

INSPECTION, MONITORING, AND MAINTENANCE PLAN

C Street Landfill

Prepared for: City of Shelton

Project No. AS150074C • November 28, 2023 FINAL



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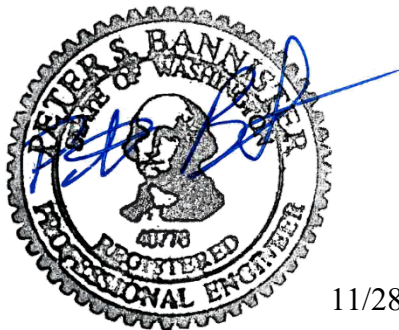
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Aspect Consulting, LLC



11/28/23

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1 Introduction

This inspection, monitoring, and maintenance (I, M, and M) Plan was prepared by Aspect Consulting (Aspect) on behalf of the City of Shelton (City) to present post-construction containment infrastructure I, M, and M for the Shelton C Street Landfill Site, a former municipal solid waste landfill located in Shelton, Washington (Site; Figure 1). The City entered into Agreed Order No. DE 19541 (Agreed Order) with Washington State Department of Ecology (Ecology) on December 20, 2021, for cleanup of the Site. This I, M, and M Plan is a deliverable required by the Agreed Order. The draft I, M, and M Plan was provided to Ecology for their review as Appendix B of the Engineering Design Report (Aspect, 2022), and was approved by Ecology prior to commencing cleanup activities described herein.

This I, M, and M Plan presents technical guidance and regulatory requirements to assure the integrity of the containment infrastructure, including the soil cap, fencing, and signage. Details on post-construction topographic surveying and groundwater monitoring is provided in the Compliance Monitoring Plan (CMP; Appendix A to the Engineering Design Report). This I, M, and M Plan has been updated following completion of construction, incorporating details relevant to the long-term inspection, monitoring, and maintenance. The plan is intended to be updated as Site conditions change, and additional information becomes available.

2 Roles and Responsibilities

Post-construction I, M, and M includes the following roles and responsibilities:

- Competent persons to conduct visual inspections, document observations, and implement and document maintenance (such as vegetation control) under oversight of a licensed engineer.
- A licensed surveyor to conduct and document topographic surveying as described in the CMP.
- A licensed hydrogeologist to oversee groundwater monitoring and sampling at the Site, as described in the CMP.

The City of Shelton is responsible for selection and management of those performing the above roles and responsibilities, and for ensuring compliance with this I, M, and M Plan. The names and phone numbers of the individuals currently filling these roles are as follows:

Table 1. Contact Information for Responsible Parties

| Role | Party | Point of Contact | Email |
|---|-------------------|-------------------------|--|
| Overall Project Manager | City of Shelton | Brent Armstrong | Brent.armstrong@sheltonwa.gov 360-432-5180 |
| City of Shelton Sub-Consultants and Subcontractors | | | |
| Inspector | Aspect Consulting | Peter Bannister, PE | peter.bannister@aspectconsulting.com 206-780-7728 |
| Licensed Surveyor | Apex Engineering | Kurt Parcher, PLS | parcher@apexengineering.net 253-473-4494 |
| Licensed Hydrogeologist | Aspect Consulting | Carla Brock, LHG | carla.brock@aspectconsulting.com 206-838-6593 |

3 Post-Closure Containment Infrastructure

The cleanup action for this Site relies on containment of contaminated soils and municipal solid waste below a soil cap. The soil cap was constructed to prevent direct contact by human and terrestrial ecological receptors and to minimize infiltration of precipitation. Physical barriers (perimeter fencing and restricted access gates) prevent unauthorized access to the Site. Signage posted at the perimeter of the Site notifies the public of the presence of contaminants and provides contact information for the Ecology Site Manager, as follows:

Restricted Area – No Trespassing
 City of Shelton Property
 Contamination Cleanup In Progress
 Contact: Andrew Smith, Dept. of Ecology
 Phone: (360) 485-3987

Inspections, maintenance, and repair or replacement of the containment infrastructure will be documented annually and submitted to Ecology. Refer to Figure 2 for depiction of the containment infrastructure locations and extents.

3.1 Physical Barriers and Signage

Annual inspection of signage and physical barriers will be conducted to preserve their intended function. The inspection will include visual observation of the following conditions (Figure 2):

- The vehicular gate (operation, locking mechanism, general condition)
- Fencing around the Site (general condition)
- Signage (count, legibility, general condition)

Refer to Appendix A for additional detail on the scope of the visual inspection. Observed conditions will be documented on a field report and with photographs to identify any maintenance needs. Maintenance, repairs and/or replacement will be completed as needed.

3.2 Soil Cap

Annual inspection of the soil cap (Figure 2) will be conducted to document sustained integrity and identify maintenance needs. The inspection will include visual observation of the entire soil cap area for the following conditions:

- Appearance and condition of vegetation
- Soil erosion, cracks, or other changes in the vegetative topsoil layer
- Evidence of intrusion by humans or animals, including ruts, holes, or wildlife trails
- Any other damage or disturbance to the cap

Refer to Appendix A for additional detail on the scope of the visual inspection. Observed conditions will be documented on a field report and with photographs to identify any maintenance needs.

Vegetation management is anticipated to require two mowing events per year to prevent the establishment of invasive or noxious weeds or deep-rooted vegetation that could impair the soil cap integrity. Otherwise, soil cover maintenance, such as raking, tilling, and/or applying additional topsoil material, will be completed as needed to sustain the integrity and protectiveness of the cover.

4 References

Aspect Consulting, LLC (Aspect), 2022, Engineering Design Report, C Street Landfill, City of Shelton, July 11, 2022.

5 Limitations

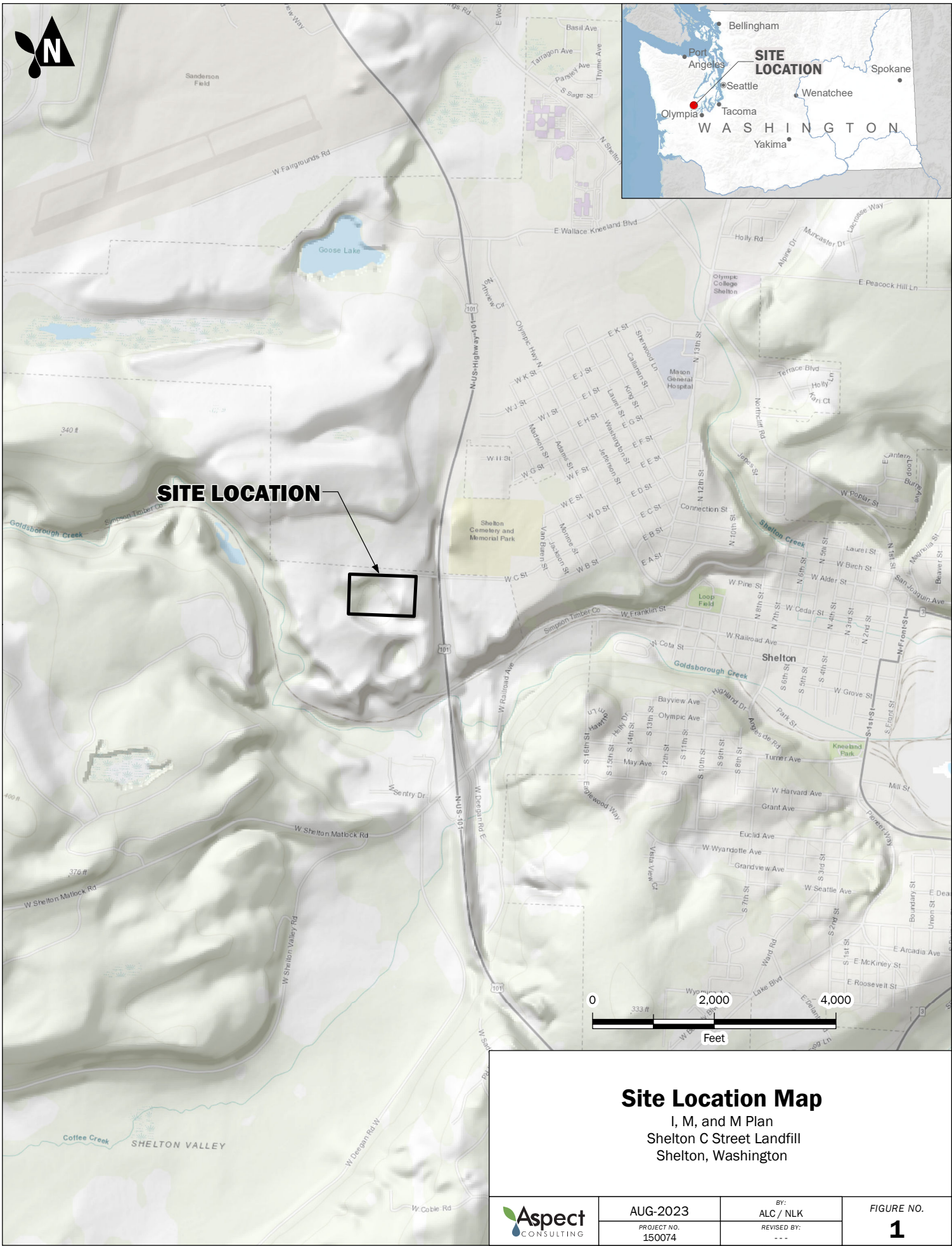
Work for this project was performed for the City of Shelton (Client), and this report was prepared in accordance with generally accepted professional practices for the nature and conditions of work completed in the same or similar localities, at the time the work was performed. This report does not represent a legal opinion. No other warranty, expressed or implied, is made.

All reports prepared by Aspect Consulting for the Client apply only to the services described in the Agreement(s) with the Client. Any use or reuse by any party other than the Client is at the sole risk of that party, and without liability to Aspect Consulting.

Aspect Consulting's original files/reports shall govern in the event of any dispute regarding the content of electronic documents furnished to others.

Please refer to Appendix B titled "Report Limitations and Guidelines for Use" for additional information governing the use of this report.

FIGURES



SITE LOCATION

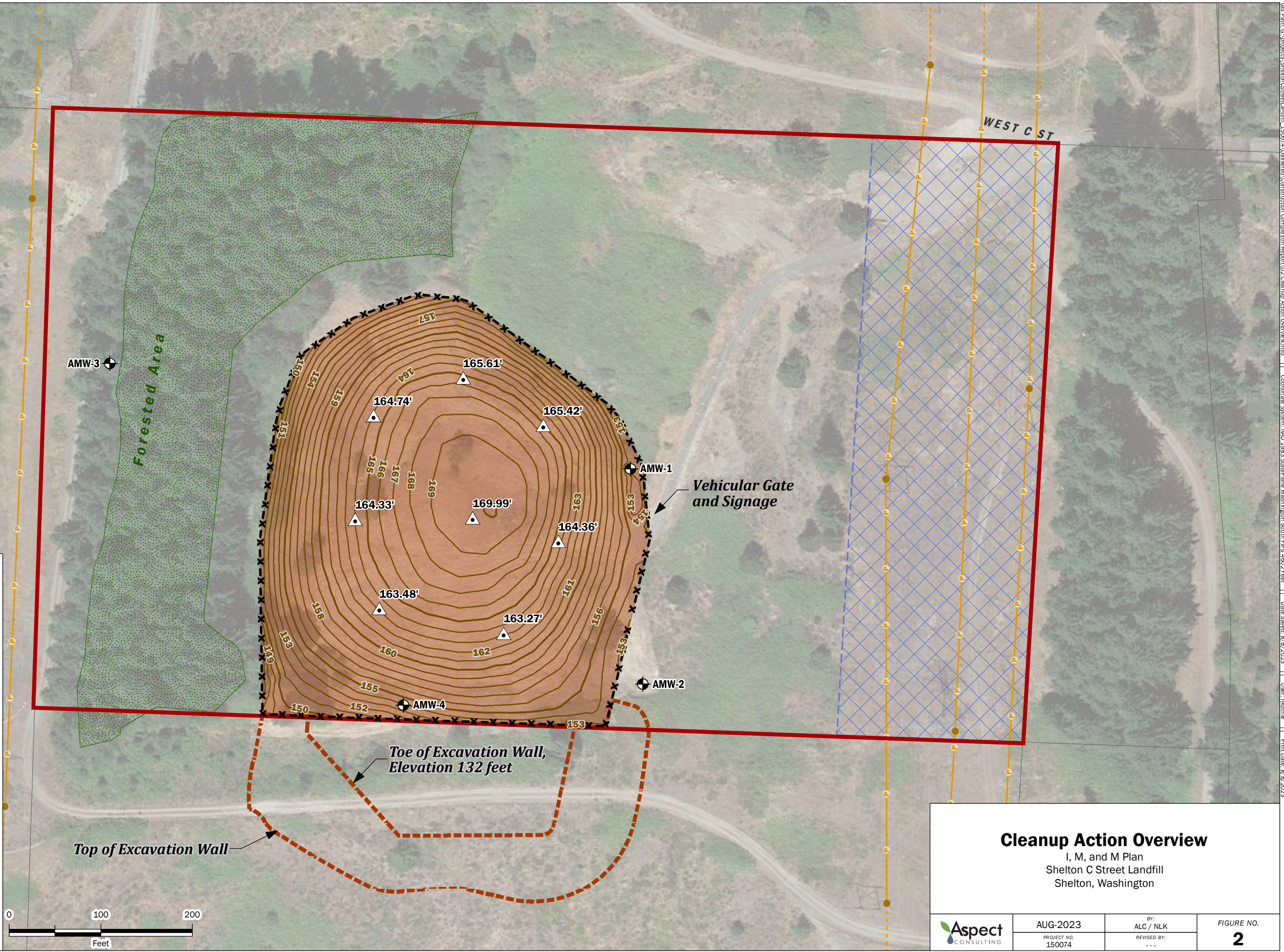


Site Location Map
 I, M, and M Plan
 Shelton C Street Landfill
 Shelton, Washington

| | | | |
|--|-----------------------|--------------------|------------------------|
| | AUG-2023 | BY: ALC/ NLK | FIGURE NO. 1 |
| | PROJECT NO. 150074 | REVISED BY: --- | |

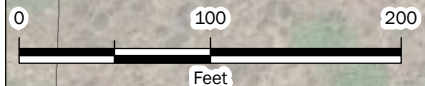
Basemap Layer Credits || Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
 Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

GIS Path: G:\projects\Shelton\CStreet\ariffil_150074\Delivered Construction Completion Report\01 Site Location Map.mxd | Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet | Date Saved: 8/1/2023 | User: mchic | Print Date: 8/1/2023



- Settlement Survey Benchmarks
- Landfill Cap
- Extent of Landfill Waste Consolidation Excavation on South-Adjoining Property
- Contour Major
- Contour Minor
- Chain Link Fence
- Point of Compliance Groundwater Monitoring Well
- Landfill Parcel
- Forested Area
- Transmission Line Easement
- Transmission Tower
- Transmission Line
- Tax Parcel

Note: All site feature locations are approximate. Aerial imagery from Google Satellite Imagery.



| | | |
|--|-----------------------------------|--|
| Cleanup Action Overview | | |
| I, M, and M Plan Shelton C Street Landfill Shelton, Washington | | |
| | AUG-2023 PROJECT NO. 150074 | BY: ALC / NLK REVISED BY: --- |
| | | FIGURE NO. 2 |

GIS Path: G:\Projects\SheltonCStreetLandfill_150074\Delivered\Construction Completion Report\02 Cleanup Action Overview.mxd | Coordinate System: NAD 1983 StatePlane Washington South FIPS 4602 Feet | Date Saved: 8/8/2023 | User: mchole | Print Date: 8/8/2023

APPENDIX A

Annual Soil Cap Inspection Procedures and Form

A. Annual Soil Cap Inspection

The cleanup action for the Site relies on containment of contaminated soils and municipal solid waste below a soil cap. Annual inspection will occur to verify the integrity of the soil cap and to identify maintenance and/or repair needs. This appendix provides information on the scope of the annual inspection and guidance for documentation. The Site is shown relative to surrounding physical features on Figure 1. A depiction of the containment infrastructure (fencing, signage, soil cap, etc.) is shown on Figure 2.

A.1. Observations and Documentation

The following sections provide information on the conditions to evaluate during the annual soil cap inspection. Observations will be recorded on the Annual Soil Cap Inspection Field Report (Field Report; Attachment A-1). The Field Report will record the date of the inspection, the name of the person performing the inspection, weather conditions, and written observations and photographs of the conditions described in the following report. Areas requiring maintenance or repair will be indicated on a site map attached to the Field Report.

A.1.1. Appearance and Condition of Vegetation

Adequate vegetation coverage reduces soil erosion and preserves the integrity of the soil cap by reducing infiltration of precipitation. Specifically, shallow-rooted native grasses are the first defense to keep precipitation from passing through the low-permeability layer beneath the topsoil layer.

Adequate appearance and condition of vegetation means grasses cover nearly all of the area, all monitoring wells and survey monuments are accessible, and there are no vines or deep-rooted shrubs or trees growing on the cap.

Maintenance is required if the appearance and condition of the vegetation is not adequate. Re-seeding with native grasses is warranted if coverage is not adequate. All vines and deep-rooted shrubs or trees should be hand pulled or mowed before they can become established.

On the Field Report site map, mark each area of the cap with “V” where vegetation maintenance is required based on annual inspection.

A.1.2. Soil Erosion, Cracks, or Other Changes in the Vegetative Topsoil Layer

Vegetation and the topsoil layer protect the low-permeability layer and preserves the integrity of the soil cap by reducing infiltration of precipitation. Soil erosion can be caused by heavy precipitation events resulting in rills. Cracks can form due to differential settlement of the materials beneath the cap. Maintaining the topsoil layer and repairing the low-permeability layer to address soil erosion or cracks helps keep precipitation from passing through the low-permeability layer beneath the topsoil.

Adequate conditions related to the topsoil layer means that rills and cracks in the topsoil are not observed.

Maintenance is required if shallow erosion or cracks are observed in the topsoil but do not expose the underlying low-permeability layer. Maintenance includes filling shallow erosion or cracks with new topsoil and reseeding the area with native grasses.

Repairs are required if shallow erosion or cracks are observed in the topsoil and expose the underlying low-permeability layer. Repairs include restoring the low-permeability layer and the topsoil layer to meet the design standards, as specified in the Engineering Design Report. Following repairs, the area will be reseeded with native grasses.

On the Field Report site map, mark each area of the cap with “M” where topsoil maintenance is required based on annual inspection. Mark each area of the cap with “R” where repairs are required based on annual inspection.

A.1.3. Evidence of Intrusion by Humans or Animals, including Ruts, Holes, or Wildlife Trails

Vegetation and the topsoil layer protect the low-permeability layer and preserve the integrity of the soil cap by reducing infiltration of precipitation. Fencing around the cap should prevent human trespass and reduce animal activity on the cap, preserving the cap integrity. If human or wildlife activity is causing damage to the cap although the fencing is in adequate condition, then maintenance to the topsoil layer and/or repairs to the low-permeability layer are warranted as described in the previous section.

Adequate conditions related to the fencing means that the fence is not damaged, and the access gates are secured. A qualified fencing contractor should perform any necessary repairs.

On the Field Report site map, mark each area of the fencing with “F” where repairs are required during annual inspection.

A.1.4. Any Other Damage or Disturbance to the Cap

The cap was designed with slopes to prevent ponding and avoid slope failure. Unanticipated differential settlement may cause a depression in the cap surface that allows for precipitation to pond. Unanticipated differential settlement may alter the side slopes and cause slope failure. These conditions should be reported to the City project manager, if observed.

On the Field Report site map, mark each area of the cap with “P” where ponding is observed, or “SF” where slope failure is observed.

A.1.5. Damage to Survey Monuments or Wells

Long-term settlement monitoring and groundwater monitoring required infrastructure include eight settlement survey markers and four groundwater monitoring wells (Figure

2). If survey monuments or monitoring wells are damaged, these conditions should be reported to the City project manager.

On the Field Report site map, mark each monitoring location with “X” where damage is observed.



ANNUAL SOIL CAP INSPECTION FIELD REPORT

350 Madison Avenue North
Bainbridge Island, Washington 98110
(206) 780-9370

710 Second Avenue, Suite 550
Seattle, Washington 98104
(206) 328-7443

| | | |
|---|--|--|
| DATE: | WEATHER: | |
| PROJECT NAME: C STREET LANDFILL SITE | OWNER: CITY OF SHELTON | |
| INSPECTOR: | PROJECT LOCATION: C STREET, SHELTON, WA | |

The cleanup action for the C Street Landfill Site relies on containment of contaminated soils and municipal solid waste below a soil cap. Annual inspections will occur to verify the integrity of the soil cap and physical barriers and to identify maintenance and/or repair needs. Refer to Appendix A of the Inspection, Monitoring, and Maintenance (I, M, and M) Plan dated November 2023 for information on the scope of the annual inspection and guidance for the field report documentation.

APPEARANCE AND CONDITION OF VEGETATION

SOIL EROSION, CRACKS, OR OTHER CHANGES IN THE VEGETATIVE SOIL LAYER

EVIDENCE OF INTRUSION BY HUMANS OR ANIMALS, INCLUDING RUTS, HOLES OR WILDLIFE TRAILS

ANY OTHER DAMAGE OR DISTURBANCE TO THE CAP

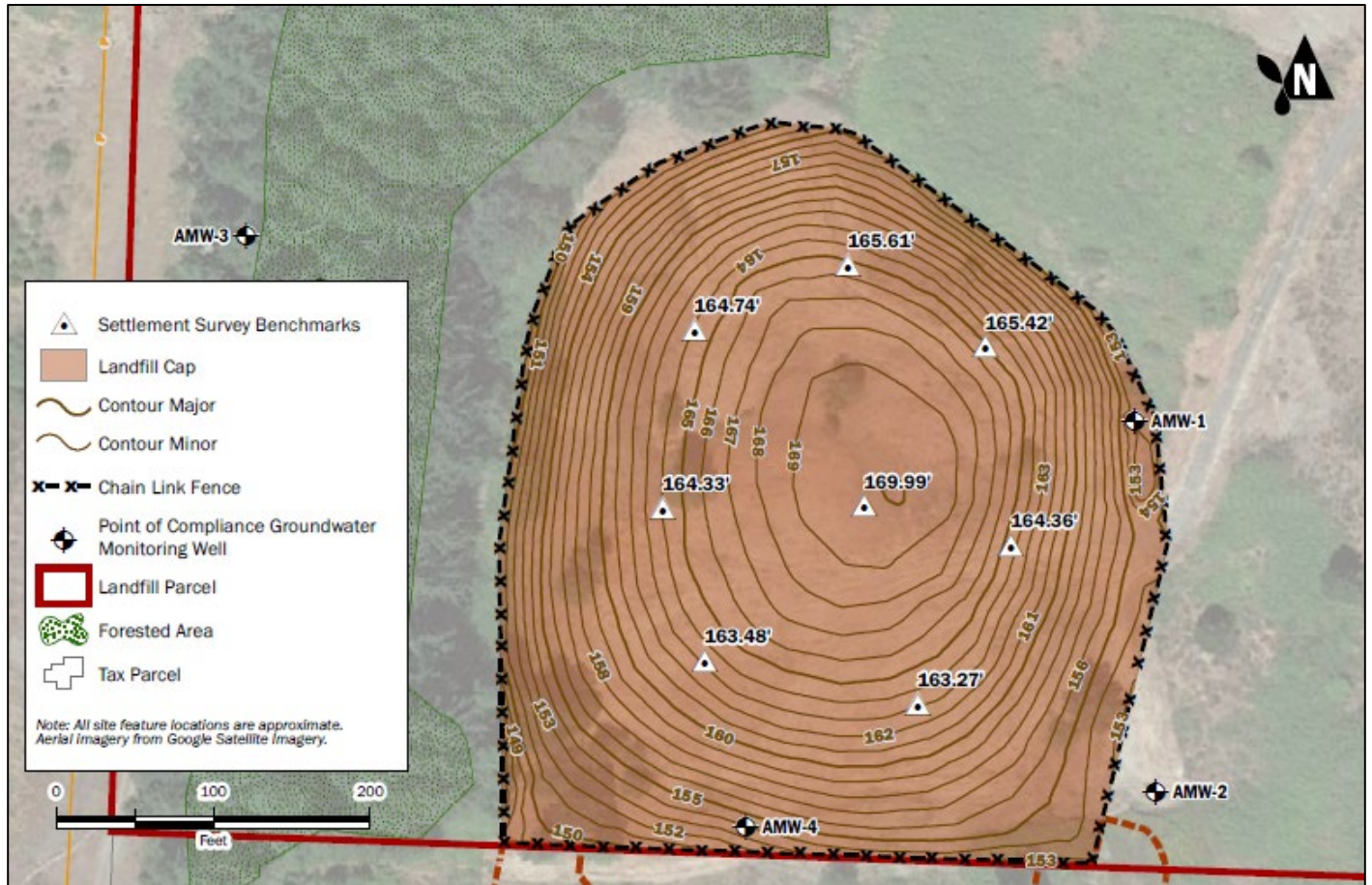
DAMAGE TO SURVEY MONUMENTS OR GROUNDWATER MONITORING WELLS

| | |
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| COPIES TO: City of Shelton, Washington State Department of Ecology | REVIEWED BY: |
|---|---------------------|

PROJECT NAME: C STREET LANDFILL SITE

DATE: Error! Reference source not found.

SITE PLAN



Markups on the Site Plan indicate the following:

- **V** indicates location where vegetation maintenance is required
- **M** indicates location where topsoil maintenance is required
- **R** indicates location where repairs of erosion or cracks is required
- **F** indicates location where fencing repairs are required
- **P** indicates location where ponding is observed
- **SF** indicates location where slope failure is observed
- **X** indicates a survey benchmark or groundwater monitoring well where damage is observed

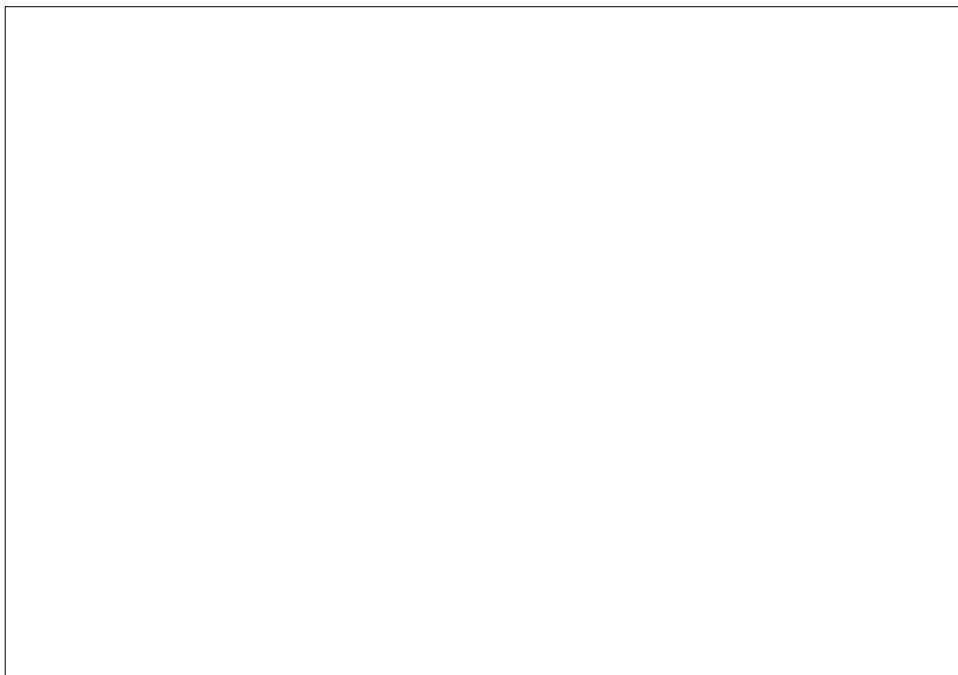
PROJECT NAME: C STREET LANDFILL SITE

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PHOTOGRAPHS



Photograph 1.



Photograph 2.

(add pages as needed)

APPENDIX B

Report Limitations and Guidelines for Use

REPORT LIMITATIONS AND GUIDELINES FOR USE

Geoscience is Not Exact

The geoscience practices (geotechnical engineering, geology, and environmental science) are far less exact than other engineering and natural science disciplines. It is important to recognize this limitation in evaluating the content of the report. If you are unclear how these "Report Limitations and Guidelines for Use" apply to your project or property, you should contact Aspect Consulting, LLC (Aspect).

This Report and Project-Specific Factors

Aspect's services are designed to meet the specific needs of our clients. Aspect has performed the services in general accordance with our agreement (the Agreement) with the Client (defined under the Limitations section of this project's work product). This report has been prepared for the exclusive use of the Client. This report should not be applied for any purpose or project except the purpose described in the Agreement.

Aspect considered many unique, project-specific factors when establishing the Scope of Work for this project and report. You should not rely on this report if it was:

- Not prepared for you;
- Not prepared for the specific purpose identified in the Agreement;
- Not prepared for the specific subject property assessed; or
- Completed before important changes occurred concerning the subject property, project, or governmental regulatory actions.

If changes are made to the project or subject property after the date of this report, Aspect should be retained to assess the impact of the changes with respect to the conclusions contained in the report.

Reliance Conditions for Third Parties

This report was prepared for the exclusive use of the Client. No other party may rely on the product of our services unless we agree in advance to such reliance in writing. This is to provide our firm with reasonable protection against liability claims by third parties with whom there would otherwise be no contractual limitations. Within the limitations of scope, schedule, and budget, our services have been executed in accordance with our Agreement with the Client and recognized geoscience practices in the same locality and involving similar conditions at the time this report was prepared

Property Conditions Change Over Time

This report is based on conditions that existed at the time the study was performed. The findings and conclusions of this report may be affected by the passage of time, by events such as a change in property use or occupancy, or by natural events, such as floods,

earthquakes, slope instability, or groundwater fluctuations. If any of the described events may have occurred following the issuance of the report, you should contact Aspect so that we may evaluate whether changed conditions affect the continued reliability or applicability of our conclusions and recommendations.

Geotechnical, Geologic, and Environmental Reports Are Not Interchangeable

The equipment, techniques, and personnel used to perform a geotechnical or geologic study differ significantly from those used to perform an environmental study and vice versa. For that reason, a geotechnical engineering or geologic report does not usually address any environmental findings, conclusions, or recommendations (e.g., about the likelihood of encountering underground storage tanks or regulated contaminants). Similarly, environmental reports are not used to address geotechnical or geologic concerns regarding the subject property.

We appreciate the opportunity to perform these services. If you have any questions, please contact the Aspect Project Manager for this project.