola Valley, Coyote Hills Park in Newark and Mission Peak Regional Park in Fremont.

Hobbyists began flying model gliders at Bedwell Bayfront Park as early as 1986, shortly after the park was opened and before trees matured. The breeze that sets up consistently in the afternoons from early Spring through late Fall is forced into updrafts in front of the various small hills in the park. Flying gliders on these updrafts is called "slope gliding". Motor-driven model aircraft and gliders that use thermals to stay aloft have mostly been flown at the large meadow area. Most of the model aircraft hobbyists flying motor driven models tended to station themselves at the southern edge of the central meadow. Hand-launched gliders and motor assisted gliders, as well as a few gliders launched by "hi-start" (stretched rubber tubing and string serving as a glider slingshot) were mostly flown from the northern edge of the meadow. This is because the prevailing breeze generally blows from north to south and gliders naturally follow the breeze to keep up with passing thermals.

The environmental assessment noted several concerns regarding glider use at the park, and additional research to set parameters for glider use was conducted.

Key findings included:

- The range a glider can go is dependent on the capabilities of the pilot, the glider design, and the weather.
- The meadow is a good flying area because it is large and open, and it does not have any paths that cross through it. At the launch of a glider, it takes seconds for the glider to reach 100-feet significance. By keeping the gliders in the meadow, they are visible, and the pilot can land the plane if a pedestrian is spotted around the area of the meadow.
- Landings are often the slowest part of the flight, while the launch is the quickest. Thermal climbs are faster, and the glider can reach a speed of about 15mph. The control of the glider is dependent on the pilot, but control of the glider is not impacted by the size of the plane.
- In the past, a park ranger informed glider users to stay out of the middle of the meadow to limit the amount of foot traffic through the middle that might disrupt local wildlife. Glider pilots can launch from the north edge and can control the glider landing location, without having to walk into the meadow's interior.

Community Process

Public participation is a prioritized aspect of this project. Four (4) public outreach events and several informational pop-up booths were hosted as a part of the outreach process. Community Meeting #1 was held on April 8th at the Menlo Park Senior Center, Community Meeting #2 was held on June 17th at Bedwell Bayfront Park, Community Meeting #3 was held specifically for the Belle Haven community on August 10th at the Menlo Park Senior Center, and Community Meeting #4 was held on October 25th at a Parks and Recreation Commission meeting at the Senior Center in the Belle Haven community.

A significant part of the master planning process is to provide the opportunity for the public to voice their "wish list" items for the park. A long list of potential park features were proposed to the public and, through input provided at community workshops, park amenities and activities that received a majority of the community's support were included in the master plan. Features found on the final plan are a product of an iterative community outreach process.

The public was notified about these events through an extensive community outreach process, shown in Figure 6. Several pop-

Outreach events

pop-up booths


Farmers' market


On-site pop-up booth

community meeting #1


Off-site community meeting

community meeting #2


On-site community meeting

Figure 6 *Images taken of various outreach events*

up and outreach events were held over the course of several months to inform the public and potential project stakeholders of the upcoming input opportunities. The general community was notified via newsletters that were sent through the City's utility bills during the weeks prior to and after the first community workshop in April. Several information booths were hosted by the City and the design team to help promote the upcoming community meetings; booths were held at the Farmer's Market downtown on March 19th, on-site at the park on March 25th, April 1st, April 22nd, and May 13th, at the City's summer concert series, during the july 4th festival, and during National Night Out on August 1st. Digital notifications included City website updates, e-mail blast from the City, and posts to Nextdoor and on the project Facebook page. Ads in the Belle Haven newsletter also helped reach neighbors in close proximity to the park. Visitors to the park were greeted by on-site posters at each of the parking areas, brochures in the entry kiosk, and a marquee/electronic reading board with upcoming meeting information. Additional notification posters were placed at kiosks and community bulletin boards at other City facilities (i.e. libraries, community centers, and parks).

Figure 8 summarizes the various notification methods used for each public meeting.

Figure 7 *Examples of just some of the notification methods used to get the word out*

Outreach Notification Method	Community Meeting #1	Community Meeting #2	Community Meeting #3	Community Meeting #4
Update City webpage	x	x	x	x
Update Facebook page	x	x	x	x
E-mail blast to various stakeholder groups	x	x	x	x
E-mail blast to NextDoor	x	x	x	x
Ad/notice in Belle Haven newsletter*	x	x		x
Direct utility billing*	x			
On-site marquee / electronic board	x	x		x
On-line survey for Open House*	x	x	x	x
E-mail blast to Open House #1/2 attendees		x	x	x
Project outreach at community events	x	x	x	x
Project outreach on-site	x	x		
On-site posters*	x	x		x
Place Posters at other City parks*	x			
On-site brochures*	x	x		x
Event translator for Spanish speakers*	x	x	x	

**Resources available in Spanish*

Figure 8 *Outreach Plan summarizing the various notification methods for public meetings*

Stakeholder and Agency Coordination

The planning process sought to develop as a collaborative effort between project stakeholders and related agencies. Project stakeholders were identified and sent periodic updates about the project and potential input opportunities. A stakeholder is identified based on their potential impact with shaping the project. Stakeholders include the Oversight Group, the Interagency members, and the community, which together, represent local and regional groups that can contribute to the park. The Oversight Group consisted of members representing various community perspectives and helped review presentation materials before they were shared with the general public. The group consisted of an M-2 business, public-at-large, Parks and Recreation Commission, environmental quality commission, environmental protection and conservation, Friends of Bedwell Bayfront Park, and City of Menlo Park. Meetings with the Oversight Group were held before each Open House. Members of the interagency group include:

- San Mateo County (Environmental Health and Solid Waste Program)
- United States Environmental Protection Agency (EPA) Region IX
- Bay Area Air Quality Management District (BAAQMD)
- Regional Water Quality Control Board (RWQCB)
- San Mateo County Environmental Health Services Division
- CalRecycle
- West Bay Sanitary
- APTIM (formally CB&I)
- San Francisco Bay Conservation and Development Commission (BCDC)
- Regional Water Quality Control Board
- United States Army Corps of Engineers
- Association of Bay Area Governments
- California Department of Fish and Wildlife Services
- U.S .Fish and Wildlife Services
- National Marine Fisheries Service
- Coastal Conservancy
- California Air Resources Board (CARB)

Oversight Group, Interagency, and community meetings were held to shape the development of the park master plan shown in this report. A list of these meetings are shown in Figure 9.

Meeting	Date	Purpose
Kick-off Meeting	2/8/17	Kick-off the project and review outreach strategy
Oversight Group Meeting #1	3/23/17	Review project goals and open house format and materials
Community Meeting #1	4/8/17	Solicit community input on what they would like to see for Bedwell Bayfront Park
Oversight Group Meeting #2	6/8/17	Review open house results and design alternatives
Community Meeting #2	6/17/17	Solicit community input on the three design alternatives
Interagency Meeting	7/12/17	Solicit input on the three design alternatives
Community Meeting #3	8/10/17	Solicit community input on the three design alternatives in the Belle Haven neighborhood
Oversight Group Meeting #3	9/13/17	Review open house results and preferred plan
PRC #1	10/11/17	Present preferred plan to community
Community Meeting #4/PRC #2	10/25/17	Solicit community input on the preferred plan
City Council Meeting	11/14/17	Solicit input and approval on the park master plan

Figure 9 *Project meetings*

Community Meetings

Community Meeting #1

The community meetings have been a primary means to obtain input. Community Meeting #1 occurred on Saturday April 8th at the Senior Center in Belle Haven from 10 am to 2 pm. It was a very rainy day, but 50 people signed in at the event, and 39 people completed a response packet. The packet was the primary collection tool used to gather feedback at this event and asked participants to review materials and respond to questions that helped to identify preferred activities and amenities for the park.

One of the most significant questions asked at the event was for participants to define "passive recreation". Bedwell Bayfront Park was founded as a passive recreation park, but the definition of this meaning ranges in interpretation. The public was asked to respond to a grid of images that described passive recreation from less active to more active activities. The public was also asked to respond to park amenities images to help indicate preferred amenities to include in the master plan.

As a result, a majority of participants support As a result, a majority of participants support more active activities, such as fitness, than less active. Participants also support preserving the park's natural qualities and keeping a majority of the trails unpaved. Input gathered at Community Meeting #1, both from the meeting and through the online survey, was utilized to generate concept alternatives. Results from Community Meeting #1 were summarized and made available at Community Meeting #2.

Community Meeting #2

Community Meeting #2 occurred on Saturday, June 17th at Bedwell Bayfront Park from 10am to 2pm. In the midst of a heat wave, 60 people signed in at the event, and 56 completed response packets. At this event, the packet asked participants to review the materials and respond to questions to help identify concept plan preferences. Participants were presented with two (2) plan alternatives to respond to.

Each plan alternative included unique park features and varied in the design, amenities, and materials used. Participants were asked to select a preferred plan and provide input on features they liked, disliked, or would like to change. This method allowed participants to customize the plan by providing comments on park features and describing what they would change about the design, if anything. A third option, or a "Do Nothing" option, was not provided because the design team wanted the public to respond to specific concepts and describe why certain

features are desired or undesired in order to have enough qualitative data to design a preferred plan to present at Community Meeting #4.

Participants showed a slight preference for Plan A, but were fairly split in preference for Plan A, Plan B, and electing to select no plan. A majority of participants were in favor of preserving existing uses (i.e. walking, jogging, biking on paved paths), having accessible paths and summits, and the addition of picnic tables and educational signage. A majority of participants supported nature play and a kayak launch, where a slight majority did not support the inclusion of non-motorized hand-launched model gliders in the park master plan.

Community Meeting #3

Community Meeting #3 was scheduled after Community Meeting #2 in response to the low numbers of Spanish-speaking participants involved in the input process at prior events. A significant percentage of park users speak Spanish and live in the Belle Haven community, less than 2 miles from the park. Open House #3 used the same materials as Community Meeting #2 but used fully translated response packets and two (2) Spanish interpreters.

Turn-out to the meeting was greater than the returned number of response packets. 21 packets were turned in and a majority of the participants said they preferred neither plan. Many of the responses matched the feedback from Community Meeting #2. The greatest amount of support was for habitat restoration, trail surfacing, picnic tables, and screening trees.

Community Meeting #4/Parks and Recreation Commission Meeting

The draft park master plan was presented to the public at a third community workshop held on October 25, 2017 at a Parks and Recreation Commission meeting at the Senior Center in the Belle Haven community. The purpose of the workshop was to obtain input from the community and obtain direction from the Commission as to how the draft park master plan should be further refined. The Commission expressed its desire to xxx, xxx, and xxx. Based on the input received, the final park master plan was developed. More participants supported…(To be completed after the meeting)

City Council

The plan was presented to City Council at a meeting held on November 14, 2017. The purpose of the meeting was to obtain Council input and approval for the park master plan. The community had an opportunity to voice their opinions at this meeting. The Council expressed its desire to XXXX. The Council provided the following direction to the design team: (To be completed after the meeting).

3 Master Plan

Park Master plan

The park master plan includes design recommendations that were influenced by the public during community outreach events. The plan considers key factors that the public view as significant design considerations, and include design guidelines to provide recommendations that fit the park's natural and passive recreation aesthetic.

The master plan is based on community input and interdisciplinary collaboration, and adheres to the park's character as a passive recreation destination. The master plan includes features that touch on four main points:

- Accessibility Improvements
- Educational Opportunities
- Environmental Considerations
- Publicly-supported passive recreation enhancements

The master plan seeks to expand the accessible trail system while preserving the natural qualities, introduce educational learning opportunities about Bedwell Bayfront Park as an existing landfill and current habitat, and provide site amenities that the public supported.

Accessibility Improvements:
Accessibility improvements will provide an inclusive trail system for people of all abilities to experience the park's features. Improvements include widening, (re) paving, and (re)grading pathways, providing wheelchair access to summits, and introducing a treated trail that provides the natural qualities of a gravel trail while being a stabilized surface to meet ADA standards.

Educational Opportunities:
Bedwell Bayfront Park is a unique open space because it exudes the look of an untampered natural environment, yet it is built above a capped landfill and is constrained by the Bay and the Don Edwards San Francisco Bay Wildlife Refuge. This aspect of the park will be described and celebrated through a series of educational opportunities at the park's interior. Educational opportunities feature informative signage, such as the story of the landfill and explanations about the process of methane capture and the flare that can be viewed from a portion of the park. Other informative signs discuss environmental features, such as local bird species and how water levels fluctuate in the tidal ponds.

Environmental Considerations:
While the park is human-made and came to exist after the closure of the landfill, people often view the park as an environmental gem in the region. The plant and animal species that can be viewed from the park are a large attraction for visitors. It is important to protect these qualities and provide restoration and preservation, such as native plant restoration and stormwater management, wherever possible. Construction during implementation of the master plan will be carefully monitored to reduce impacts to habitat species. Sea level rise is a significant environmental consideration for the park, as most of the park's edges will be impacted by projected changes in sea level. The master plan will account for these changes and provide relief from sea level rise impacts.

Passive Recreation Enhancements:
Key park features include:

- Walking/hiking/jogging
- Bird watching/kite flying
- Biking on additional paved trails
- On-leash dog walking
- New restroom/ranger office
- Orienteering/geocaching
- Great Spirit Path
- Bay Trail
- Accessible paths
- Accessible summits
- Screening trees
- Habitat restoration
- Picnic tables and benches
- Fitness course
- Nature play
- Kayak launch
- Paved/gravel parking
- Park ranger

Figure 10 *The master plan*

Design Guidelines

The park's Design Guidelines will be utilized to help guide the development of Bedwell Bayfront Park. They reflect unique considerations, including the park's proximity to the Don Edwards San Francisco Bay National Wildlife Refuge, the park's shared use as a landfill, and the emphasis on passive recreation.

The Park Design Guidelines addresses:

1. Character
2. Access and Parking
3. Trails and Pathways
4. Site Furnishings
5. Structures
6. Signage and Wayfinding
7. Landscape
8. Destinations and Points of Interest
9. Other Items to Consider

Images show examples of improvements and help illustrate Design Guideline concepts. Images are graphic details and do not represent selected site features.

1. Character

Character is selecting and designing site amenities to fit the atmosphere and geographic location of the park. The park is exposed to sea-air and full-sun conditions. Site furnishings should consist of wood or plastics that avoid corrosion and will not crack or become too hot to use. The natural tone of wood fits the open space aesthetic of the park and is the preferred furnishing option. Wood will need to be maintained and sealed to preserve the use and quality of the product..

Natural character and open space

2. Access and Parking

Access and parking includes vehicular park uses, such as roadways, parking areas, and maintenance roads. See Figure 8 for an enlargement of the entrance area.

- Vehicular access will be served by March Road, along Flood Slough.
- Parking areas will have defined parking stalls to maximize capacity. A new gravel parking lot and expanded existing parking areas will meet parking demands.
- Parking areas include two (2) paved parking lots, a gravel parking lot, gravel parking areas for parallel parking, and undesignated parking is likely to continue.
- Maintenance roads will be provided on the park's perimeter via the Bay Trail and interior via gravel. Maintenance

Vehicular turn-around - *Trail Link*

Gravel parking

Figure 11 *Park entrance area enlargement*

access is required for trash collection, landfill operations, and emergency events.

- The park's entrance will include a turn-around before the automated control arms for vehicles who do not wish to enter the park

3. Trails and Pathways

Trails and pathways includes pedestrian and bicycle circulation. Pedestrian circulation includes trails (paved and unpaved) in the park's interior and other pathways or sidewalks along the perimeter of the park. Bicycle circulation areas include the Bay Trail, bike parking, and interior bike trails. Figure 12 shows the different trail types included in the master plan.

Bicycle Access

- The Bay Trail will be 10'-0" wide with a 3'-0" wide treated shoulder on one side of the path (for joggers/pedestrians).
- Access to the park for bicycles is located at the entry to park off of the Bay Trail, shown in Figure 11.

Pedestrian Access

- Trail types include wheelchair accessible and non-accessible routes. Accessible routes will be paved with asphalt or treated surfacing and will be a minimum of 6'-0" wide and no more than 5% longitudinal slope. Non-accessible

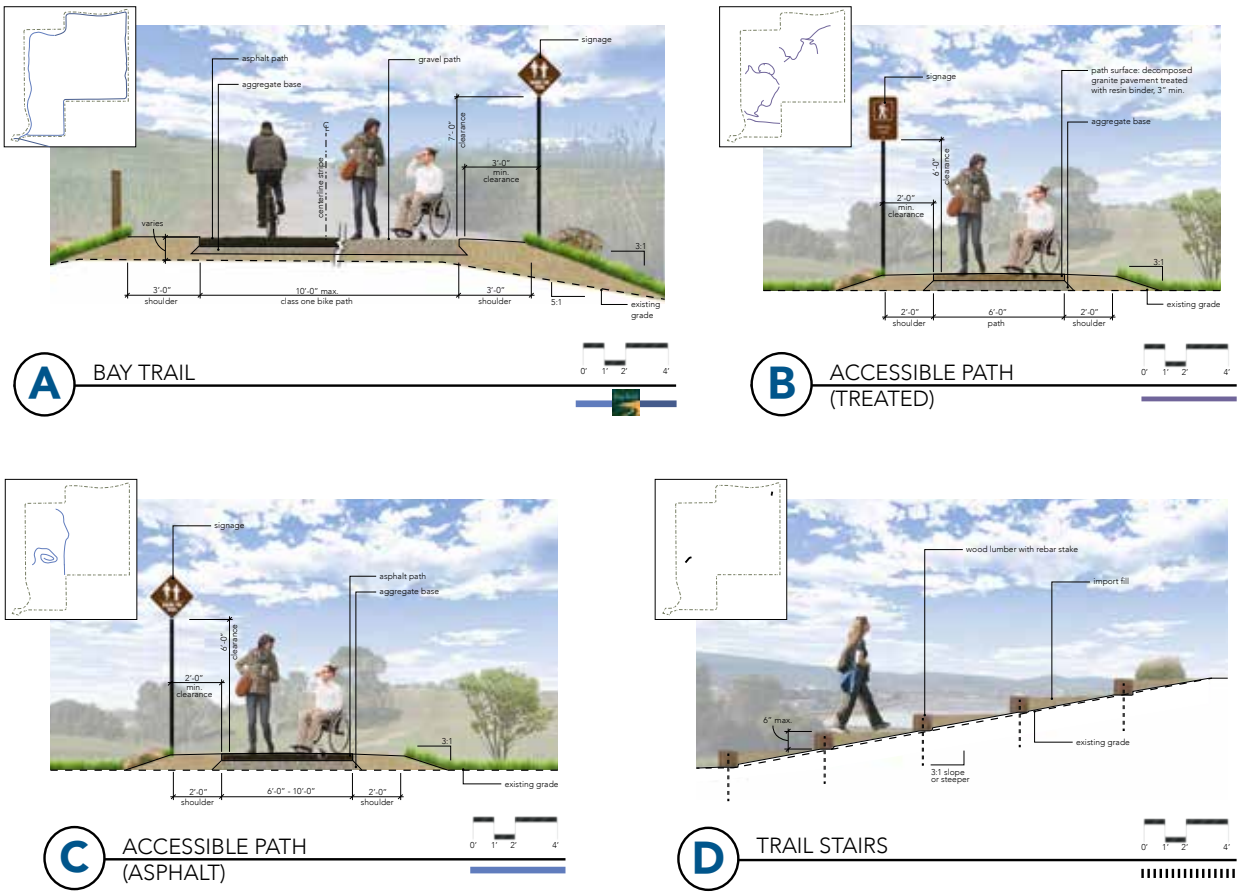


Figure 12 *Trail type sections*

routes are unpaved and have varying widths and slopes.

- Treated trails use a NaturalPave XL Resin Pavement, or similar; this pavement retains the natural coloration and texture of the constituent aggregate materials and offers a stabilized surface for accessible use with maintenance.
- Paved trails will be asphalt and should be sealed and maintained on a regular cycle.

4. Site Furnishings

Proposed site furnishings shall have a consistent design aesthetic that supports the open space qualities of the park and the Bay-side location. Colors and materials for site furnishings are to be compatible with the restroom and other site features and need to be approved by the City.

Picnic Tables and Benches

- Provide tables and benches at various locations, as shown on the plan. Picnic tables can be set individually or grouped to support conversation and gathering, for viewing activities or pleasant views, and for direct supervision of children.


Bench


Bike rack - *Forms and Surfaces*

Drinking fountain - *Murdock*

- Provide a minimum of one table, per ADA and Title 24 Standards, on an accessible path. Ensure that at least one side of the table is open with four-foot (4') clearance between picnic tables or other obstructions.
- Set benches back from circulation paths so that passersby do not disturb bench sitters.
- Benches will be placed to maximize shade in the summer and sun in the winter.
- Wood furniture, or match existing site furniture.

Bike Racks

- Bike racks will be provided near parking areas and primary activities.
- Back racks will be hoop racks and allow a minimum of three (3) bikes to park at each cluster.
- Bike racks will have a galvanized finish to be corrosion resistant.

Drinking Fountains

- The drinking fountain will be located at the restroom area and include accessible fountains and a bottle-filler.

Trash Receptacle

- A trash receptacle will include recycling and be placed near all high-use areas.

5. Structures

A small ranger office is proposed to adjoin the restroom and provide a place

to store materials and have a small work space. Nature play uses naturally-sourced materials for creation of an exploratory play area. All proposed structures will have an aesthetic that blends with the landscape through the selection of natural colors and finishes. See Figure 11 for an enlargement of the ranger office and restroom area.

Ranger office - *Royal Wolf*

The Building

- Fixtures will be stainless steel and heavy duty.
- Use a polished concrete sealed on the floors with two (2) coats of anti-graffiti stain.
- Do not use tile or brick on outdoor sinks.
- Install at least one (1) outdoor GFI quadruple outlet with a heavy-duty, weather-resistant, vandal-proof, lockable cover.

Nature play - *Greenworks*

Nature Play Area

- Nature play area shall be 5,000 square feet minimum and be designed for 2-12 year olds.
- Surface material will be engineered wood fiber to emulate a natural "forest floor."
- Use natural colors for play components.
- Provide a shaded grouped seating area and individual benches for direct supervision of children in play areas.
- Provide an access ramp into the play

Wood fiber surfacing
Oregon State Parks

Figure 13 *Restroom and ranger office area enlargement*

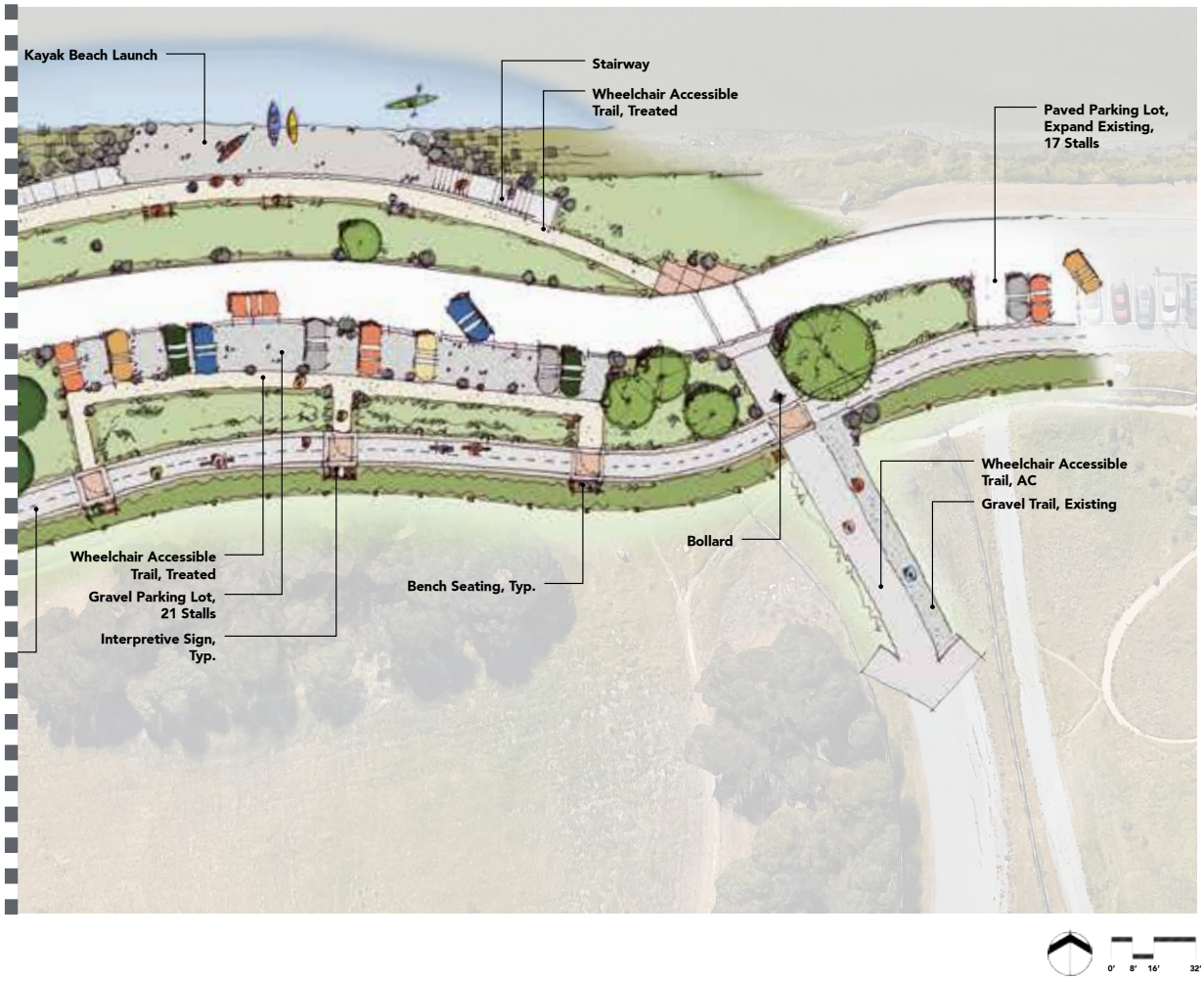
area.

- Playground design shall comply with the latest requirements of the American Society for Testing and Materials, ASTM F1487 – 17 (Playground Equipment for Public Use)
- Playground equipment components shall be constructed primarily of stone and wood for a natural feel.
- Design shall consider durability and the long-term maintenance requirements of the specific equipment, as well as the potential occurrence of vandalism and graffiti.
- The design and equipment shall include a variety of play elements (slide, climb, balance).

Kayak Launch

The choice of materials used to construct launches is particularly important in an environmentally sensitive area. Materials that require little onsite alterations and are least toxic are the most preferable for these sites. Natural surface designs are the most ideal for launches in areas of fluctuating water levels.

- The kayak launch will be constructed as a low sloping beach and provide an adaptable access point at various water levels.
- The kayak launch will be constructed with accessible routes, which includes a concrete stairway and walkway.

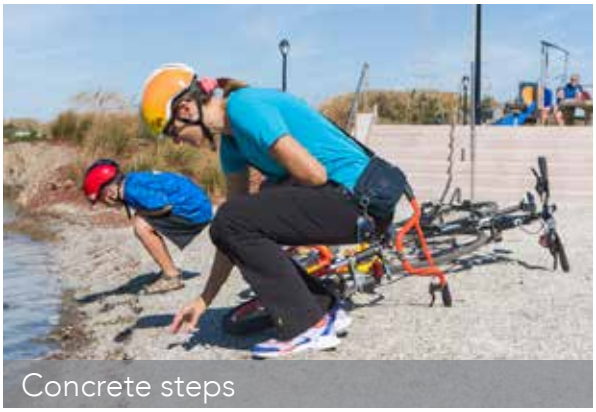


- Use of the kayak launch will be limited based on tidal patterns, local habitat, loading/unloading space availability, and park hours.

6. Signage

There is a hierarchal structure to the use and intention of signage types. Signage types include regulatory, informational,

Kayak launch - *Virginia.org*



Concrete steps

Water activities signage
Little Rock District

Dog use signage with dispenser


Ranger enforcement - *Glacier.org*

interpretive, wayfinding, gateway, and an overall park map.

Regulatory

Bedwell Bayfront Park includes several activities that require regulatory signage to maintain a level of control in the park. Activities include non-motorized water activities and on-leash dog walking and dog clean up. These activities require signs posted at entry kiosks and at areas of these activities to inform park visitors of the regulatory expectations and penalties for misconduct.

- Water activities regulations to be posted at the boat launch along Flood Slough. Regulations to include tidal information and habitat protection warnings, such as nesting season and seasonal migrations of protected species.
- Dog use regulations to be posted at high-use areas around the park and should be posted with a dog bag dispenser attached. All dogs shall be on a leash at all times and owners shall be responsible for picking up after their dog and disposing of waste in a trash can.
- The park ranger will be responsible for enforcing park regulations.

Informational

Kiosk signs are informational signs used to inform visitors of park amenities, trail routes, and notices. Kiosks also provide the park map brochure. Educational signage

- Locate at kiosk location and at restroom area.
- Kiosks are wooden and provide a large informational space for permanent and temporary postings.
- Stone benches are built into post legs to provide resting spaces.
- Kiosks have a small overhang to provide shade.

Interpretive

Interpretive signs provide educational information to park visitors. Two types of interpretive signage are to be used: one for general park information and the other as an educational resource. General interpretive signage is currently available at the park. These signs are degraded and shall be replaced with new panels to match the aesthetic of other proposed park signage. General panels shall be placed at high use areas (i.e. restroom area and along accessible trails) and feature information about park history, the landfill, and other park details.

- Educational panels will provide topic information about three areas of interest: landfill infrastructure and function, local habitat found at Bedwell

Kiosk - *Wisconsin Historical Markers*

Kiosk
Grand Rounds Branding & Design

Educational panel

Exploratorium - *The Exploratorium*

Directional signage

Mile marker

Bayfront Park, and Bayland behavior witnessed around the park.

- Educational signage is integrated with other site features and includes sign panels to lean on and nearby boulders and shade trees as resting areas.
- A partnership with the Exploratorium may generate ideas for educational node concepts and the implementation of each educational loop.

Wayfinding

A type of directional signage used for trail routes, destination point, and overall park orientation. Wayfinding signage uses the same aesthetic as other signage in the park, but features pictorial graphics and icons to visually denote directional cues. Wayfinding signage is used at decision points where paths cross and along educational loops to identify the entirety of the loop. These signs are designed as:

- Signs will be of two types: large wayfinding posts with multiple directional cues and small posts for educational loops and accessible trails.
- The sign is made of blue plastic and includes white graphics.
- Graphics include mile marker information, directional arrows, educational loop icon, and simple language.
- Signage should be posted on a wood post of prescribed height: 7’-0” for large post and 2’-5” for small post.
- Mile markers include trail distances.

Trails are keyed in the park map.

Gateway Sign

- The corner at the east side of the entrance will feature a monument gateway sign with low growing landscaping for sign legibility and uplighting for maximized visibility.
- The monument sign will be curved to be viewed from all intersection directions and will be approximately 15'-0" wide and 8'-0" tall to clearly show the City's and the park's name.
- The sign will be made of stone and pre-cast concrete and will reserve the same natural colors as other site features.

Park Map

A park map will be a trifold design with trail and amenities information and also feature park history, ecological and landfill information, and important contact information. The park map shall be updated every 5 years.

7. Landscape

Landscaping for the park will be minimal and will be comprised mostly of natural habitat restoration vegetation, screening trees, and infill of plantings near the entrance roadway.

- Provide trees to screen the sewage facility in groves rather than in singles or rows in equal intervals to achieve natural growth pattern.

Gateway monument
Quinta do Vallado

Monument lighting - *OutdoorLights.com*

Park brochure


Screening trees


Stormwater management


Summit views

- Use natives in order to reduce maintenance, provide habitat, and add interest to park landscapes.
- Plant more trees of species currently found on-site and remain mindful of nesting birds and predatory species that use the tree canopies.
- Provide a naturalized area of low maintenance native grasses along Marsh Road in the park for stormwater management.

8. Destinations and Points of Interest

Points of interest within the park include the summit areas and the Great Spirit Path.

Summits

Summits are at the highest points in the park and feature views of the park, the Bay, and the surrounding area.

- Two (2) summits are wheelchair accessible, and all summits include paved pad with boulder seating.
- Each paved pad ranges from 1,500 to 5,000 square feet.
- The largest summit area in the northeast corner of the park features a picnic area.

Fitness Clusters

- Each fitness cluster features aerobic exercise equipment for a degree of ability levels.
- Equipment is made of non-corrosive metals and includes neutral paint colors

to help blend with the surrounding landscape.
- Regularly maintain equipment and post signage for appropriate use of equipment to reduce the chance of injury of equipment failure.
- Each fitness cluster has a 2 to 3 person occupancy.

Fitness cluster - *Playcore*

The Great Spirit Path

The Great Spirit Path is a route that follows a curated sculptural art form. The Great Spirit Path is an existing park feature that will be refurbished and restored by placing the art pieces on a treated pavement pad and reducing the maintenance required. Approximately half of the Great Spirit Path is wheelchair accessible.

- Update and revise the Great Spirit Path literature. Translate the material from a brochure format to an interpretive panel and locate at the beginning and mid-point of the path.
- Replace and secure vandalized or absent stonework and place stones in a treated pavement to not be moved and easily mowed around.
- Replace vandalized or absent stonework with Sonoma field stone or sandstone.
- Supervise implementation of new stonework and stay consistent with the artwork's design.

Great Spirit Path (c) S Suresh

4 Implementation

Cost Estimate

Costs for Bedwell Bayfront Park include park improvements, operation and maintenance costs, and landfill improvements. The park improvements include the community-supported features and will be implemented in phases that prioritize improvements to address flooding and those that enhance accessibility. Details about each implementation phase are noted in the section below. The operation and maintenance costs and the landfill improvement costs are separate items that may be funded and implemented differently than the park improvements. The approximate costs are based on 2017 dollars. Detailed cost estimates for all assumed expenses can be reviewed in the Appendix.

Park Improvements

Item	Estimated Cost Range
Site preparation / start-up	$ 400,000 – $500,000
Accessible trails	$ 700,000 – $800,000
Parking	$ 150,000 – $250,000
Uses and amenities	$ 1,400,000 – $1,500,000
Restroom building and utilities	$ 600,000 – $700,000
Landscaping	$ 1,000,000 – $1,150,000
Tidal flooding / Sea level rise	$ 1,100,000 – $1,200,000
Contingencies and inflation	$ 3,650,000 – $3,800,000
Design and permitting	$ 1,000,000 – $1,100,000
Estimated Project Total	**$10 million – $11 million**

Annual Operations and Maintenance

Item	Estimated Cost Range
Salaries and services	$ 250, 000 – 300,000
Capital repairs and maintenance	$ 100,000 – 150,000
Utilities, contingencies, and other expenditures	$ 100,000
Estimated Project Total	**$ 450,000 – $550,000**

Landfill Improvements

Item
Leachate and gas collection systems
Water suppression
Energy generation
Entrance road
Estimated Project Total: $4 million - 4.5 million

Phasing and Implementation

Limited available funding, permitting, and other factors require a park of this size and cost to be constructed in phases. The project is divided into three phases that prioritizes implementation based on flood impacts, accessibility, community-supported improvements, and ease of implementation. All three phases are to be completed over the next 15 years.

Phase 1

Timeframe: 0 to 5 years

Improvements to include the following:

- Address deferred maintenance and safety items (ie. sidewalk gap at Bayfront Expressway intersection, electrical panel)
- Install asphalt ADA trails
- Install treated ADA trails in the northern half of the park
- Provide site furnishings and amenities: seating, bike racks, dog bag dispenser, paved overlooks
- Install the ranger's office building
- Address the 100 year tidal event (reconstruct the segments of the entrance road and Bay Trail that are below 10.5' in elevation)

Total Estimated Cost Range: $3.3 million to $3.6 million

(Shown in Figure 14)

Phase 2

Timeframe: 5 to 10 years

Improvements to include the following:

- Install automatic entrance / gate system
- Install treated ADA trails in the southern half of the park (that serve the southern summit and Great Spirit Path)
- Provide additional site furnishings and amenities: picnic tables, wayfinding signage, and interpretive signage
- Provide nature play, kayak launch, and habitat restoration areas
- Provide parking improvements and related landscaping
- Replace restroom building

Total Estimated Cost Range: $5.7 million to $6.1 million

(Shown in Figure 15)

Phase 3

Timeframe: 10 to 15 years

Improvements to include the following:

- Address sea level rise (reconstruct the segments of entrance road and Bay Trail that are between 10.5' and 12.5' in elevation)
- Solar / methane generation
- Renovate the Great Spirit Path art piece

Total Estimated Cost Range: $1 million to $1.3 million

(Shown in Figure 16)

Phase 1: 0 to 5 years to complete

Figure 14 *Phase 1*

Phase 2: 5 to 10 years to complete

Figure 15 *Phase 2*

Phase 3: 10 to 15 years to complete

Figure 16 *Phase 3*

Implementation Schedule

Depending on the availability of funding, construction could begin within two years. It is anticipated that environmental clearance will take 6 to 12 months to complete. Construction documentation will take 9 to 18 months, depending on project phasing. Construction of the project will take 7 to 12 months, depending on phasing. If federal funds are used, these durations will likely increase due to the requirement for obtaining National Environmental Policy Act (NEPA) clearance.

Funding Plan

The BBP Maintenance Fund is a sinking fund used for expenses related to the operations and maintenance of park facilities. The City imposed a tipping fee on each ton of waste disposed in the landfill until it was closed. The Fund has a balance of $335,000 and current annual expenses of $110,000. Recommended options for funding the Park's capital improvements will include a range of funding sources and financing mechanisms, including park in lieu fees, park and recreations development impact fees, proceeds from Measure T, future General Obligation bonds, existing and future development agreements, and grant funding. Potential options for funding annual operations and maintenance include an increase of the Utility Users Tax (temporary, interim solution), a citywide parcel tax (long-term solution), and a modest hotel amenity charge. In addition, the City can consider maximizing volunteer efforts. A detailed funding plan can be reviewed in the appendix of the document.

Agency Permitting and Approvals

The improvements included in the park plan were reviewed by the project's Interagency Group to help define regulatory and permitting requirements to accomplish the implementation of all of the project's proposed features. The Interagency Group was an integral component of the implementation aspect of the project and was comprised of agencies that move regulatory jurisdiction or would be affected by park improvements. The Interagency Group met with the project team to review the park plans and determine if there were any regulatory restrictions or concerns to be addressed.

The interagency group was made up of three subsections with unique specialties. These subsections include three areas of focus:

- Landfill oversight
- Bay / Bayland oversight
- Resource oversight

The following is a brief list of the agencies and regulations that affected the planning process for Bedwell Bayfront Park and a summary of the most pertinent requirements and recommendations from those agencies:

Landfill Oversight

The Bay Area Air Quality Management District (BAAQMD) sets regulatory requirements as part of the landfill closure plan. A new flare was built in 2013 and the landfill gas is combusted in compliance with the BAAQMD permit.

The San Mateo County, Environmental Health Services Division, Health Services Department is a Local Enforcement Agency designated to regulate and inspect the solid waste landfill at Bedwell Bayfront Park.

The mission of the Regional Water Quality Control Board (RWQCB) is to preserve, enhance and restore the quality of California's water resources, which includes managing landfill-related discharge of leachate through issuance of landfill waste discharge requirements.

The California Department of Resources Recycling and Recovery (CalRecycle), formerly CA integrated Waste Management Board) administers and provides oversight for all of the state's waste handling and recycling programs. CalRecycle provides training and ongoing support for Local Enforcement Agencies

Bay / Bayland Oversight

The Bay Conservation and Development Commission (BCDC) has regulatory responsibility over development in San Francisco Bay and along the Bay's nine-county shoreline. BCDC is guided in its decisions by its law, the McAteer-Petris Act, the San Francisco Bay Plan, and other plans for specific areas around the Bay.

California Coastal Conservancy provides capital funds, development permits, and technical assistance to protect, restore and expand coastal-dependent recreation, commercial and industrial facilities and to expand opportunities for public access and use of urban waterfronts in conjunction with new development.

The mission of the San Francisco Bay Regional Water Quality Control Board (RWQCB) is to preserve, enhance and restore the quality of California's water

resources, which includes managing construction-related discharge of storm water runoff. The RWQCB is part of California's State Water Resources Control Board (SWRCB), which administers the U.S. EPA's storm water permitting program.

The United States Army Corps of Engineers (USACE) aims to provide sustainable solutions which manage the nation's water resources and protect the welfare of the people. Under Section 404 of the Clean Water Act and under Section 10 of the Rivers and Harbors Act, permits may be required if the project will impact Waters of the the United States.

Bay Area Governments (ABAG) is the comprehensive regional planning agency and Council of Governments for the nine counties and 101 cities and towns of the San Francisco Bay Region. ABAG's Resilience Program supports recovery and mitigation research, planning, and action for a resilient Bay Area. ABAG help facilitate cross-jurisdictional coordination and collaboration, research, advocacy, education, communication, and technical assistance to local governments.

Resource Oversight

The California Department of Fish and Wildlife (CDFW) is responsible for conserving, protecting, and managing California's fish, wildlife, and native plant resources. CDFW's Environmental Review and Permitting Programs implement sections of the California Fish and Game Code, California Code of Regulations, and other statutes and regulations. These Programs help fulfill CDFW's mission to manage California's diverse fish, wildlife, and plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public.

U.S. Fish and Wildlife Service (USFWS) is a federal agency that issues permits under various wildlife laws and treaties at different offices at the national, regional, and/or wildlife port levels. Permits enable the public to engage in legitimate wildlife-related activities that would otherwise be prohibited by law. Service permit programs ensure that such activities are carried out in a manner that safeguards wildlife. Additionally, some permits promote conservation efforts by authorizing scientific research, generating data, or allowing wildlife management and rehabilitation activities to go forward.

National Marine Fisheries Service (NMFS), also known as NOAA Fisheries, is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce. Using the Magnuson-Stevens Act as the guide, NOAA Fisheries works in partnership with Regional Fishery

Management Councils to assess and predict the status of fish stocks, set catch limits, ensure compliance with fisheries regulations, and reduce bycatch.

Under the Menlo Park Fire Protection District all new installations and all modifications to fire protection and life safety systems are reviewed and inspected by the Fire and Life Safety Division to that the installation or modifications meet applicable fire and life-safety codes and standards.

The San Francisquito Creek Joint Powers Authority's (SFJPA) serve the interrelated ecosystem, recreational, and disaster protection needs of the region. SFCJPA has been working on the development of projects focused on providing protection from the 100-year flood to the affected areas located in the San Francisquito Creek watershed and evaluate project EIRs.

Environmental Clearance

Prior to construction, environmental clearance must be obtained in accordance with the California Environmental Quality Act (CEQA). The project may qualify for a Mitigated Negative Declaration due to the minimal anticipated impacts on the environment that would result. A Mitigated Negative Declaration is a document that describes the proposed project, presents findings related to environmental conditions, includes a copy of the Initial Study which documents the reasons to support the findings, and includes mitigation measures, if any, included in the project to avoid potentially significant effects. The Initial Study is most likely to include an assessment of the traffic impacts and the impacts of sea level rise.

Environmental clearance and approval from the agencies listed above is required for the project to proceed to the design and implementation stage. The project will need to acquire appropriate permits and undergo additional studies to fully evaluate project impacts. Items listed below were identified by the Interagency Group or through the environmental review process as areas of concern and/or require regulatory enforcement. The review of potential impacts relates directly to the site assessment categories:

- Biological Resources
- Hydrology/Water Quality
- Transportation/Traffic

<u>Hydrology/Water Quality</u>

- Drainage calculations are suggested for the final proposed drainage plan to determine size and configuration

of retention or detention measures to avoid increased runoff which could potentially result in localized flooding.

Kayak Launch

The coastal salt marsh along Flood Slough as well as vegetated tidal flats in the tidal pond meet the definition of federally protected wetlands as defined by Section 404 of the Clean Water Act, as these areas are within the tidal prism of San Francisco Bay and are dominated by hydrophytic vegetation. As a narrow band of wetland runs the entire length of the Flood Slough, development of a kayak launch facility along the Flood Slough shoreline could impact to federally protected wetlands. The exact amount of impact will depend upon the exact location selected for this recreational feature and the project feature (i.e., re-sloped channel edge or dock). Impacts to federally protected wetlands would be a significant impact, yet can be mitigated.

- It is recommended to implement a coastal marsh restoration/revegetation program to provide compensation for permanent impacts to the coastal marsh from the boat launch facility.
- It is suggested that one year after kayak launch construction; the City should monitor the recovery of all coastal salt marsh areas temporarily affected by construction and/or equipment/ worker access.

Transportation

- Actual parking time limits, restrictions, and fees would be determined by the City Council.
- Enforcement of street parking from park users seeking to avoid the parking fee would be addressed by City police/ traffic department. Neighboring streets may need to include restrictions to limit overflow during certain times of the day.

Landfill

By permit, the landfill is allowed to modify the gas system with proper notification to the BAAQMD. Leachate management is also regulated and changes to that system would need approval by the RWQCB. Modifications would not be subject to CEQA since the operations are already permitted, and there is no change in source (either air emissions or wastewater source). However, if the City is to proceed with a compressed natural gas (CNG) fill station, that modification may be subject to CEQA review due to a potential vehicle traffic, a new fire risk, potential new air emissions, etc. Fire suppression measures, such as additional fire hydrants, will be reviewed for implementation through the same process as the CNG fill station.

Acknowledgements

City Council
Kirsten Keith, Mayor
Peter I. Ohtaki, Mayor Pro Tem
Ray Mueller, Councilmember
Catherine Carlton, Councilmember
Richard Cline, Councilmember

Parks and Recreation Commission
Jennifer Baskin
Christopher Harris, Chair
Jennifer Johnson
Laura Lane
Marianne Palefsky
Sarah Staley Shenk
Tucker Stanwood, Vice Chair

City Staff
Derek Schweigart, Community Services, Assistant Community Services Director
Azalea Mitch, Engineering, City Engineer
Justin Murphy, Public Works, Director
Brian Henry, Public Works, Superintendent
David Mooney, Public Works, Parks and Trees Supervisor
William (Tony) Dixon, City of Menlo Park Police

Oversight Group
Eileen McLaughlin, Citizens Committee to Complete the Refuge
Allan Bedwell, Friends of Bedwell Bayfront Park
Lauren Swezey, Facebook (M-2 Business)
Michelle Tate, Belle Haven Resident
Marianna Palefsky, Parks and Recreation Commission
Janelle London, Environmental Quality Commission

Consultant - Callander Associates
Brian Fletcher, Principal
Marie Mai, Project Manager
Jana Schwartz, Designer/Graphics

Appendix

Technical Reports
- Environmental Assessment
- Traffic Assessment
- Funding Plan
- Landfill Improvements Plan

Cost Estimates
- Park Improvements
- Annual Operations and Costs
- Landfill Improvements

Meeting Summaries
- Kick-off Meeting
- Staff Meeting #1
- Oversight Group Meeting #1
- Staff Meeting #2
- Community Meeting/Online Survey #1
- Staff Meeting #3
- Concept Plan Review Meeting
- Oversight Group Meeting #2
- Community Meeting #2/#3/Online Survey #1
- Oversight Group Meeting #3
- Park and Recreation Commission Meeting #1
- Park and Recreation Commission Meeting #2
- City Council

Bibliography

DRAFT EXECUTIVE SUMMARY

To: Derek Schweigart and Azalea Mitch
City of Menlo Park

Brian Fletcher, Marie Mai, and Jana Schwartz
Callander Associates

From: Ashleigh Kanat and Teifion Rice-Evans

Subject: Bedwell Bayfront Park Master Plan: Preliminary Funding Strategy; EPS #161177

Date: October 18, 2017

In support of the Bedwell Bayfront Park Master Plan process, Economic & Planning Systems, Inc. (EPS) is preparing the funding and financing strategy to guide implementation of the proposed park improvements. This memorandum summarizes the estimated costs to install the proposed capital improvements and maintain and operate the park each year and describes potential funding sources and financing mechanisms. The funding strategy is based on information learned through discussions with City staff and during the community meetings, subsequent targeted research, and prior EPS experience.

Preliminary Findings and Recommendations

1. ***The Bedwell Bayfront Park (BBP) will require new investment in the coming years as the established Maintenance Fund is nearing depletion and a number of capital improvements are required.***

   The BBP Maintenance Fund is a sinking fund used for expenses related to the operations and maintenance of park facilities.[1] The Fund has a balance of $335,000 and current annual operating and maintenance expenses are about $110,000, suggesting full depletion in three years. At a minimum, the City needs to identify a long-term funding source to cover these costs. However, as described further below, the BBP Master Plan process has identified a number of additional capital improvement investments and associated

[1] The City imposed a tipping fee on each ton of waste disposed in the landfill until the landfill was closed in 1982.

The Economics of Land Use

Economic & Planning Systems, Inc.
One Kaiser Plaza, Suite 1410
Oakland, CA 94612-3604
510.841.9190 tel
510.740.2080 fax

Oakland
Sacramento
Denver
Los Angeles

www.epsys.com

operating and maintenance costs that are required to provide both basic and enhanced park improvements. In addition, the City must continue to address the required landfill improvements and management costs as well as a range of costs associated with addressing sea level rise.

2. The Bedwell Bayfront Park Master Plan process has identified park improvements of approximately $9.0 to $13.5 million, the funding of which will require a broad array of funding sources.

As shown in **Table 1**, capital cost estimates are provided both with and without costs related to complying with landfill regulatory requirements. With landfill-related improvements, total estimated costs are approximately $13.5 million. Without landfill-related improvements, estimated costs are approximately $9.0 million. Of the $9.0 million estimate, approximately 45 percent of the estimated costs are related to "basic park" improvements,[2] while approximately 34 percent of costs are to implement "enhanced park" features. The remainder of the capital costs are to protect against sea-level rise. Landfill-related costs are expected to be funded from the Bedwell Bayfront Park Landfill Fund. As park improvements are implemented (consistent with the proposed BBP phasing), annual operations and maintenance costs are estimated to range from $330,000 per year after Phase 1 improvements are installed to $480,000 per year in Phase 3.

Table 1 Estimate of Probable Construction Costs (Rounded, in 2017 Dollars)

Improvement Category	Phase 1 *0 to 5 Years*	Phase 2 *5 to 10 Years*	Phase 3 *10 to 15 Years*	Total	Share of Total *w/ Landfill*	Share of Total *w/o Landfill*
Basic Park Improvements	$2,016,000	$1,790,000	$287,000	$4,093,000	30.4%	45.3%
Enhanced Park Improvements	$242,000	$2,801,000	$0	$3,043,000	22.6%	33.7%
Regulatory Improvements						
Landfill Related	$3,354,000	$1,084,000	$0	$4,438,000	33.0%	--
Sea Level Rise	$1,038,000	$199,000	$656,000	$1,893,000	14.1%	21.0%
Subtotal, Regulatory	$4,392,000	$1,283,000	$656,000	$6,331,000	47.0%	21.0%
Total [1]	**$6,650,000**	**$5,874,000**	**$943,000**	**$13,467,000**	**100.0%**	
Total, without Landfill Costs [2]	*$3,296,000*	*$4,790,000*	*$943,000*	*$9,029,000*		***100.0%***

[1] Total costs include project start-up, demolition, earthwork and grading, site construction, site furnishings, buildings and utilities, irrigation, soil preparation, planting, contingencies, and professional services. Contingency and professionaly services costs are included on a proportional basis within each of the improvement categories. Costs exclude permit fees, methane capture, and credit for partial fill by SAFER/Salt Pond Restoration projects. Inflation costs estimated by Callander are excluded from these totals.

[2] Capital improvements related to the landfill are expected to be funded through the Bedwell Bayfront Park Landfill Fund.

Sources: Callander Associates; Economic & Planning Systems, Inc.

[2] "Basic Park" improvements address deferred maintenance and safety items, ADA accessibility, and site furnishings (e.g., seating, bike racks, dog bag dispensers).

3. ***There are a range of potential funding sources for investments in BBP capital improvements and ongoing operations and maintenance.***
   Recommended options for funding the Park's capital improvements include a range of funding sources and financing mechanisms, including proceeds from Measure T, park in lieu fees, park and recreations development impact fees, existing and future development agreements, grant funding, and perhaps future General Obligation bonds as well.

   Potential options for funding annual operations and maintenance include dedicated user fees (e.g., revenue from charging for parking), a hotel amenity charge at the nearby Menlo Gateway project, an increase of the Utility Users Tax, which would augment the General Fund (perhaps on a temporary basis, as an interim solution until a holistic approach to funding the Citywide park system is in place), and a citywide parcel tax (long-term solution). In addition, the City can consider maximizing volunteer efforts.

4. ***As the BBP Master Plan process is beginning to home in on a range of capital improvements needed at the Park, and as the BBP Maintenance Fund is nearing depletion, it is an appropriate time for the City to consider how to fund required improvements and operations and maintenance in the context of the City's other park and open space resources.***
   Unlike any of the City's other parks, the 160-acre Bedwell Bayfront Park is a regional asset that draws visitors from across the Bay Area, and it is one of the City's few open space resources east of Highway 101. There are significant new development projects occurring in this part of the City, and as new growth brings new residents and employees, Bedwell Bayfront Park will play an increasingly important role in the City's parks and open space system. Until now, Bedwell Bayfront Park has been maintained with funds from the BBP Maintenance Fund and has been considered somewhat apart from the rest of the City's park and open space resources.

   As part of the pending Citywide Parks and Recreation Facilities Master Plan process, the City may want to consider the role of BBP as well as how to fund required improvements and operations and maintenance in the context of the City's other park and open space resources.

Sources of Funds and Cost Categories by Phase

There are a range of funding sources and financing mechanisms that may be available to fund improvements and ongoing maintenance at Bedwell Bayfront Park. Whether a particular funding source is appropriate for a given improvement or cost category depends on a number of factors, such as whether the funding is needed for capital improvements or ongoing operations and maintenance, the type of improvement, the geographic area of benefit, how the combined burden of fees and/or assessments and taxes affect development feasibility, and the timing of funding sources versus the need for improvements. It is also important to consider and plan for the long-term fiscal implications of capital improvements.

Table 2 presents a sample strategy to address capital and operations and maintenance costs. The City already makes use of some of these, while others represent options for future consideration.

Table 2 Sample Strategy

Funding Sources and Uses	Phase 1 *0 to 5 Years*	Phase 2 *5 to 10 Years*	Phase 3 *10 to 15 Years*
One-Time Capital Improvements			
Cost Estimate (2017 $$)	$6,650,000	$5,874,000	$943,000
1) General Obligation Bond (Measure T)	X	X	
2) Recreation In-Lieu Fees	X	X	X
3) Park Impact Fees		X	X
4) Development Agreement Commitments (Existing)	X		
5) Development Agreement Commitments (Future)	X	X	X
6) Grants	X	X	X
Annual Operations and Maintenance			
Annual Cost Estimate (2017 $$)	$330,000	$450,000	$480,000
1) Balance of Maintenance Fund	X		
2) Dedicated User Fees (e.g., Parking Fees)	X	X	X
3) Dedicated Hotel Amenity Charge	X	X	X
4) Development Agreement Commitments (Existing)	X		
5) Development Agreement Commitments (Future)	X	X	X
6) Dedicated Parks Parcel Tax (Long-Term)		X	X
7) General Fund, UUT Increase (Short-Term)	X		
8) General Fund (if no Parcel Tax)		X	X

Sources: Callander Associates; Economic & Planning Systems, Inc.

CITY OF MENLO PARK

STAFF REPORT

Parks and Recreation Commission
Meeting Date: **10/25/2017**
Staff Report Number: **17-028-PRC**
Informational Item: **Community Services Director's update and announcements**

Recommendation

Staff recommends that the Commission receive the Community Services Director's update and announcements.

Policy Issues

City policies are not affected.

Background

1. **Frozen Sing-Along at PAC a complete sell-out**
   Back by popular demand, the City of Menlo Park, in conjunction with Guggenheim Entertainment, presented the Frozen Sing-Along! on Oct. 8, 2017, 1-3 p.m. Over 470 people were able to sing along with the Academy Award-nominated film. Participants were encouraged to dress up as Elsa, Anna, Kristoff, Olaf or their favorite Frozen character. This sing-along event was highly interactive with in-movie antics and a special "Fun Pack" for advance ticket buyers. The event sold out more than 10 days in advance and we hope it will be an indicator of the growing popularity of our sing-along events.

2. **Council sees final alternatives for Ravenswood Rail Crossing**
   The final alternatives of the Ravenswood Avenue Railroad Crossing study were presented to the City Council at their regular meeting Tuesday, Oct. 10, 2017, for their selection of a preferred alternative. The project team presented the proposed alternatives and impacts including construction and "shoofly" designs as well as feedback received to date. Council asked staff to gather additional data and return for a final decision. Once selected, the City staff will move forward with the environmental studies and design phase to advance this project into construction. This project is evaluating the engineering feasibility of replacing the existing at-grade crossings of the Caltrain tracks by building grade separations of the roadways from the tracks at Ravenswood Avenue, Oak Grove Avenue and Glenwood Avenue, with priority on Ravenswood Avenue.

3. **Menlo Park CSD celebrates National Bullying Prevention Month**
   Bullying is carried out in many forms, including embarrassment, harassment, name-calling, exclusion, threats, teasing, cyberbullying, intimidation and more. We can all imagine how it feels to be a victim of such aggression. The emotions are unwelcome and often the sufferer is left feeling humiliated by those using intimidation tactics against them.

   Signs of bullying can include anxiety when speaking about school, changes in appetite, difficulty sleeping or nightmares, sudden illness prompting sick days away from school, or decreased self-

esteem. Keep the lines of communication open with your children and talk to them often about their days at school, their friends and their daily experiences. Encourage them to do the things they love, the things that, as a parent, you know make them smile and boost their confidence. There are many resources for parents that assist in identifying and understanding bullying as well as responding to such behavior. Two websites are stompoutbullying.org and stopbullying.gov.

October is National Bullying Prevention Month. This year Menlo Park will join forces with our longtime partner, Kuk Sool Won, to help promote awareness about bullying. The campaign unites communities around the world to educate and raise awareness of bullying prevention. Throughout the month, the Child Development Center will gear programs toward this issue and Oct. 25 all city departments will be encouraged to join by wearing orange. Council will present a proclamation recognizing October as National Bullying Prevention Month on October 17.

4. **Halloween Hoopla Parade & Trick-or-Treat**
   Join us for Halloween Hoopla October 28, 2017 from 11:00 am-2:00 pm. The annual costume parade through downtown Menlo Park will start at Maloney Street parking lot behind 640 Santa Cruz Avenue. Afterward, go door-to-door at the local businesses for the merchant trick-or-treat. Fremont Park will have a number of fun carnival games and activities including crafts provided by Cheeky Monkey. Be mystified with Marshall Magoon's magic show and dance to Happily Ever Laughter's musical performance. Take your chance at the giant pumpkin guess! All activities are free and fun for the whole family.

5. **City Council Update**
   The Council meeting on October 10 included an update on the Belle Haven Pool Audit and Master Plan. On October 17, the Council received an updated on the Bedwell Bayfront Park Master Plan and also approved a contract with Gates+Associates for the development of the overall Parks and Recreation Facilities Master Plan which we expect to begin in November 2017.

   On November 7, the Council will be receive the Commission's recommendation to approve the Belle Haven Pool Audit and Master Plan. On November 14, the Bedwell Bayfront Park Master Plan will go to the Council for their approval based on the Commission's final recommendation.

Analysis

Analysis is not required.

Impact on City Resources

There is no change in impact on City resources from these items.

Environmental Review

Environmental review is not required.

Public Notice

Public Notification was achieved by posting the agenda, with the agenda items being listed, at least 72 hours prior to the meeting.

Attachments

None

Report prepared by:
Natalie Bonham, Recreation Supervisor