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DENVER
ENVIRONMENTAL HEALTH

SCOPE OF WORK:

GLOBEVILLE LANDING OUTFALL PROJECT – ADDITIONAL AIR QUALITY MONITORING

CITY AND COUNTY OF DENVER

DEPARTMENT OF ENVIRONMENTAL HEALTH,

DIVISION OF ENVIRONMENTAL QUALITY

DATE OF ISSUANCE: November 22, 2016

SCOPE OF WORK

GLOBEVILLE LANDFILL OUTFALL – ADDITIONAL AIR MONITORING SCOPE OF WORK (SOW):

Sampling, analysis, and reporting of particulate matter of 10 microns or less (PM_{10}), discretionary analysis of Lead (Pb) and Arsenic (As), at the Globeville Landing Outfall (GLO) Project Site.

SCHEDULE

Start Date:	Starting the week of November 27, 2016
End Date:	13 months post start of construction (Approx.)
Pollutants:	PM_{10} for project duration; Metals (Arsenic & Lead) analysis of PM_{10} filter (likely 33% of samples from Nov-Feb, will adjust after initial results are reviewed)
Sample Sites:	Four (4) sites (see "Site Overview Map")
Sample Schedule:	One 24-hour sample will be collected every sixth (6th) day at each of the four (4) sites. Each sample will be collected over a 24-hour period. Sampling will be conducted for just over a period of one year. Potential multiple baseline samples during first weeks of sampling to be able to provide adequate sample points comparison.

TASKS

Task 1. Installation of four (4) PQ100 Ambient Air Particulate Samplers located upwind, downwind, and other critical areas. (see "Site Overview Map")

Task 2. Supply and prepare sampling filter media.

Task 3. Collect 24 hour samples at 4 sites every 6th day.

Task 4. Transport of samples from site to lab.

a) Shipping of metals samples for analysis as needed.

DELIVERABLES

Once the sampling has commenced the following deliverables will be submitted:

Deliverable #1 Pollutant report on all four sites. This report will include (but is not limited to):

Frequency: Weekly

i) Summary (narrative and/or graphic) of pollutant data collected,
ii) Instrument calibration schedules & results
iii) Maintenance issues
iv) Weather events
v) List of operation staff and contacts

Deliverable #2 Quarterly summary report on three months of monitoring at the Globeville Landfill Outfall site. Quarterly summary report will include (but is not limited to):

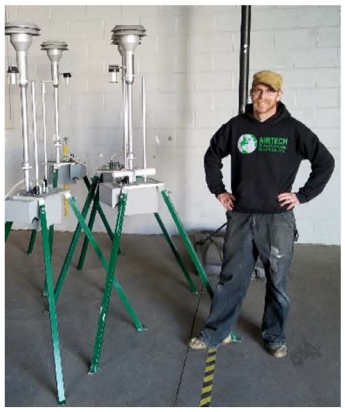
i) Summary (narrative and/or graphic) of pollutant data collected, calibration schedules & results, maintenance issues, and weather events
ii) Professional judgment commentary on any notable data and/or event(s)
iii) Conclude an average baseline concentration for each pollutant prior to construction as practicable
iv) List of operation staff and contacts

Deliverable #3 Final report on thirteen months of monitoring at the Globeville Landfill Outfall Project site. To be submitted within 30 days following final sampling day. The final report will include (but is not limited to):

i) Summary (narrative and/or graphic) of pollutant data collected, calibration schedules & results, maintenance issues, and weather events
ii) Professional judgment correlation of unusual pollutant concentration to identifiable sources
iii) Professional judgment commentary on any notable data and/or event(s)
iv) Conclude an average baseline concentration for each pollutant prior to construction as practicable
v) List of operation staff and contacts

INSTRUMENTATION

The sampling will be done using a PQ100 Ambient Air Particulate Sampler and collected on a 47mm filter of suitable quality to be able to test for metals after PM_{10} analysis is complete.



PQ100 Ambient Air Particulate Sampler

- EPA Federal Reference Method for PM_{10}
- Capable of a 24-hour run on internal built-in 12-volt battery
- Volumetric Flow Control, using ambient temperature and barometric pressure compensated mass flow sensor
- Can be configured for PM_{10}, PM_4, $PM_{2.5}$, PM_1 and TSP for low or high altitude

METHODOLOGY

The sampling of PM10 will be performed using BGI PQ100 air samplers and collected on a tared filter of suitable quality to be able to test for metals after the PM10 analysis is complete. In the sampler, air is drawn by a sample pump through a size selective inlet device. The air then passes inside the instrument housing to a Mass Flow Sensor. The signal generated by the sensor is then routed to a microprocessor which determines if the flow is at the set value and adjusts the pump speed to maintain the correct flow rate. The microprocessor turns the instrument on and off at predetermined times and maintains the flow to a designated pressure and temperature value. The microprocessor stores all parametric information generated during the run period and configures it for presentation on the visual display and download to the software provided with the sampler. The sampler includes a 12-volt battery which allows sampling for 24 hours without having to connect the sampler to external power. After the sampling is complete and the filters are weighed, some of the collected filters will be submitted for metals analysis.

GLO SITE DESCRIPTION

The original Omaha & Grant Smelter facility was built on approximately 50 acres bordering the South Platte River. The Omaha and Grant Smelter facility commenced operations in October 1882. The smelter operated for approximately 21 years and was eventually closed in 1903. The Omaha & Grant Smelter facility employed a lead smelting process to produce gold, silver, copper, and lead. The smelting process involved the fusing of ore, fuel, and lime to form a melted product.

The site was designated as Operable Unit 2 (OU-2), which includes soils located in the vicinity of the former Omaha and Grant Smelter, of the Vasquez Boulevard and Interstate 70 (VB/I-70) Superfund Site (the Site). The Site was designated as a Superfund site due to the elevated levels of lead and arsenic in the soils from the prior smelting operations.

The Site is owned and used by the City and County of Denver (CCoD) as the Globeville Landing Park and the Denver Coliseum, which opened in 1952. The CCoD constructed the Denver Stadium and Coliseum circa 1950 which encompassed part of the northeast portion of the former Omaha and Grant smelter facility. The approximately 10-acre Globeville Landing Park is located along the east side of the South Platte River. The park, constructed in the 1970s encompasses part of the southwest portion of the former Omaha and Grant smelter facility.

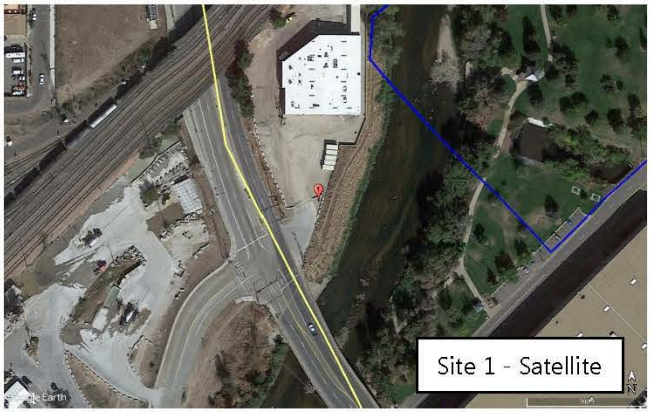
The Coliseum parking lot is also underlain by a landfill that predates the Resource Conservation and Recovery Act (RCRA) of 1984. The Globeville Landing Park is underlain by soil mixed with construction debris. The Globeville Landing Outfall (GL) Project includes installation of an open-channel stormwater drainage feature through a portion of Operable Unit 2 (OU-2) of the VB/I-70 Superfund Site. As part of the GLO Project construction activities, the City will conduct the above detailed additional air monitoring for (PM10), lead, and arsenic at the GLO Project Site.

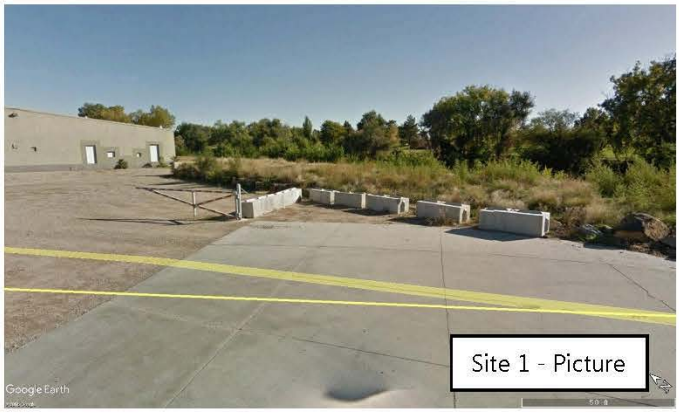
SITE OVERVIEW MAP

SAMPLE LOCATION DETAILS

Location: Site 1

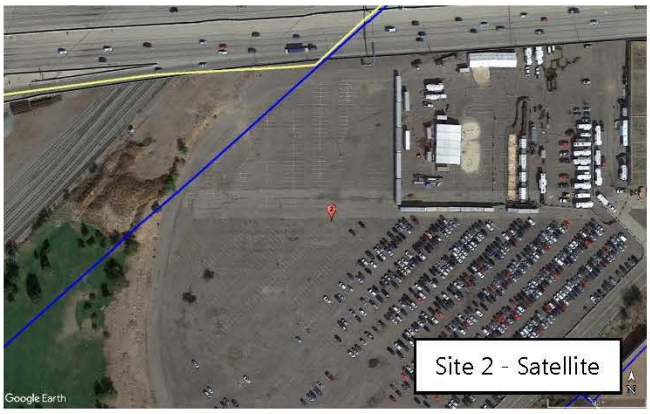
GPS Coordinate: Lat: 39°46'34.00"N Long: 104°58'42.50"W

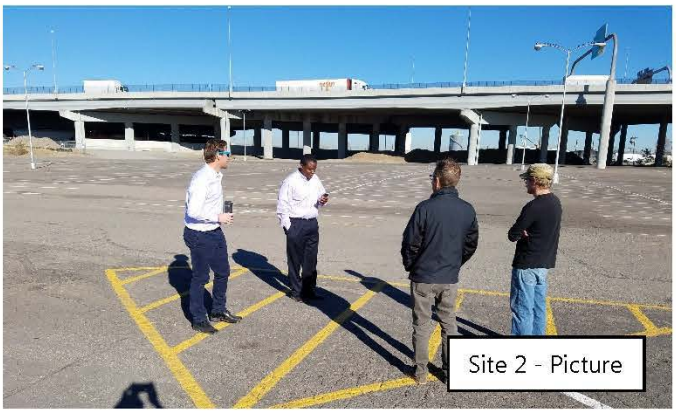




Location: Site 2

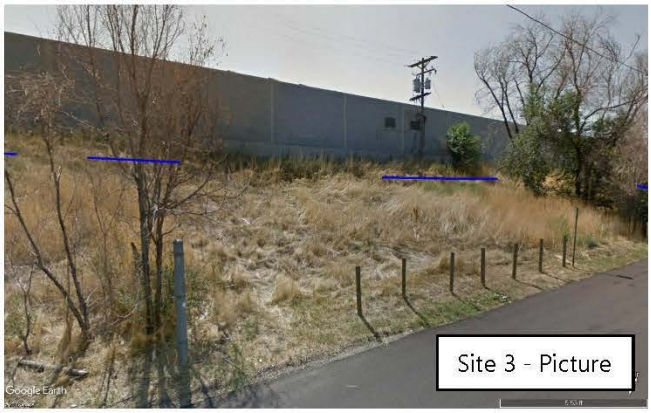
GPS Coordinate: Lat: 39°46'42.60"N Long: 104°58'28.30"W





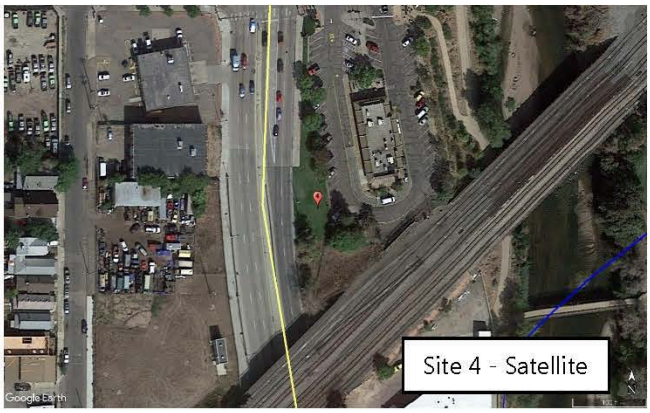
Location: Site 3

GPS Coordinate: Lat: 39°46'41.30"N Long: 104°58'19.50"W

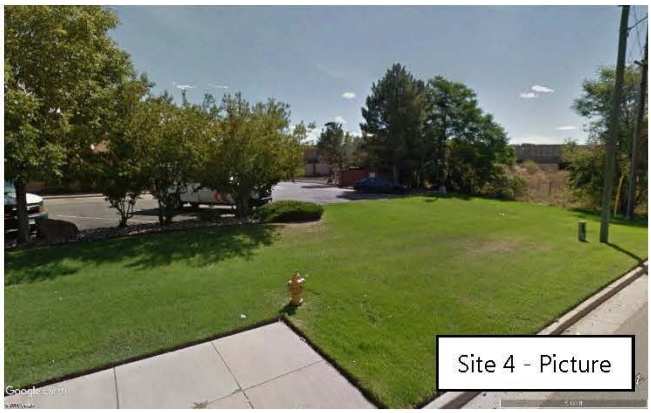


Location: Site 4

GPS Coordinate: Lat: 39°46'39.10"N Long: 104°58'44.50"W



Site 4 - Satellite



Site 4 - Picture