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WHATCOM COUNTY
STATE OF WASHINGTON
BY

STATE OF WASHINGTON
WHATCOM COUNTY SUPERIOR COURT

STATE OF WASHINGTON, DEPARTMENT OF ECOLOGY,

Plaintiff,

v

CITY OF BELLINGHAM, a Washington Municipal Corporation, CARL and AUDREY AKERS, NORTHWEST RECYCLING, PARBERRY, INC., PARBERRY FAMILY L.P., JOHN SANDS, and WHATCOM COUNTY,

Defendants.

NO. 03 2 02164 1

CONSENT DECREE
Holly Street Landfill

DAVID A. NICHOLS

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COPY

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 586-6760

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 586-6760

I. INTRODUCTION

A. In entering into this Consent Decree (Decree), the mutual objective of the Washington State Department of Ecology (Ecology), the City of Bellingham (City), Carl and Nickie Akers, Northwest Recycling, Parberry, Inc., Parberry Family L.P., John Sands, and Whatcom County (collectively Defendants) is to provide for remedial action at a facility where there has been a release or threatened release of hazardous substances. This Decree requires the Defendants to undertake remedial action as described in the Cleanup Action Plan attached as Exhibit A to this Decree and to record covenants restricting the future uses of their property to uses consistent with this Decree and the Cleanup Action Plan.

Ecology has determined that these actions are necessary to protect public health and the environment.

B. The Complaint in this action is being filed simultaneously with this Decree. An answer has not been filed, and there has not been a trial on any issue of fact or law in this case. However, the parties wish to resolve the issues raised by Ecology's complaint. In addition, the parties agree that settlement of these matters without litigation is reasonable and in the public interest and that entry of this Decree is the most appropriate means of resolving these matters.

C. In signing this Decree, Defendants agree to its entry and agree to be bound by its terms.

D. By entering into this Decree, the parties do not intend to discharge non-settling parties from any liability they may have with respect to matters alleged in the complaint. The parties retain the right to seek reimbursement, in whole or in part, from any liable persons for sums expended under this Decree.

E. This Decree shall not be construed as proof or admission of liability or responsibility for any releases of hazardous substances or cost for remedial action nor an admission of any liability or facts; provided, however, that the Defendants shall not challenge the jurisdiction of Ecology in any proceeding to enforce this Decree.

F The Court is fully advised of the reasons for entry of this Decree, and good cause having been shown: IT IS HEREBY ORDERED, ADJUDGED, AND DECREED AS FOLLOWS:

II. JURISDICTION

A This Court has jurisdiction over the subject matter and over the parties pursuant to Chapter 70.105D RCW, the Model Toxics Control Act (MTCA)

B Authority is conferred upon the Washington State Attorney General by RCW 70.105D.040(4)(a) to agree to a settlement with any potentially liable person if, after public notice and hearing, Ecology finds the proposed settlement would lead to a more expeditious cleanup of hazardous substances. RCW 70.105D.040(4)(b) requires that such a settlement be entered as a consent decree issued by a court of competent jurisdiction.

C Ecology has determined that a release or threatened release of hazardous substances has occurred at the Site which is the subject of this Decree.

D Ecology has given notice to Defendants, as set forth in RCW 70.105D.020(16), of Ecology's determination that the Defendants are potentially liable persons for the Site and that there has been a release or threatened release of hazardous substances at the Site.

E The actions to be taken pursuant to this Decree are necessary to protect public health, welfare, and the environment.

F Defendants have agreed to undertake the actions specified in this Decree and consent to the entry of this Decree under the MTCA.

III. PARTIES BOUND

This Decree shall apply to and be binding upon the signatories to this Decree (parties), their successors and assigns. The undersigned representative of each party hereby certifies that he or she is fully authorized to enter into this Decree and to execute and legally bind such party to comply with the Decree. Defendants agree to undertake all actions required by the terms and conditions of this Decree and not to contest state jurisdiction regarding this Decree. No

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 586-6760

change in ownership or corporate status shall alter the responsibility of the Defendants under this Decree Defendants shall provide a copy of this Decree to all agents, contractors and subcontractors retained to perform work required by this Decree and shall ensure that all work undertaken by such contractors and subcontractors will be in compliance with this Decree.

IV. DEFINITIONS

Except as specified herein, all definitions in WAC 173-340-200 apply to the terms in this Decree.

A. Site: The Site, referred to as Holly Street Landfill, is located in the City of Bellingham, Washington, to the north and east of Holly Street. The Site is more particularly described in Exhibit B to this Decree which is a detailed site diagram.

B Parties: Refers to the Washington State Department of Ecology, the City of Bellingham, Carl and Nickie Akers, Northwest Recycling, Parberry, Inc., Parberry Family L.P., John Sands, and Whatcom County.

C City: Refers to the City of Bellingham.

D Defendants: Refers to the City of Bellingham, Carl and Nickie Akers, Northwest Recycling, Parberry, Inc., Parberry Family L.P., John Sands, and Whatcom County.

E. Consent Decree or Decree: Refers to this Consent Decree and each of the exhibits to the Decree. All exhibits are integral and enforceable parts of this Consent Decree. The terms "Consent Decree" or "Decree" shall include all Exhibits to the Consent Decree.

V. STATEMENT OF FACTS

Ecology makes the following finding of facts without any express or implied admissions by Defendants.

A. The Holly Street Landfill is an approximately 13-acre area located in Bellingham, Washington, to the north and east of Holly Street. The Landfill Site is shown in Exhibit B to this Decree.

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 586-6760

B Beginning in approximately 1905, private property owners filled portions of the Holly Street Landfill area with dredge spoil and other materials. Between approximately 1937 and 1953, municipal waste disposal occurred at the Site, including disposal of glass, concrete, household debris, metal scrap, soil, coal slag, ashes and wood debris. The Holly Street Landfill is a "facility" as defined in RCW 70.105D 020(4)

C. The City of Bellingham, Carl and Nickie Akers, Northwest Recycling, Parberry, Inc , Parberry Family L P , John Sands, and Whatcom County are current owners of property within the Site and are "owners" as defined by RCW 70 105D.020(12)

D. In April of 2000, the City of Bellingham began performing environmental investigations at the Site In March, 2002 the City asked to begin consent decree negotiations for the Site pursuant to WAC 173-340-520. Ecology determined that, given the unique circumstances of the Site and the substantial amount of information already gathered by the City, a separate administrative process for the preparation of an RI/FS at the site would not serve MTCA's policy of effectuating the expeditious cleanup of sites. Therefore, Ecology agreed to commence consent decree negotiations and directed the City, pursuant to Ecology's discretionary authority under WAC 173-340-350(2), to prepare a Remedial Investigation / Feasibility Study (RI/FS) for the Site. On August 9, 2002 the City submitted a Draft Final RI/FS to Ecology. In April, 2003 Ecology accepted the RI/FS as a final document (Final RI/FS) Public review and comment on the Draft Final RI/FS took place as part of the public review and comment process for this decree.

E. The Final RI/FS identified hazardous substances within the fill and municipal wastes at the Site that exceed State cleanup levels. Specifically, the RI/FS identified metals and volatile organic compounds in soils at levels above the MTCA Methods A and or B soil cleanup levels set under the WAC 173-340-740 including: arsenic, copper, cadmium, lead, mercury, and carcinogenic polynuclear aromatic hydrocarbon. The RI/FS also identified shoreline seepage discharges from portions of the Holly Street Landfill Site that were above

the MTCA Methods A and or B surface water cleanup levels for copper and zinc set under the WAC 173-340-730 Finally, the RI/FS reported combustible methane gas concentrations in the Maritime Heritage Park portion of the Site above the Lower Explosive Levels (LEL) set by the Federal National Institute for Occupational Safety and Health (NIOSH)

F. Environmental conditions at the Site were reported in the Final RI/FS. The investigations have documented the "release", as defined in RCW 70.105D.020(20), of hazardous substances into the environment. The Final RI/FS analyzed remedial alternatives and identified appropriate cleanup standards as required pursuant to MTCA. Based on the results of the Final RI/FS, Defendants proposed and Ecology approved a final remedy as outlined in Section VI of this Decree (Work to be Performed), below, and as described more fully in the attached Cleanup Action Plan (CAP) (Exhibit A). The work outlined in this Consent Decree (Work to be Performed) and in the CAP, is necessary and appropriate to complete cleanup of existing Site conditions and to ensure that future uses of the Site will be consistent with cleanup requirements and be protective of human health and the environment.

VI. WORK TO BE PERFORMED

A. This Decree contains a program designed to protect public health, welfare and the environment from the known release, or threatened release, of hazardous substances or contaminants at, on, or from the Site. The requirements of this program are set forth in detail in the Cleanup Action Plan attached as Exhibit A to this Decree, and in the Consent Decree Schedule attached as Exhibit C, subject to Section XVIII of this Decree (Extension of Schedule). The Exhibits are incorporated by reference in this Decree. The Defendants acknowledge that they are strictly, jointly and severally liable for the obligations set forth in this decree. However, in order to effectuate the work to be performed in the most efficient manner, certain Defendants have elected to take the lead in performing certain responsibilities under this Decree. Language in this decree and its attachments which reflect a specific Defendant or Defendants as the party performing a task does not in any way relieve the other

Defendants of their strict, joint and several liability for the performance of all of their obligations under this decree.

B. The City has performed the Remedial Investigation/Feasibility Study and Defendants agree to perform the remedial actions herein and as described in the Cleanup Action Plan and Schedule to eliminate contaminated soil direct contact and soil to groundwater, groundwater to surface water and vapor exposure pathways to known or suspected hazardous substances at or from the Site and to protect human health and the environment from the release or threatened release of known or suspected hazardous substances at or from the Site.

C. Defendants shall perform remedial actions in the attached Cleanup Action Plan, Exhibit A, pursuant to the Schedule attached as Exhibit C, subject to Section XVIII of this Decree (Extension of Schedule). Defendants, through their contractor(s) and subcontractor(s) as necessary, shall accomplish the following tasks, with specific lead responsibilities for such tasks as provided in Paragraphs E though I of this Section:

1. Task 1: Implement the Cleanup Action Plan (CAP), Exhibit A and the Compliance Monitoring and Contingency Response Plan, Exhibit E, including but not limited to the following:

a. Implement Upland Cleanup capping to maintain a minimum of 2 (two) feet of clean soil cap, or equivalent structural cover, throughout the landfill area;

b. Implement Upland Cleanup passive gas venting system below the building structure depicted in Exhibit G for Maritime Heritage Park pursuant to Section VII of this Decree (Planned Maritime Heritage Park Project);

c. Implement Shoreline Cleanup or Shoreline/Aquatic Alternative Remedy capping to restrict tidal mixing with near shore landfill refuse;

d. Excavate and dispose off-site a sufficient amount of shoreline material as necessary to avoid loss of aquatic habitat resulting from the Shoreline action;

e. Implement natural attenuation, institutional controls, and deed restrictions at the Site pursuant to Section XV of this Decree (Land Use Restrictions);

f. Implement ambient air and surface water sampling program to evaluate the effectiveness of the remedial action as outlined in Exhibit E to this Decree; and

g. Design and implement contingency actions, if necessary, as outlined in Exhibit E to this Decree.

2 Task 2: Provide for public participation pursuant to Section XXV of this Decree (Public Participation).

3 Task 3: Perform remedial design tasks pursuant to the Schedule attached as Exhibit C to this Decree.

4. Task 4: Implement Compliance Monitoring as outlined in the Cleanup Action Plan (Exhibit A) and the Compliance Monitoring and Contingency Response Plan (Exhibit E), which includes:

a. Protection Monitoring.

b. Performance Monitoring

c. Confirmation Monitoring

5. Task 5: Implement the Schedule attached hereto as Exhibit C, subject to Section XVIII of this Decree (Extension of Schedule).

D Defendants shall obtain any and all state, federal, or local permits required by applicable law before commencing the remedial action at the Site, except as provided in Section XXI. Defendants shall prepare a Site Safety and Health Plan in accordance with WAC 173-340-810 and the most recent OSHA, WISHA, Ecology, and EPA guidance and applicable regulations, for Ecology review. The Site Safety and Health Plan shall be submitted with the "Construction Plans and Specifications" called for in the Schedule.

E. The City of Bellingham shall, at a minimum, implement the Shoreline Cleanup described in Section 4 1 of the Cleanup Action Plan ("Elements of the Proposed Cleanup

Action") and shall perform the remedial design and other remedial action tasks detailed in the Schedule, subject to Section XVIII of this Decree (Extension of Schedule).

F. The City may, contingent on continuing participation at the Site by the United States Army Corps of Engineers' Civil Works Program or other ecosystem restoration funding sources, implement the Shoreline/Aquatic Alternative Remedy described in Section 4.2 of the Cleanup Action Plan ("Elements of the Alternative Integrated Cleanup/Restoration Action") in lieu of the Shoreline Cleanup described in Paragraph B above.

G. All Defendants who, at the time of entry of the Consent Decree, own property within the Site shall implement the Upland Cleanup described in Section 4.1 and 4.2 of the Cleanup Action Plan for the property which they own within the Site.

H. All Defendants who, at the time of entry of the Consent Decree, own property within the Site shall record, as set forth in Section XV of this Decree (Land Use Restrictions), Restrictive Covenants substantially in the form of Exhibit D to this Decree that restrict future uses of such property to uses consistent with this Consent Decree and the Cleanup Action Plan.

I. The City shall perform compliance monitoring pursuant to the Compliance Monitoring and Contingency Response Plan attached as Exhibit E to this Decree.

J. Defendants agree not to perform any remedial actions outside the scope of this Decree that are substantial unless the parties agree to amend the scope of work to cover these actions. Minor changes to the work to be performed may occur if documented in writing by Ecology. All work conducted under this Decree shall be done in accordance with ch. 173-340 WAC unless otherwise provided herein.

VII. PLANNED MARITIME HERITAGE PARK PROJECT

A. The City intends to develop and operate part of the Site, at the Maritime Heritage Park, as a Classroom Building Structure.

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
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B. The proposed building, depicted in the Conceptual Site Use Plan, Exhibit G to this Decree, shall not involve closed space to the ground. The City agrees that the proposed building shall incorporate passive venting of any methane gas from the soil.

C. The City or its successors agree to conduct compliance monitoring and contingency response actions for the proposed building as outlined in Exhibit E to this Decree, which outlines in detail the locations and frequency of ambient monitoring to ensure continued protection of human health and the environment.

D. Defendants agree that any other future development in the Maritime Heritage Park portion of the Site will require either monitoring or an appropriate methane venting system that meets with Ecology approval, set forth in Exhibit E to the Consent Decree.

VIII. DESIGNATED PROJECT COORDINATORS

The project coordinator for Ecology is:

Lucille T. McInerney, P.E.
Site Manager
Washington Department of Ecology
Northwest Regional Office
3190 169th Avenue, SE
Bellevue, WA 98008-5452
(425) 649-7000

The project coordinator for Defendants is:

Sheila Hardy - Special Projects Manager
The Office of Neighborhoods and Community Development
City of Bellingham
Crown Plaza
114 West Magnolia Street, Suite 501
Bellingham, WA 98225
(360) 676-6880

Each project coordinator shall be responsible for overseeing the implementation of this Decree. The Ecology project coordinator will be Ecology's designated representative at the Site. To the maximum extent possible, communications between Ecology and Defendants and all documents, including reports, approvals, and other correspondence concerning the activities performed pursuant to the terms and conditions of this Decree, shall be directed through the

project coordinators. The project coordinators may designate, in writing, working level staff contacts for all or portions of the implementation of the remedial work required by this Decree. The project coordinators may agree to minor modifications to the work to be performed without formal amendments to this Decree. Minor modifications will be documented in writing by Ecology.

Any party may change its respective project coordinator. Written notification shall be given to the other parties at least ten (10) calendar days prior to the change.

IX. PERFORMANCE

All work performed pursuant to this Decree shall be under the direction and supervision, as necessary, of a professional engineer or hydrogeologist, or equivalent, with experience and expertise in hazardous waste site investigation and cleanup. Any construction work must be under the supervision of a professional engineer. Defendants shall notify Ecology in writing as to the identity of such engineer(s) or hydrogeologist(s), or others and of any contractors and subcontractors to be used in carrying out the terms of this Decree, in advance of their involvement at the Site.

X. ACCESS

Ecology or any Ecology authorized representatives, including the City of Bellingham when performing remedial action pursuant to this Decree, shall have the authority to enter and freely move about all property at the Site at all reasonable times for the purposes of overseeing and verifying remedial actions being performed, including, inter alia: inspecting records, operation logs, and contracts related to the work being performed pursuant to this Decree; reviewing Defendants' progress in carrying out the terms of this Decree; conducting such tests or collecting such samples as Ecology may deem necessary; using a camera, sound recording, or other documentary type equipment to record work done pursuant to this Decree; and verifying the data submitted to Ecology by the Defendants. Without limitation on Ecology's rights under this Section, Ecology will provide Defendants advanced notice of its entry onto

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
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FAX (360) 586-6760

the Site when feasible All parties with access to the Site pursuant to this paragraph shall comply with approved health and safety plans and all applicable federal and state safety and health requirements.

XI. SAMPLING, DATA REPORTING, AND AVAILABILITY

With respect to the implementation of this Decree, the Defendants shall make the results of all sampling, laboratory reports, and/or test results generated by them, or on their behalf available to Ecology and shall submit these results in accordance with Section XII of this Decree (Progress Reports)

Compliance monitoring data shall be submitted according to Exhibit E: Compliance Monitoring and Contingency Response Plan. These submittals shall be provided to Ecology in accordance with Section XII of this Decree (Progress Reports).

If requested by Ecology, the Defendants shall allow split or duplicate samples to be taken by Ecology and/or its authorized representatives of any samples collected by the Defendants pursuant to the implementation of this Decree. The Defendants shall notify Ecology seven (7) days in advance of any sample collection or work activity at the Site. Ecology shall, upon request, allow split or duplicate samples to be taken by the Defendants or their authorized representatives of any samples collected by Ecology pursuant to the implementation of this Decree provided it does not interfere with the Defendant's sampling. Without limitation on Ecology's rights under Section X (Access), Ecology shall endeavor to notify the Defendant's prior to any sample collection activity.

XII. PROGRESS REPORTS

A. Until such time as Ecology determines such reports are no longer necessary or modifies the frequency of reporting, the City shall submit to Ecology written progress reports that describe the actions taken to implement the requirements of this Decree. The progress report shall be prepared as set forth in the following schedule:

*Monthly during the construction period identified in the Schedule (from "Begin Construction" through "Work Completion Report"); and

* Quarterly after entry of this Decree and during post remedial monitoring activities

The progress reports shall contain the following:

1. A list of on-Site activities that have taken place during the reporting period;

2. Detailed description of any deviations from required tasks not otherwise documented in project plans or amendment requests;

3. Description of all deviations from the Schedule (Exhibit C) during the current reporting period and any planned deviations in the upcoming reporting period;

4. For any deviations in schedule, a plan for recovering lost time and maintaining compliance with the Schedule;

5. All data (including laboratory analyses) which, after the QA/QC program has been performed, have been received by the City during the past reporting period and an identification of the source of the samples; and

6 A list of deliverables for the upcoming reporting period if different from the schedule.

B. All progress reports shall be submitted by the tenth day of the month following each reporting period after the effective date of this Decree. Unless otherwise specified, progress reports and any other documents submitted pursuant to this Decree shall be sent by certified mail, return receipt requested, to Ecology's project coordinator.

XIII. RETENTION OF RECORDS

The Defendants shall preserve, during the pendency of this Decree and for ten (10) years from the date this Decree is no longer in effect as provided in Section XXVI (Duration of Decree), all records, reports, documents, and underlying data in their possession relevant to the implementation of this Decree and shall insert in contracts with project contractors and

subcontractors a similar record retention requirement. Upon request of Ecology, the Defendants shall make all non-archived records available to Ecology and allow access for review. All archived records shall be made available to Ecology within a reasonable period of time.

XIV. TRANSFER OF INTEREST IN PROPERTY

A. No voluntary or involuntary conveyance or relinquishment of title, easement, leasehold, or other interest in any portion of the Site shall be consummated without provision for continued operation and maintenance of the cleanup action undertaken pursuant to this Consent Decree. Defendants shall restrict leases to uses and activities consistent with this Decree.

B. Prior to transfer of any legal or equitable interest in all or any portion of the property, and during the effective period of this Decree, the transferring Defendant shall serve a copy of this Decree upon any prospective purchaser, lessee, transferee, assignee, or other successor in interest of the property; and, at least thirty (30) days prior to any transfer of title or easement interests in the property, the transferring Defendant shall notify Ecology of said contemplated transfer.

C. This Consent Decree was not based on circumstances unique to the Defendants as defined in RCW 70.105D.040(4)(e). RCW 70.105D.040(4)(e), as found in MTCA as of the effective date of this Consent Decree, will apply to any owner or operator who is a successor in interest to Defendants if all statutory provisions are met.

XV. LAND USE RESTRICTIONS

A. For all property within the Site owned by Defendants, each such Defendant agrees to record a Restrictive Covenant substantially in the form of Exhibit D with the office of the Whatcom County Auditor within twelve (12) months of the entry of this Decree. The Restrictive Covenants shall restrict future users of the Site. Covenants applicable to property within the Maritime Heritage Park portion of the Site (as identified in Exhibit B to this Decree)

shall include the bracketed language in Section 2 of Exhibit D regarding methane controls. Covenants applicable to all other properties within the Site shall not include such language. Each such Defendant shall provide Ecology with a copy of its recorded Restrictive Covenant within thirty (30) days of the recording date

B. For those properties within the Site not owned by Defendants where residual concentrations of hazardous substances for which cleanup levels have been established in the CAP will exceed residential soil cleanup levels following completion of the remedial action, the City of Bellingham will make a good faith effort to obtain a recorded restrictive covenant substantially in the form of Exhibit D to this Decree within eighteen (18) months from the date of entry of this Decree. If the City of Bellingham obtains a recorded Restrictive Covenant for these properties, the City of Bellingham will provide Ecology with a copy within thirty (30) days of receiving the Covenant.

If, after eighteen (18) months, the City of Bellingham has failed to obtain a recorded Restrictive Covenant substantially in the form of Exhibit D for these properties despite the use of a good faith effort, then the City may request Ecology's assistance in obtaining a Restrictive Covenant for these properties. The City may request Ecology's assistance prior to eighteen (18) months from the date of entry of this Decree if the City can show that it s good faith effort to obtain a recorded Restrictive Covenant and that further efforts are not likely to be successful. In providing assistance to the City, Ecology will undertake all reasonable efforts to facilitate the recording of the Restrictive Covenant. The City's use of a good faith effort to obtain a Restrictive Covenant for these properties will satisfy its obligations under this paragraph.

XVI. RESOLUTION OF DISPUTES

A. In the event a dispute arises as to an approval, disapproval, proposed modification or other decision or action by Ecology's project coordinator, Ecology and the affected Defendant shall utilize the dispute resolution procedure set forth below.

1. Upon receipt of the Ecology project coordinator's decision, the affected Defendant has fourteen (14) days within which to notify Ecology's project coordinator of its objection to the decision.

2. The parties' project coordinators shall then confer in an effort to resolve the dispute. If the project coordinators cannot resolve the dispute within fourteen (14) days, Ecology's project coordinator shall issue a written decision.

3. The affected Defendant may then request Ecology management review of the decision. This request shall be submitted in writing to the Toxics Cleanup Program Manager within seven (7) days of receipt of Ecology's project coordinator's decision.

4. Ecology's Program Manager shall conduct a review of the dispute and shall issue a written decision regarding the dispute within thirty (30) days of the affected Defendant's request for review. The Program Manager's decision shall be Ecology's final decision on the disputed matter.

B. If Ecology's final written decision is unacceptable to affected Defendant, the affected Defendant has the right to submit the dispute to the Court for resolution. The parties agree that one judge should retain jurisdiction over this case and shall, as necessary, resolve any dispute arising under this Decree. In the event the affected Defendant presents an issue to the Court for review, the Court shall review the action or decision of Ecology on the basis of whether such action or decision was arbitrary and capricious and render a decision based on such standard of review.

C. The parties agree to only utilize the dispute resolution process in good faith and agree to expedite, to the extent possible, the dispute resolution process whenever it is used. Where either party utilizes the dispute resolution process in bad faith or for purposes of delay, the other party may seek sanctions.

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Ecology Division
PO Box 40117
Olympia, WA 98504-0117
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D. Implementation of these dispute resolution procedures shall not provide a basis for delay of any activities required in this Decree, unless Ecology agrees in writing to a schedule extension or the Court so orders.

XVII. AMENDMENT OF CONSENT DECREE

A. This Decree may only be amended by a written stipulation among the parties to this Decree that is entered by the Court or by order of the Court. Such amendment shall become effective upon entry by the Court. Agreement to amend shall not be unreasonably withheld by any party to the Decree.

B. Defendants shall submit any request for an amendment to Ecology for approval. Ecology shall indicate its approval or disapproval in a timely manner after the request for amendment is received. If the amendment to the Decree is substantial, Ecology will provide public notice and opportunity for comment. Reasons for the disapproval shall be stated in writing. If Ecology does not agree to any proposed amendment, the disagreement may be addressed through the dispute resolution procedures described in Section XVI of this Decree (Resolution of Disputes).

XVIII. EXTENSION OF SCHEDULE

A. An extension of schedule shall be granted only when a request for an extension is submitted in a timely fashion, generally at least 30 days prior to expiration of the deadline for which the extension is requested, and good cause exists for granting the extension. All extensions shall be requested in writing. The request shall specify the reason(s) the extension is needed.

B. An extension shall only be granted for such period of time as Ecology determines is reasonable under the circumstances. A requested extension shall not be effective until approved by Ecology or the Court. Ecology shall act upon any written request for extension in a timely fashion, preferably within fifteen (15) days of receipt of the request. It

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 586-6760

shall not be necessary to formally amend this Decree pursuant to Section XVII (Amendment of Consent Decree) when a schedule extension is granted.

C. The burden shall be on the Defendant requesting an extension to demonstrate to the satisfaction of Ecology that the request for such extension has been submitted in a timely fashion and that good cause exists for granting the extension. Good cause includes, but is not limited to, the following:

1. Circumstances beyond the reasonable control and despite the due diligence of the Defendant requesting an extension including delays caused by unrelated third parties or Ecology, such as (but not limited to) delays by Ecology in reviewing, approving, or modifying documents submitted by Defendants; or

2. Acts of God, including fire, flood, blizzard, extreme temperatures, storm, or other unavoidable casualty; or

3. Endangerment as described in Section XIX.

However, neither increased costs of performance of the terms of the Decree nor changed economic circumstances shall be considered circumstances beyond the reasonable control of Defendants.

D. Ecology shall give Defendant written notification in a timely fashion of any extensions granted pursuant to this Decree.

XIX. ENDANGERMENT

In the event Ecology determines that activities implementing or in noncompliance with this Decree, or any other circumstances or activities, are creating or have the potential to create a danger to the health or welfare of the people on the Site or in the surrounding area or to the environment, Ecology may order Defendants to stop further implementation of this Decree for such period of time as needed to abate the danger or may petition the Court for an order as appropriate. During any stoppage of work under this Section, the obligations of Defendants with respect to the work under this Decree which is ordered to be stopped shall be suspended

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
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and the time periods for performance of that work, as well as the time period for any other work dependent upon the work which is stopped, shall be extended, pursuant to Section XVIII of this Decree (Extension of Schedule), for such period of time as Ecology determines is reasonable under the circumstances.

In the event Defendants determine that activities undertaken in furtherance of this Decree or any other circumstances or activities are creating an endangerment to the people on the Site or in the surrounding area or to the environment, Defendants may stop implementation of this Decree for such period of time necessary for Ecology to evaluate the situation and determine whether Defendants should proceed with implementation of the Decree or whether the work stoppage should be continued until the danger is abated. Defendants shall notify Ecology's project coordinator as soon as possible, but no later than twenty-four (24) hours after such stoppage of work, and thereafter provide Ecology with documentation of the basis for the work stoppage. If Ecology disagrees with the Defendants' determination, it may order Defendants to resume implementation of this Decree. If Ecology concurs with the work stoppage, the Defendants' obligations shall be suspended and the time period for performance of that work, as well as the time period for any other work dependent upon the work which was stopped, shall be extended, pursuant to Section XVIII of this Decree (Extension of Schedule), for such period of time as Ecology determines is reasonable under the circumstances. Any disagreements pursuant to the clause shall be resolved through the dispute resolution procedures in Section XVI (Resolution of Disputes).

XX. INDEMNIFICATION

The Defendants agree to indemnify and save and hold the State of Washington, its employees, and agents harmless from any and all claims or causes of action for death or injuries to persons or for loss or damage to property arising from or on account of acts or omissions of the Defendants, their officers, employees, agents, or contractors in entering into and implementing this Decree. However, the Defendants shall not indemnify the State of

Washington nor save nor hold its employees and agents harmless from any claims or causes of action arising out of the negligent acts or omissions of the State of Washington, or the employees or agents of the State, in implementing the activities pursuant to this Decree

XXI. COMPLIANCE WITH APPLICABLE LAWS

A. All actions carried out by the Defendants pursuant to this Decree shall be done in accordance with all applicable federal, state, and local requirements, including requirements to obtain necessary permits, except as provided in paragraph B of this Section.

B. Pursuant to RCW 70.105D.090(1), the substantive requirements of chapters 70.94, 70.95, 70.105, 75.20, 90.48, and 90.58 RCW and of any laws requiring or authorizing local government permits or approvals for the remedial action under this Decree that are known to be applicable at the time of entry of the Decree have been included in Exhibit A, the Cleanup Action Plan, and are binding and enforceable requirements of the Decree.

The Defendants have a continuing obligation to determine whether additional permits or approvals addressed in RCW 70.105D.090(1) would otherwise be required for the remedial action under this Decree. In the event either the Defendants or Ecology determines that additional permits or approvals addressed in RCW 70.105D.090(1) would otherwise be required for the remedial action under this Decree, it shall promptly notify the other party of this determination. Ecology shall determine whether Ecology or the Defendants shall be responsible to contact the appropriate state and/or local agencies. If Ecology so requires, the Defendants shall promptly consult with the appropriate state and/or local agencies and provide Ecology with written documentation from those agencies of the substantive requirements those agencies believe are applicable to the remedial action. Ecology shall make the final determination on the additional substantive requirements that must be met by the Defendants and on how the Defendants must meet those requirements. Ecology shall inform the Defendants in writing of these requirements. Once established by Ecology, the additional requirements shall be enforceable requirements of this Decree. The Defendants shall not begin

or continue the remedial action potentially subject to the additional requirements until Ecology makes its final determination.

Ecology shall ensure that notice and opportunity for comment is provided to the public and appropriate agencies prior to establishing the substantive requirements under this Section.

C Pursuant to RCW 70.105D.090(2), in the event Ecology determines that the exemption from complying with the procedural requirements of the laws referenced in RCW 70.105D.090(l) would result in the loss of approval from a federal agency which is necessary for the State to administer any federal law, the exemption shall not apply and the Defendants shall comply with both the procedural and substantive requirements of the laws referenced in RCW 70.105D.090(l), including any requirements to obtain permits.

XXII. REMEDIAL AND INVESTIGATIVE COSTS

Defendant City of Bellingham agrees to pay costs incurred by Ecology pursuant to this Decree. These costs shall include work performed by Ecology or its contractors for, or on, the Site under Ch. 70.105D RCW both prior to and subsequent to the issuance of this Decree for investigations, remedial actions, and Decree preparation, negotiations, oversight and administration. Ecology costs shall include costs of direct activities and support costs of direct activities as defined in WAC 173-340-550(2). Defendant City of Bellingham agrees to pay the required amount within ninety (90) days of receiving from Ecology an itemized statement of costs that includes a summary of costs incurred, an identification of involved staff, and the amount of time spent by involved staff members on the project. A general statement of work performed will be provided upon request. Itemized statements shall be prepared quarterly. Failure to pay Ecology's costs within ninety (90) days of receipt of the itemized statement will result in interest charges.

XXIII. IMPLEMENTATION OF REMEDIAL ACTION

If Ecology determines that Defendants have failed without good cause to implement the remedial action, Ecology may, after notice to Defendants, perform any or all portions of the

remedial action that remain incomplete If Ecology performs all or portions of the remedial action because of the Defendants' failure to comply with their obligations under this Decree, Defendants shall reimburse Ecology for the costs of doing such work in accordance with Section XXII (Remedial and Investigative Costs), provided that Defendants are not obligated under this Section to reimburse Ecology for costs incurred for work inconsistent with or beyond the scope of this Decree.

XXIV. FIVE YEAR REVIEW

As remedial action, including ground water monitoring, continues at the Site, the parties agree to review the progress of remedial action at the Site, and to review the data accumulated as a result of site monitoring as often as is necessary and appropriate under the circumstances. At least every five years Ecology and the City of Bellingham shall meet to discuss the status of the Site and the need, if any, of further remedial action at the Site. Ecology reserves the right to require further remedial action at the Site under appropriate circumstances. This provision shall remain in effect for the duration of the Decree or until Ecology determines that such reviews are no longer necessary.

XXV. PUBLIC PARTICIPATION

Ecology shall maintain the responsibility for public participation at the Site in accordance with the Public Participation Plan, Exhibit F to this Decree However, the City of Bellingham shall cooperate with Ecology and, if agreed to by Ecology, shall:

A. Prepare drafts of public notices and fact sheets at important stages of the remedial action, such as the submission of work plans, Remedial Investigation/Feasibility Study reports and engineering design reports. Ecology will finalize (including editing if necessary) and distribute such fact sheets and prepare and distribute public notices of Ecology's presentations and meetings;

B. Notify Ecology's project coordinator prior to the preparation of all press releases and fact sheets, and before major meetings with the interested public and local

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 586-6760

governments Likewise, Ecology shall notify the City of Bellingham prior to the issuance of all press releases and fact sheets, and before major meetings with the interested public and local governments;

C. Participate in public presentations on the progress of the remedial action at the Site. Participation may be through attendance at public meetings to assist in answering questions, or as a presenter;

D. In cooperation with Ecology, arrange and/or continue information repositories to be located at the Bellingham Public Library, 210 Central Avenue, Bellingham, Ecology's Bellingham Field Office, 1204 Railroad Avenue, Suite 200, Bellingham, and Ecology's Northwest Regional Office at 3190 160th Avenue SE, Bellevue, Washington. At a minimum, copies of all public notices, fact sheets, and press releases; all quality assured ground water, surface water, soil sediment, and air monitoring data; remedial actions plans, supplemental remedial planning documents, and all other similar documents relating to performance of the remedial action required by this Decree shall be promptly placed in these repositories.

XXVI. DURATION OF DECREE

This Decree shall remain in effect and the remedial program described in the Decree shall be maintained and continued until the Defendants have received written notification from Ecology that the requirements of this Decree have been satisfactorily completed. The provisions set forth in Section XXVIII (Contribution Protection), Section XXIX (Covenant Not to Sue), and Section XX (Indemnification) and such other continuing rights of the Defendants or Ecology under this Decree shall survive the termination of this Decree pursuant to this paragraph.

XXVII. CLAIMS AGAINST THE STATE

Defendants hereby agree that they will not seek to recover any costs accrued in implementing the remedial action required by this Decree from the State of Washington or any of its agencies; and further, that the Defendants will make no claim against the State Toxics

Control Account or any Local Toxics Control Account for any costs incurred in implementing this Decree Except as provided above, however, Defendants expressly reserve their rights to seek to recover any costs incurred in implementing this Decree from any other potentially liable person Nothing in this Section shall preclude the City from applying for or receiving State Toxics Control Act or any Local Toxics Control Act or other such funding in the future.

XXVIII. CONTRIBUTION PROTECTION

With regard to claims for contribution against Defendants for matters addressed in this Decree, Defendants are entitled to protection from contribution actions or claims as is provided by MTCA, RCW 70 105D 040, or as otherwise provided by law. For purposes of this Section, "Matters Addressed" shall mean all past and future aspects of the investigation and remediation of the Site (including any agency oversight costs), whether performed by Ecology, Defendants or other parties.

XXIX. COVENANT NOT TO SUE

A. In consideration of Defendants' compliance with the terms and conditions of this Decree, Ecology agrees that compliance with this Decree shall stand in lieu of any and all administrative, legal and equitable remedies and enforcement actions available to the State against Defendants for the release or threatened release of known hazardous substances addressed pursuant to this Decree and the Cleanup Action Pan (Exhibit A). For purposes of this paragraph, "known hazardous substances" shall include the hazardous substances identified in the Final Remedial Investigation / Feasibility Study (April, 2003), which are described in the Cleanup Action Plan.

B Re-opener: Ecology specifically reserves the right to institute legal or administrative action against Defendants, following twenty (20) days written notice to Defendants, seeking to require Defendants to perform additional remedial action at the Site, or to pursue appropriate cost recovery in accordance with provisions set out in RCW 70.105D.050, under the following circumstances:

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 586-6760

1. In the event Defendants fail to comply with the terms and conditions of this Decree, including all Exhibits, and after written notice of noncompliance, such failure is not cured by Defendants within thirty (30) days of receipt of notice of noncompliance.

2. In the event new information becomes available regarding factors not known to Ecology at the time of entry of this Decree which present a previously unknown threat to human health or the environment, and Ecology determines, in light of this information, that further remedial action is necessary at the Site to protect human health or the environment, and Defendants, after notice from Ecology, fail to take necessary action within a reasonable time.

C. Applicability: The Covenant Not To Sue set forth above shall have no applicability whatsoever to:

1. Criminal liability;

2. Actions against potentially liable parties not a party to this Decree, including cost recovery;

3. Liability for damages to natural resources.

XXX. EFFECTIVE DATE

This Decree is effective upon the date it is entered by the Court.

XXXI. PUBLIC NOTICE AND WITHDRAWAL OF CONSENT

This Decree has been the subject of public notice and comment under RCW 70.105D.040(4)(a). As a result of this process, Ecology has found that this Decree will lead to a more expeditious cleanup of hazardous substances at the Site.

If the Court withholds or withdraws its consent to this Decree, it shall be null and void at the option of any party and the accompanying Complaint shall be dismissed without costs

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 586-6760

and without prejudice. In such an event, no party shall be bound by the requirements of this Decree.

DATED this 25 day of Sept, 2003.

DAVID A. NICHOLS
JUDGE
Whatcom County Superior Court

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 586-0760

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

JAMES PENDOWSKI
Program Manager
Toxics Cleanup Program

Dated: 5/20/03

CHRISTONE O. GREGOIRE
Attorney General

STEVEN J. THIELE, WSBA #20275
Assistant Attorney General
Attorneys for Plaintiff
State of Washington
Department of Ecology
(360) 586-4619

Dated: 5-27-03

CITY OF BELLINGHAM

By: _____
MAYOR PRO TEM

Dated: JUN 0 4 2003

APPROVED AS TO FORM: _____
Office of the City Attorney

ATTEST: _____
Finance Director

DEPARTMENTAL APPROVAL: _____
Department Head

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 586-6760

by Carl Akers
Carl Akers

Audrey Akers
Audrey Akers

Dated 6/12/03

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 586-6760

NORTHWEST RECYCLING

by Lorna H Parbury
(Name)
its President
(Title)
Dated 7/14/03

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 586-6760

PARBERRY, INC.

by Louis H Parberry
(Name)
its president
(Title)
Dated 7/14/03

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 586-6760

PARBERRY FAMILY L.P.

by Lewis Parberry
(Name)
its ~~Pres~~ President
(Title)
Dated 7/14/93

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 586-6760

by _____
John Sands

Dated 6/25/03

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 586-6760

DATED this 24th day of July, 2003.

WHATCOM COUNTY

PETE KREMEN
County Executive

STATE OF WASHINGTON)
) ss.
COUNTY OF WHATCOM)

On this 24th day of July, 2003, before me personally appeared Pete Kremen, to me known to be the person individually or jointly described in and who executed the above instrument and who acknowledged to be the act of signing and sealing thereof.

LINDA M. KASPER
NOTARY PUBLIC
STATE OF WASHINGTON
COMMISSION EXPIRES
3-29-05

NOTARY PUBLIC in and for the State of Washington, residing at Bellingham.

My Commission expires:
3/29/05

APPROVED AS TO FORM:

KAREN N. FRAKES
Civil Deputy
Prosecuting Attorney

FILED
03 SEP 23 PM 1:13
COUNTY
BY

STATE OF WASHINGTON
WHATCOM COUNTY SUPERIOR COURT

STATE OF WASHINGTON, DEPARTMENT OF ECOLOGY,

Plaintiff,

v

CITY OF BELLINGHAM, a Washington Municipal Corporation, CARL and AUDREY AKERS, NORTHWEST RECYCLING, PARBERRY, INC., PARBERRY FAMILY L.P., JOHN SANDS, and WHATCOM COUNTY,

Defendants.

NO 03 2 02164 1

ORDER ENTERING CONSENT DECREE

DAVID A. NICHOLS

Having reviewed the Joint Motion for Entry of the Consent Decree, it is hereby ORDERED AND ADJUDGED that the Consent Decree in this matter is entered and that the Court shall retain jurisdiction over the Consent Decree to enforce its terms.

DATED this 25 day of Sept, 2003.

DAVID NICHOLS

JUDGE/COMMISSIONER
Whatcom County

COPY

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 586-6760

Presented by:

AMY KRAHAM, WSBA #19959
Assistant City Attorney
Attorney for Defendant
City of Bellingham

Dated: 9/3/03

Approved as to form,
notice of presentation waived:

CHRISTINE O. GREGOIRE
Attorney General

STEVEN J. THIELE, WSBA #20275
Assistant Attorney General
Attorneys for Plaintiff
Department of Ecology
(360) 586-4619

Dated: 9-10-03

Audrey Akers

CARL and AUDREY AKERS

Dated: 9-9-03

LANGABEER, TULL & LEE, P.S.

ROBERT M. TULL, WSBA #5845
Attorney for Defendants
John Sands, Parberry, Inc.,
Parberry Family L.P., and
Northwest Recycling
(360) 671-6460

Dated: 9/9/03

WHATCOM COUNTY

By: KAREN FRAKES, WSBA 13600

Dated: 9/9/03

COPY

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 586-6760

EXHIBIT A

CLEANUP ACTION PLAN (CAP)

EXHIBIT A

CLEANUP ACTION PLAN (CAP)

HOLLY STREET LANDFILL
BELLINGHAM, WASHINGTON

ISSUED BY:

WASHINGTON STATE DEPARTMENT OF ECOLOGY

TOXICS CLEANUP PROGRAM

NORTHWEST REGIONAL OFFICE, BELLEVUE

April 2003

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EXECUTIVE SUMMARY

The Holly Street Landfill site is a 13-acre historic municipal solid waste landfill located in the City of Bellingham's (City's) Old Town district (Figure 1). Municipal solid waste is located on both sides of Whatcom Creek. The Holly Street Landfill site on the northwest bank and Maritime Heritage Park on the southeast bank of Whatcom Creek are listed and ranked by the Washington Department of Ecology (Ecology) as contaminated sites subject to the investigation and cleanup requirements of the Washington State Model Toxics Control Act. Since these sites are essentially one site bisected by Whatcom Creek, Ecology has combined the sites into one site known as the Holly Street Landfill.

Bellingham's "Old Town", the location of the Holly Street Landfill is the site of the first platted Euro-American settlement on Bellingham Bay. The nucleus of this settlement, the town of Whatcom, grew from a lumber mill built in 1853 at the lower falls of Whatcom Creek just to the east of the landfill. This historically significant area stretches from Whatcom Creek up West Holly Street beyond the northeastern landfill boundary to "H" Street and up upon the natural bluff top (Figure 1). Early plat maps and Sanborn Fire Maps detail the numerous structures constructed over the years in this area, often supported on pilings over the tidelands.

From 1937 to 1953, municipal waste was disposed on private tidelands within the former Whatcom Creek Estuary. Wastes disposed at the site included debris and scrap materials, consistent with landfill disposal practices of the time. With the recent acquisition of the Sash & Door property, the City currently owns 8.3 acres of the 13-acre landfill site, including all landfill properties located along the Whatcom Creek shoreline. Various private property owners own land around the upland/inland perimeter of the landfill.

A final Remedial Investigation/Feasibility Study (RI/FS) has been prepared for this site, including collection of data needed to evaluate the nature and extent of contamination. Soil, sediment, surface water, and ground water conditions were characterized during the Remedial Investigation (RI). Based on the findings of the RI, no current public health hazard exists as a result of exposure to contaminants. However, controls are needed at the site to continue to prevent human and environmental exposure to buried (subsurface) refuse and associated soil contaminants. Moreover, although contaminants have not been detected in ground water at the site at levels of potential concern, metals such as copper and zinc present in landfill refuse are

mobilized by tidal processes affecting the shoreline landfill zone. These processes result in seepage to Whatcom Creek along a localized reach of the Sash & Door property shoreline that poses a potential risk to sensitive aquatic species in this area.

The Feasibility Study (FS) developed and evaluated three potential remedial alternatives for the site. The preferred remedial alternative has been identified as a cap constructed along the former Sash & Door property shoreline and localized upland areas, institutional controls, and monitoring of localized surface water seeps. However, contingent upon continuing participation by the U.S. Army Corps of Engineers' (Corps') Civil Works program or other ecosystem restoration funding sources, the preferred alternative could be modified as an integrated cleanup and habitat restoration action with a cap constructed along the Sash & Door shoreline and localized upland areas, institutional controls, and monitoring of localized surface water seeps. The habitat restoration component of the contingent integrated action includes conversion of approximately 0.3 acres of existing uplands to aquatic habitat. Future site plans are consistent with maintaining long-term habitat restoration benefits. While the habitat restoration component is consistent with remedial action objectives, it is not necessary to achieve cleanup goals. This Cleanup Action Plan provides the necessary documentation to support the cleanup effort and summarizes information describing the proposed site cleanup.

1.0 INTRODUCTION

This document presents the Final Cleanup Action Plan (CAP) for the Holly Street Landfill, Bellingham, Washington. It has been prepared to satisfy the requirements of the Model Toxics Control Cleanup Act (MTCA) administered by the Department of Ecology (Ecology) under Chapter 173-340-360 WAC, Draft Cleanup Action Plan. The CAP (EXHIBIT A, of the Consent Decree) provides a general description of the proposed cleanup action and sets forth functional requirements that the cleanup must meet for cleanup levels specified for the site. The remedial actions selected for the site are to occur under the legal framework of a Consent Decree between Ecology, the City, and other Defendants.

1.1 Purpose

The purpose of the CAP is to:

- Describe the site, including a summary of its history and extent of contamination.
- Identify site specific cleanup levels and points of compliance for each hazardous substance and media of concern
- Summarize the other alternative cleanup actions evaluated in the Feasibility Study
- Identify and describe the selected remedial action alternative for the site
- Present the schedule for implementing the cleanup action plan
- Discuss applicable state and federal laws for the proposed cleanup action
- Discuss institutional controls and site use restrictions

2.0 SUMMARY OF SITE CONDITIONS

The RI/FS document presents the results of investigations into the nature and extent of contamination at the Holly Street Landfill site and evaluates the feasibility of alternative methods of cleanup of the site. The investigations and studies were performed in coordination with both the U.S. Environmental Protection Agency (EPA) and Ecology. EPA's oversight in their role as a funding agency was performed under the terms of a Cooperative Agreement between the City and EPA, and specifically as an element of the Holly Street Landfill Brownfield's Redevelopment Project. Ecology's oversight of the RI/FS was performed under the MTCA Voluntary Cleanup Program and was presented together with the CAP for public review and comment.

This section provides a summary of site conditions, including the nature and extent of impacts. In addition, the exposure pathways identified for the site are briefly described.

2.1 Site Description

The Holly Street Landfill site is a 13-acre historic municipal solid waste landfill located in the Old Town district of Bellingham, Washington (Figure 1 and EXHIBIT B, of the Consent Decree). In the late 1800s, the Holly Street Landfill Site was part of the original Whatcom Creek estuary and mudflat. Around 1905, private property owners began filling portions of the site with dredge spoils and other materials to increase useable upland areas. From 1937 to 1953, municipal waste was used by owners of fill private tidelands within the former Whatcom Creek Estuary. Wastes disposed at the site included debris and scrap materials, consistent with landfill disposal practices of the time.

With the recent acquisition of the Sash & Door property, the City currently owns 8.3 acres of the 13-acre landfill site, including all landfill properties located along the Whatcom Creek shoreline. Various private property owners own land around the upland/inland perimeter of the landfill.

Municipal solid waste is located on both sides of Whatcom Creek. The Holly Street Landfill site on the northwest bank (near the former Sash & Door property) and Maritime Heritage Park on the southeast bank of Whatcom Creek are listed and ranked

by Ecology as contaminated sites subject to the investigation and cleanup requirements of MTCA. Since these sites are essentially one site bisected by Whatcom Creek, Ecology has combined the sites into one site known as the Holly Street Landfill.

2.2 Nature and Extent of Contamination

Based on a review of available historical records, municipal waste disposal at the Holly Street Landfill site occurred over the period between 1937 and 1953. The estimated extent of municipal solid waste at the site, based on available data and historical shoreline maps, comprises an area of roughly 13 acres, located on both sides of Whatcom Creek (Figure 1). Data collected by GeoEngineers (2002) was incorporated into the RI/FS, and was an integral part of the evaluation and remedy selection process.

Most of the wastes disposed at the site are generally described in the historical documents as inorganic materials, largely devoid of putrescible wastes or flammable items, which were disposed at other locations. Specific descriptions of waste materials disposed at the Holly Street Landfill site have included glass, concrete, household debris, metal scrap, soil, coal slag, ashes, and woody debris, consistent with landfill disposal practices of the time. Few of the waste materials are currently exposed at the surface, but are largely covered by soil fills, gravel, buildings, and asphalt.

The current ground surface of the landfill consists predominantly of silty sand and gravel of variable thickness, overlain in many areas by asphalt (northern fill unit) or landscaping (southern fill unit). Cover material thickness ranges from approximately 1 to 20 feet, and is generally thicker in the southeast portion of the site (Maritime Heritage Park), where it ranges from about 3 to 20 feet thick.

Landfill refuse is divided into two distinct areas separated by the Whatcom Creek estuary. Approximately 9.1 acres of refuse lie on the northwest side of Whatcom Creek and 3.8 acres lie on the southeast side (Figure 2A). The extent of refuse at the site, determined from more than 50 soil explorations within the general site area, closely follows the historical shoreline and is also bounded by Holly Street, which was constructed prior to filling the site. The refuse on the northwest lobe of the site was encountered to a maximum depth of 18 feet below ground surface. Refuse on the

southeast portion of the site was present at deeper depths, extending up to approximately 40 feet below ground surface.

2.2.1 Soil

A range of metals (arsenic, cadmium, and lead) and hydrocarbon compounds were detected in soil/refuse at the Holly Street Landfill site at concentrations that exceed MTCA cleanup standards for unrestricted (residential) site uses (Figure 2A). As with other regional landfills, performance-based cleanup standards are needed at the Holly Street Landfill site to minimize potential human and environmental exposure to refuse and associated soil contaminants.

2.2.2 Soil Gases (Methane)

Methane concentrations measured within soil gas at the Holly Street Landfill are generally well below potential explosive limits. Two soil gas monitoring sites located within the central area of the Maritime Heritage Park contained subsurface soil gas that exceeded the lower explosive limit (Figure 2B). Soil gas samples collected near the margins of the Park, and throughout the rest of the landfill site, were well below potential explosive levels. Future development in the Maritime Heritage Park will need to include supplemental gas monitoring and/or a passive gas venting system below the structure and compliance monitoring conducted as outlined in EXHIBIT E of the Consent Decree to ensure continued protection of human health and the environment.

2.2.3 Ground Water

Ground water was encountered within the base of the refuse during the RI/FS explorations. Iron and manganese were detected above taste/odor or aesthetic thresholds. However, no chemicals were detected at concentrations exceeding potential drinking water use health-based criteria. Moreover, no human health risks are likely to be associated with potential drinking water consumption of ground water at the Holly Street Landfill site because the City supplies drinking water throughout this area from sources removed from potential Site influence.

2.2.4 Surface Water

Although ground water in the interior portions of the landfill contains low concentrations of hazardous substances, geochemical oxidation processes acting within the immediate shoreline zone mobilize certain metals present in landfill refuse. As a result, shoreline seepage discharges from portions of the Holly Street Landfill site near the former Sash & Door property have the potential to result in both chronic and acute toxicity to sensitive aquatic life. Copper and zinc concentrations peak in shoreline seeps adjacent to the northwest lobe of the site (but not on southeast lobe of the site), before being diluted upon discharge into Whatcom Creek (Figure 2A). The large dilution potential of Whatcom Creek restricts such exceedances to the immediate shoreline area of the estuary.

2.2.5 Sediment

During the RI/FS, sediment samples were collected in the shoreline area adjacent to the Holly Street Landfill site. Although other contaminated sediment cleanup sites are present downstream of the landfill, all sediment samples collected immediately adjacent to the Holly Street Landfill site were below State Sediment Management Standards chemical criteria.

2.3 Exposure Pathways

Based on the Geotechnical and Engineering Report and the RI/FS, the following pathways were evaluated and identified as applicable to the Holly Street Landfill:

- Soil Direct Contact
- Soil to Ground Water
- Shoreline Ground Water to Surface Water/Sediment
- Soil to Ambient Air

2.3.1 Soil Direct Contact

All soil with contaminant concentrations exceeding direct contact criteria will require appropriate remedial measures. In the absence of institutional controls, the MTCA points of compliance for soil are from 0 to 15 feet below the ground surface, for protection of human health. As part of the planned remediation of the site, contaminated soils within the landfill area will be covered with a minimum of 2 feet of clean soil or equivalent structural materials to prevent

direct contact. In addition, institutional controls will be established to ensure that appropriate measures are taken to maintain the integrity of the cap and limit future exposure to affected soils.

2.3.2 Soil to Ground Water

Contaminated soils and refuse at the site are currently covered by silty sand and gravel of variable thickness, overlain in many areas by asphalt (northern fill unit) or landscaping (southern fill unit). A shallow unconfined aquifer is present within the refuse at depths ranging from approximately 7 to 25 feet below ground surface, depending on surface topography. The shallow aquifer units are recharged both by lateral inflow originating in adjacent upland areas, and direct infiltration of precipitation through the permeable surface soils of the site. Both recharge pathways result in ground water contact with refuse. However, as detailed in the RI/FS, ground water quality within the refuse/aquifer units currently complies with health-based criteria, and does not require remedial action. The characteristic reducing (oxygen deficient) condition of the refuse/aquifer system prevents metals from becoming mobilized in ground water. Moreover, no existing or future drinking water use of site ground water has been identified. Ground water flow throughout the site is directed towards Whatcom Creek.

2.3.3 Shoreline Ground Water to Surface Water/Sediment

As discussed above and presented in detail in the RI/FS, although ground water in the interior portions of the landfill contains low concentrations of hazardous substances, certain metals present in landfill refuse are mobilized by geochemical oxidation processes acting within the immediate shoreline zone (i.e., within approximately 20 feet of Whatcom Creek). Oxidation of shoreline refuse deposits occurs in this shoreline zone as salt water begins to mix with the ground water, increasing the amount of dissolved oxygen within these waters, and resulting in mobilization of metals into shoreline ground water. This process results in release of copper and zinc into shoreline seeps at levels that have the potential to result in both chronic and acute toxicity to sensitive aquatic life.

The remedial action objective for the surface water is to protect sensitive ecological receptors and human health from the consumption of potentially contaminated organisms. The point of compliance for surface water at the Holly Street Landfill site is the point at which hazardous substances are released to the surface waters of the state, which corresponds to seepage discharges along the landfill shoreline. The point of compliance for these seeps is within the biologically active zone of shoreline sediments, or between approximately 0 and 12 centimeters below mudline, for the protection of organisms in this environment. As described in the RI/FS, control of such oxidation releases from soil to ground water can be achieved by constructing a semi-permeable cap along the shoreline to limit tidal-induced exchange of oxidized surface waters into the landfill (lateral recharge). As shoreline ground water in contact with landfill soils re-establish equilibrium with interior portions of the landfill following cap construction, shoreline ground water and surface water seepage concentrations are expected to return to the low concentrations observed throughout the rest of the site.

2.3.4 Soil to Air

Methane concentrations measured within soil gas at the Holly Street Landfill are generally well below potential explosive limits. However, single soil gas-monitoring sites (A-MW-4 and A-GP-2; Figure 2B) located within the central area of the Maritime Heritage Park contained subsurface soil gas that exceeded the lower explosive limit (LEL) set by the Federal National Institute for Occupational Safety and Health (NIOSH). Future development in the Maritime Heritage Park shall include supplemental gas monitoring and/or a passive gas venting system below the structure. A Site Use Conceptual Plan for the Maritime Heritage Park is depicted in EXHIBIT G of the Consent Decree. Potential future additional structures as may be constructed within the Maritime Heritage Park will require either monitoring or an appropriate methane venting system that meets with Ecology approval, as set forth in EXHIBIT E – Compliance Monitoring and Contingency Response Plan, to the Consent Decree. Ambient air compliance monitoring as outlined in EXHIBIT E of the Consent Decree shall be performed to ensure continued protection of human health and the environment.

3.0 SUMMARY OF CLEANUP STANDARDS AND POINTS OF COMPLIANCE

The MTCA cleanup regulations provide that a cleanup action must comply with cleanup levels for selected hazardous substances, points of compliance (POCs), and applicable or relevant and applicable or relevant and appropriate state and federal laws (ARARs) [Washington Administrative Code (WAC) 173-340-710]. The final indicator hazardous substances identified for the site, the associated cleanup levels, and ARARs are briefly summarized in the following sections. POCs for ground water will be established at the down gradient edge of the site. POCs are discussed in detail in the Compliance Monitoring and Contingency Response Plan, EXHIBIT E, of the Consent Decree.

3.1 Indicator Hazardous Substances

Indicator hazardous substances (IHSs) were identified for the Holly Street Landfill site as part of the RI/FS using the criteria outlined in WAC 173-340-708(2). The final list of IHSs for ground water and soil are a subset of the contaminants detected at the site. The final soil and ground water IHSs are arsenic, cadmium, copper, lead, zinc, benzo(a)pyrene (CPAH), and methane.

3.2 Cleanup Levels

Soil and ground water cleanup levels for the final IHSs were developed based on the protection of surface water and propagation of aquatic life, and protection of human health from the consumption of potentially contaminated marine organisms and exposure to landfill gases.

As described in the RI/FS, remedial action is necessary at the Holly Street Landfill site to address soil and surface water contamination. Cleanup levels and associated points of compliance for these media are presented below. Because chemical concentrations in aquatic sediment are below cleanup levels, no remedial action is necessary. The portion of the ground water that is of concern is next to the surface water interface, where tidal influence interacts with the upland refuse, thereby mobilizing some metals in the ground water next to the surface water body. As a result, the ground water cleanup strategy is focused on shoreline soil areas affected by tidal exchange, for the protection of the surface water and its ecosystem. Ground water cleanup is not necessary at the

inland portion; therefore ground water cleanup levels are not applicable. Because of the landfill seeps at the shoreline, a surface water cleanup level is applicable to protect the surface water media and its ecosystem. Surface water at the Holly Street Landfill site discharges its hazardous substances as seeps along the landfill shoreline, therefore the point of compliance for these seeps is within the biologically active zone of shoreline sediments, or between approximately 0 and 12 centimeters below the mud line. A Contingency Response Action may be necessary if compliance monitoring indicates that cleanup levels are not being met at the point of compliance.

3.3 Soil

The IHSs and proposed cleanup levels for soil are summarized in Table 1. The remedial action objective for soil is to protect human health and the following cleanup levels are applicable from 0 to 15 feet below ground surface:

Arsenic	20 mg/kg
Cadmium	2 mg/kg
Copper	2,960 mg/kg
Lead	250 mg/kg
Zinc	24,000 mg/kg
Benzo(a)pyrene (CPAH)	0.14 mg/kg
Methane (in soil gas)	LEL (NIOSH)

3.4 Surface Water

The IHSs and proposed cleanup levels for surface water are summarized in Table 1. The remedial action objective for surface water is to protect sensitive ecological receptors, and human health from the consumption of potentially contaminated organisms. The point of compliance for surface water at the Holly Street Landfill site is the point at which hazardous substances are released to the surface waters of the state, which corresponds to seepage discharge locations along the landfill shoreline. The following Ambient Surface Water cleanup levels for the protection of aquatic life and humans are applicable:

Arsenic	36 ug/l

Cadmium	9.3 ug/l
Copper	3.1 ug/l
Lead	8.1 ug/l
Zinc	81.0 ug/l
Benzo(a)pyrene (CPAH)	0.031 ug/l

3.5 Sediments

No sediment cleanup is planned at the site. However, because surface water at the Holly Street Landfill site discharges its hazardous substances as seeps along the landfill shoreline, the point of compliance for these seeps is within the biologically active zone of shoreline sediments, or between approximately 0 and 12 centimeters below mud line. This is for the protection and propagation of aquatic life, and human health protection from the consumption of contaminated organisms. Periodic evaluation of the seeps impact at 0 to 12 centimeters below the mud line along the shoreline is necessary and the location and frequency to conduct this evaluation is outlined in EXIBIT E, Compliance Monitoring and Contingency Response Plan, of the Consent Decree. A Contingency Response Action may result from the evaluation outlined in EXHIBIT E to ensure the continued protection of human health and the environment along the seep discharge locations.

3.6 Applicable or Relevant and Appropriate Requirements (ARARs)

The preferred remedial alternative will comply with federal, state, and local laws or regulations that specifically apply to a hazardous substance, cleanup action, location, or a special circumstance at a site (e.g. presence of endangered species along active biological zones). Applicable requirements are federal and state laws or regulations that legally apply to a hazardous substance, cleanup action, location, or other circumstance at the site. Relevant and appropriate requirements are those federal and state regulations that do not legally apply but address situations sufficiently similar that they may warrant application to the cleanup action. Potential ARARs pertinent to remediation alternatives include substantive requirements of chapters 70.94, 70.95, 70.105, 75.20, 90.48, and 90.58 RCW. Others are identified and defined in the RI/FS for the Holly Street Landfill site in Chapter 6 and they include the Model Toxics Control Act (WAC 173-340), the Washington State Dangerous Waste Regulations (WAC 173-303,

Washington State Water Quality Standards for Surface Water (WAC 173-201A), and laws requiring or authorizing local government permits or approvals for the remedial action implementation. Though a cleanup action performed under formal MTCA authorities (e.g., as set forth in a Consent Decree between Ecology and the implementing parties) would be exempt from the procedural requirements of certain state and local environmental laws, the action must nevertheless comply with the substantive requirements of such laws.

4.0 DESCRIPTION OF PROPOSED CLEANUP ACTION

The proposed cleanup action for the site was selected based on a comparison of each cleanup action alternative using the following criteria (WAC 173-340-360(2) (3) and (4)) in consideration of the MTCA remedy selection requirements:

- Overall Protection of Human Health and the Environment
- Net Environmental Benefits
- Compliance with Cleanup Standards
- Use of Permanent Solutions to the Maximum Extent Practicable
- Compliance with ARARs
- Provision for Compliance Monitoring
- Provision for Reasonable Restoration Time Frame

The proposed cleanup remedy consists of both inland and shoreline actions, as follows:

PROPOSED UPLAND CLEANUP ACTION

- Implement capping to maintain a minimum 2-foot soil cap throughout the landfill area
- Implement natural attenuation, institutional controls, and deed restriction at the Site
- Implement passive gas venting system below structures as appropriate
- Implement compliance monitoring

PROPOSED SHORELINE CLEANUP ACTION

- Implement shoreline capping systems to restrict tidal mixing with near shore refuse
- Excavate and dispose off-site, a sufficient amount of shoreline solid waste as necessary to avoid loss of aquatic habitat resulting from the shoreline capping action
- Implement natural attenuation, institutional controls, and deed restrictions at the site
- Implement compliance monitoring plan

Landfill refuse is divided into two distinct areas separated by the Whatcom Creek estuary. Approximately 9.1 acres of refuse lie on the northwest side of Whatcom Creek and 3.8 acres lie on the southeast side (Figure 3). The extent of refuse at the site, determined from more than 50 soil explorations within the general site area, closely follows the historical shoreline and is also bounded by Holly Street, which was constructed prior to filling the site. The refuse on the northwest lobe of the site was encountered to a maximum depth of 18 feet

below ground surface. Refuse on the southeast portion of the site was present at deeper depths, extending up to approximately 40 feet below ground surface.

The IHSs for the site include a range of metals (arsenic, cadmium, and lead) and benzo(a)pyrene (a carcinogenic polynuclear aromatic hydrocarbon or CPAH) that were detected in soil/refuse at the Holly Street Landfill site at concentrations that exceed MTCA cleanup standards for unrestricted (residential) site uses (Figure 3). Because methane concentrations measured in subsurface soil gas (greater than 15 feet below ground surface) within the central area of the Maritime Heritage Park exceeded the LEL, methane is also an IHS for the site. Performance-based cleanup standards are needed at the Holly Street Landfill site to minimize potential human and environmental exposure to refuse and associated soil contaminants. These exposure control measures could potentially be met through construction and maintenance of a minimum of a 2 foot-thick permeable cap or equivalent direct contact exposure barrier. Caps meeting this specification appear to be already in place throughout the southeast lobe of the landfill (i.e., Maritime Heritage Park) and in most of the northwest lobe of the Site. However, based on available soil boring and test pit logs, an approximate 0.4-acre portion of the City's Maritime Heritage Center (fish hatchery) property contains only a thin cover (less than 2-feet-thick) of capping material (Figure 3).

Methane concentrations measured within soil gas at the Holly Street Landfill are generally well below potential explosive limits. However, subsurface soil gas within the central area of the Maritime Heritage Park contained methane that exceeded the LEL (Figure 3). Therefore, any future development within the Maritime Heritage Park will need to incorporate one of the following cleanup actions: 1) additional supplemental soil gas sampling and analysis to evaluate whether gas levels are below LEL at shallow depths below ground surface of anticipated structures; or 2) construction and monitoring of an engineered passive gas venting system below the structure. Ambient air compliance monitoring outlined in EXHIBIT E of the Consent Decree shall be conducted to ensure continued protection of human health and the environment.

Ground water in the interior portions of the landfill contains relatively low concentrations of hazardous substances. Geochemical oxidation processes acting within the immediate

shoreline zone from lateral recharge mobilize certain metals present in landfill refuse. As a result, shoreline seepage discharges from portions of the Holly Street Landfill site have the potential to result in both chronic and acute toxicity to sensitive aquatic life. Copper and zinc concentrations peak in shoreline seeps adjacent to the northwest lobe of the site (but not on southeast lobe of the site), before being diluted upon discharge into Whatcom Creek (Figure 3). The large dilution potential of Whatcom Creek restricts such exceedances to the immediate shoreline area of the estuary.

Based on a consideration of geochemical processes controlling copper and zinc mobility at the site, shoreline capping systems could potentially be designed to restrict tidal mixing and associated oxygen transfer into nearshore refuse deposits of the northwest landfill lobe. Such cap systems are expected to be effective in controlling the release of copper and zinc into Whatcom Creek, and may also offer concurrent opportunities to improve the quality of intertidal habitat in this area.

Sediment samples were collected in the shoreline area adjacent to the Holly Street Landfill site and the results were below State Sediment Management Standards chemical criteria.

4.1 Elements of the Proposed Cleanup Action

The selected cleanup action for the Holly Street Landfill will consist of *in situ* containment. The cleanup plan includes (see Figures 3 & 4):

1) Enhancing the existing soil cap in portions of the Maritime Heritage Center to be consistent with other landfill areas already capped to ensure that humans and the environment are protected from buried solid waste;
2) Installing a gas barrier system, including membrane and gas collection piping components, at the Maritime Heritage Park Building depicted in EXHIBIT G of the Consent Decree. In this case, the piping will be brought to a single edge-of-building stack in which a carbon treatment system and monitoring ports will be provided. The outgas stack will be attached to the side of the building and terminated above the roof. Potential future additional structures as may be constructed within the Maritime Heritage Park will require either monitoring or an appropriate methane venting system that meets with Ecology approval, as set forth in EXHIBIT E of the Consent Decree;

3) Constructing a shoreline cap system designed to restrict tidal mixing (lateral recharge) and associated oxygen transfer into nearshore refuse deposits of the northwest landfill lobe; and
4) Excavating and disposing off-site, a sufficient amount of shoreline solid waste as necessary to avoid loss of aquatic habitat resulting from the shoreline capping action, and disposing the material off-site.

Upland capping would be implemented concurrently with the shoreline remedy. The overall project would be undertaken as a single action consisting of the following elements:

- Construction Actions:
  - Upland Remedy
  - Shoreline/Aquatic Remedy
- Institutional Controls/Restrictive Covenants
- Monitoring

Each of these elements is described below.

4.1.1 Construction Actions

Upland Cleanup

Below the existing surface cap, the landfill is characterized by mostly inert material composed of soil, gravel, metal, glass, concrete, ash, and other constituents. This material will remain on site. Chemical analysis of this material detected residual contamination of metals and hydrocarbon compounds, typical of municipal waste. As evidenced by the low concentrations of hazardous substances detected in ground water within the interior portions of the landfill, these contaminants have low mobility and low solubility, and will not likely be transported from their source areas, particularly following construction of the shoreline cap (see below).

Within those areas of the Holly Street Landfill site that already have a suitable cap meeting containment specifications (e.g., all of the Maritime Heritage Park and most of the northwest landfill lobe), the existing cap section would be

maintained. In limited areas of the site where the existing cap is insufficient (e.g., less than 2 feet-thick and also not overlain by asphalt or concrete barriers), the cap would be augmented to meet containment specifications. Based on available data, approximately 0.4 acres within the Maritime Heritage Center (fish hatchery) may require a cap amendment (Figure 3). This area would be capped concurrent with the shoreline remedy (see below).

In those areas of the site that are not currently covered with 2 feet or more of soil cap materials or equivalent structural cover, the upland cap will be placed on top of the landfill material to prevent direct contact exposures. The upland cap will be constructed concurrent with the shoreline capping action discussed below, using one of two methods:

1) To achieve a minimum 2-foot total thickness of clean soil materials (e.g., silty sand and gravel) overlying refuse; or
2) With an equivalent structural cover such as standard concrete cap or asphalt section (e.g., 2-inch paving layer overlying ballast).

Surface water will be allowed to infiltrate through the cap material into the underlying waste. The soil cap will be graded and stormwater will be channeled and managed to control erosion. After the soil cap is installed, it will be re-vegetated.

Future construction of buildings within Maritime Heritage Park would include one of the following cleanup actions: 1) additional supplemental soil gas sampling and analysis to evaluate whether gas levels are below the LEL at shallow depths beneath ground surface of anticipated structures; or 2) construction and monitoring of an engineered passive gas venting system beneath the structure. A Future Site Use Conceptual Plan for the Maritime Heritage Park is depicted in EXHIBIT G of the Consent Decree. Potential future additional structures as may be constructed within the Maritime Heritage Park will require either monitoring or an appropriate methane venting system that meets with Ecology approval, as set forth in EXHIBIT E – Compliance Monitoring and Contingency Response Plan, to the Consent Decree. Ambient air

compliance monitoring outlined in EXHIBIT E of the Consent Decree shall be performed to ensure continued protection of human health and the environment.

Shoreline Cleanup

A shoreline cap would be constructed adjacent to the northwest lobe of the landfill, extending into the Whatcom Creek estuary. In order to achieve no net loss of aquatic habitat and avoid the need for off-site aquatic habitat mitigation, this alternative includes localized excavation of approximately 3 to 5 feet of material along the northwest bank of the creek, prior to placing a cap over the exposed face (Figures 3 & 4). Approximately 640 cubic yards (cy; equivalent to 900 tons) of shoreline refuse materials would be removed (likely using an upland excavator) and transported to the Roosevelt Regional Landfill (or equivalent) for disposal. Approximately twice this quantity of material (1,400 cy; 1,800 tons) would be backfilled to construct the shoreline cap. The project would be designed to achieve no net loss of aquatic habitat area or function associated with implementation of this alternative. Water quality controls such as restriction of in-water work windows to low tide conditions would be implemented as practicable as a part of this action.

Connecting with the upland cap section discussed above, the shoreline cap would be constructed of quarry spalls or equivalent materials to a minimum thickness of 2 feet from the top of bank down to extreme high water (approximately +10.5 feet MLLW). Consistent with the results of ground water transport modeling presented in the RI/FS, the cap would then grade into a minimum thickness of five feet at and below the ordinary high water elevation (+8.5 feet MLLW). Cap thickness in this case is measured horizontally (the nominal ground water flow direction). In order to improve habitat functions of the cap and also to ensure long-term integrity of the cap, a shelf with a nominal slope of 4H:1V would be constructed of sand and gravel materials between approximately +8.5 feet MLLW and +6.0 feet MLLW. Cap specifications would be refined during remedial design, incorporating detailed seismic, erosion, water quality protection, and other evaluations to ensure the long-term integrity and effectiveness of the containment structure.

Following construction, as outlined in the Compliance Monitoring and Contingency Response Plan, EXHIBIT E, of the Consent Decree, periodic physical surveys and shoreline seepage water quality sampling activities would be performed to verify that the cap system achieves its intended design objectives.

4.1.2 Institutional Controls/Restrictive Covenants

Institutional controls, EXHIBIT D, of the Consent Decree would be implemented as outlined in the Schedule, EXHIBIT C, of the Consent Decree as a component of the remedial action, including:

- Permits issued by the City for future construction within the landfill footprint would be consistent with the Cleanup Action Plan and would preclude creating a new exposure pathway with respect to the waste contained as a result of this Cleanup Action Plan. Specifically, the City would condition such permits on maintenance of a cap meeting the minimum specifications outlined above and meeting the cleanup actions for methane described in Section 4.0 above for Maritime Heritage Park and the response actions in the Compliance Monitoring and Contingency Response Plan, EXHIBIT E of the Consent Decree.

- Property owners would place deed restrictions on their property, ensuring that the property would not be used in the future for ground floor residential or day-care center uses, and to ensure that caps and soil covers meeting the minimum specifications outlined above would be maintained in the future; and

- Where utility or other work is required at the site that will require excavation, trenches will be constructed in accordance with state and City standards, with the additional requirement that 1 foot of overexcavation, or a geofabric lining, be used to provide a clean perimeter around the outside of the utility trench. All excavated refuse materials would be disposed off-site at a permitted solid waste disposal facility or contained

on site below an engineered cap meeting specifications outlined in this Cleanup Action Plan or subsequent remedial design documents (i.e., 2 foot soil cap or equivalent structural cover). Excavation work at the site and handling of construction-derived wastes shall be in accordance with applicable laws, including worker health and safety requirements.

The Holly Street Landfill Site vicinity has been included in a range of planning and strategic analyses including the Whatcom Creek Waterfront Action Program, Downtown Development Workshop, and the City Center Master Plan. Goals for the area outlined in these documents include increasing public access to the waterfront, enhancing and maintaining habitat quality, preserving historic structures, improving street, sidewalk, trail and parking facilities, and encouraging a mixture of land uses. The proposed cleanup remedy is consistent with these plans.

4.1.3 Monitoring

The City and/or individual property owners would implement the Compliance Monitoring and Contingency Response Plan as outlined in, EXHIBIT E, of the Consent Decree to evaluate the integrity of the upland and shoreline caps, and report these findings to Ecology as outlined in the Schedule, EXHIBIT C, of the Consent Decree.

Following construction, as outlined in the Schedule, periodic physical surveys, shoreline seepage water quality sampling, and habitat development monitoring activities would be performed as outlined in EXHIBIT E, the Compliance Monitoring and Contingency Response Plan of the Consent Decree to verify that the shoreline cap achieves its intended design objectives. Details, frequency, duration and rationale for the compliance monitoring are contained in the Compliance Monitoring and Contingency Response Plan, EXHIBIT E, of the Consent Decree.

4.2 Elements of the Alternative Integrated Cleanup/Restoration Action

Based on the findings of the RI/FS, and contingent on continuing participation at the site by the Corps' Civil Works program or other ecosystem restoration funding sources, the cleanup action alternative for the Holly Street Landfill could be modified by combining cleanup, habitat restoration, public access, and land use into a single integrated remedy, consistent with the Bellingham Bay Comprehensive Strategy (Ecology 2000). While the habitat restoration elements of this integrated alternative are consistent with remedial action objectives, they are not necessary to achieve cleanup goals. The integrated plan includes (see Figures 5 & 6):

1) Excavating and disposing off-site approximately 8,000 tons of shoreline solid waste within the 1/3-acre "B" Street right-of-way or another similar area of the site;
2) Backfilling the excavation area with a clean cap graded to relatively flat slopes, restoring historically lost aquatic habitat in this important estuary;
3) Enhancing the existing soil cap in portions of the Maritime Heritage Center to be consistent with other landfill areas already capped to ensure that humans and the environment are protected from buried solid waste; and
4) Incorporating public access into the overall project design to address existing community open space goals and planning objectives.

The habitat restoration concept for the site area presented in the Comprehensive Strategy would be incorporated into this alternative by removing refuse within an approximate 0.3-acre area within existing City right-of-way, along with additional enhancements. Alternatively, other shoreline refuse areas adjacent to the Whatcom Creek Estuary could be removed. Regardless of the location of the excavation, such an action would restore critical estuarine riparian buffer, marsh, and mudflat banks that existed historically in this area of Bellingham Bay, and could also be designed to provide a park-like setting allowing citizens trail access along this stretch of Whatcom Creek to the Maritime Heritage Center, potentially linked into the larger Whatcom Creek Trail Master Plan. Incorporating public access design with cleanup and habitat restoration could meet community open space goals and planning objectives, leverage additional community support and funding, and provide an opportunity to educate the public about critical estuarine environments. Future site plans are consistent with maintaining

long-term habitat restoration and public access benefits. However, while the habitat restoration and public access components are consistent with remedial action objectives, they are not necessary to achieve cleanup goals.

Upland and shoreline elements of this alternative are described below.

Upland Alternative Cleanup

Upland capping actions, institutional controls, and monitoring under the Alternative Integrated Cleanup / Restoration Action would be identical to those under the Proposed Cleanup Action described above in Section 4.1. As discussed above, in most areas of the site, the existing cap would be maintained, with no further cleanup action required. However, in limited areas of the northwest lobe of the Holly Street Landfill where the existing cap is insufficient (e.g., less than 2-feet thick and also not overlain by asphalt or concrete barriers; see Figure 5), the cap would be augmented to meet containment specifications. Based on a review of available boring and test pit logs within this area of the site, approximately 0.4 acres of the Maritime Heritage Center (fish hatchery) may require a cap amendment consistent with a 2-foot soil cap.

Shoreline/Aquatic Alternative Remedy

As generally described in the RI/FS, and consistent with the Comprehensive Strategy (Ecology 2000), refuse within a nominal 0.3-acre area within the existing B Street right-of-way (ROW) or alternate location would be removed, and the excavation area backfilled with a clean cap graded to relatively flat slopes (Figures 5 & 6). This alternative would result in a net conversion of approximately 0.3 acres of uplands into aquatic habitat, providing a substantial net gain in habitat area and function.

Approximately 5,700 cy (equivalent to 8,000 tons) of material would be removed (likely using an upland excavator) and transported/disposed at a permitted landfill (e.g., Roosevelt Regional Landfill) or whenever possible, recycled. Nearly half of this quantity of material (2,700 cy; 3,500 tons) would be backfilled with clean material to construct the shoreline cap. Water quality controls such as

restriction of in-water work windows to low tide conditions would be implemented as practicable as a part of this action.

Connecting with the upland cap section, the upper portion of the shoreline cap would be constructed in two 12-inch lifts at a slope of 3 horizontal to 1 vertical (3H:1V). The first lift would consist of clean fill soil, such as pit run sand or equivalent material. The second lift would consist of a manufactured topsoil (60 percent sand and sandy loam, and 40 percent composted organic matter by volume). Consistent with the results of ground water transport modeling presented in the RI/FS, the total thickness measured horizontally would be 6 feet from the top of bank down to +9 feet mean lower low water (MLLW; equivalent to 1.5 feet below extreme high water). This upper bank area would be covered with a biodegradable erosion control fabric and planted with woody riparian vegetation (native trees and shrubs) since it is above the area of normal tidal inundation.

A shoreline trail could be located in the upper portion of the bank near the top of the slope (Figure 6). The trail could consist of a boardwalk structure with a foundation design that is compatible with the cap and refuse beneath it. Details of the shoreline trail will be determined during remedial design.

The lower portion of the shoreline begins at elevation +9 feet MLLW, where the cap would become a relatively flat slope (30H:1V or flatter) until it reaches the +8 foot MLLW elevation. At this point the slope increases to 10H:1V until the cap ends at the limit of excavation (+6 feet MLLW). The portion of the cap between elevation +9 to +8 feet MLLW forms a bench that would be designed to recolonize with emergent marsh vegetation. This type of vegetation grows in a narrow band of elevation based on the degree of tidal inundation it requires (Thom et al. 2000). The substrate in this bench would consist of two lifts of material. The first lift would be of variable depth to a maximum of two feet and consist of relatively fine-grained materials (e.g., sands and silts). The second lift would consist of 1 foot of topsoil that is more moisture retentive and has slightly lower organic matter content than the topsoil used in the upper bank. The cap

from elevation +8 to +6 feet MLLW would consist of one lift of the fine-grained materials (e.g., sands and silts) to maximize habitat functions. Measured horizontally along the anticipated post-construction ground water flow direction, the minimum cap thickness in the lower shoreline cap would generally exceed 10 feet. The total amount of cap fill that would be placed under this alternative is approximately 2,700 cy. Several dead end extensions of the shoreline trail over this lower cap could be constructed to allow for better views of the creek, and to provide fishing access in selected locations. The cap, landscape, and trail elements of this alternative would be refined during remedial design.

Institutional Controls/Restrictive Covenants

Consistent with actions described in Section 4.1.2 above, institutional controls, EXHIBIT D, of the Consent Decree would be implemented as outlined in the Schedule, EXHIBIT C, of the Consent Decree as a component of the alternative integrated remedial/restoration action. The contingent alternative action is consistent with goals for the area outlined in a range of planning and strategic analyses, including increasing public access to the waterfront, enhancing and maintaining habitat quality, preserving historic structures, improving street, sidewalk, trail and parking facilities, and encouraging a mixture of land uses.

Monitoring

Consistent with actions described in Section 4.1.3 above, the City and/or individual property owners would implement the Compliance Monitoring and Contingency Response Plan as outlined in, EXHIBIT E, of the Consent Decree to evaluate the integrity of the upland and shoreline caps, and report these findings to Ecology as outlined in the Schedule, EXHIBIT C, of the Consent Decree to verify that the shoreline cap and landscape plan achieves its intended design objectives. Details, frequency, duration and rationale for the compliance monitoring are contained in the Compliance Monitoring and Contingency Response Plan, EXHIBIT E, of the Consent Decree.

4.3 Summary of Other Alternatives Considered

4.3.1 No Action

A no action alternative was included as a baseline alternative in the RI/FS, to which other alternatives can be compared. Under this alternative, no cleanup action or other construction activities would occur beyond independent site development actions as may be undertaken by individual property owners. No institutional controls would be implemented and no long-term monitoring would occur.

4.3.2 Maximum Removal and Habitat Restoration

This alternative includes the removal of all refuse from the site. Depending on how much of the original landfill area is backfilled, historical mudflats could be restored throughout the 13-acre landfill area, with a corresponding loss of uplands and associated development. Final mudflat elevations could be established with benches at elevation +6 feet MLLW in the northwest lobe of the site, and at elevations of -6 feet MLLW and +2.5 feet MLLW in the southeast lobe of the site. The slopes from top of bank to the target elevations would be at 3H:1V. Alternatively, the landfill area could be backfilled with clean soil, allowing continued upland use.

Including overdredge allowances, approximately 420,000 cy (590,000 tons) of material would be removed under this alternative (likely using large-capacity equipment) and transported to the Roosevelt Regional Landfill (or equivalent) for disposal. Water quality controls such as restriction of in-water work windows to low tide conditions would be implemented as practicable as a part of this action.

Because all cleanup criteria would be met by this maximum removal action, no institutional controls or long-term monitoring would be required under this alternative.

5.0 COMPLIANCE MONITORING

The attached Compliance Monitoring and Contingency Response Plan, EXHIBIT E, of the Consent Decree will be implemented in accordance with WAC 173-340-410, Compliance Monitoring Requirements. The Compliance Monitoring and Contingency Response Plan may be amended during remedial design and work construction.

The Compliance Monitoring and Contingency Response Plan, EXHIBIT E contains detailed discussions on duration and frequency of monitoring; the trigger for contingency response action along the shoreline; the rationale for terminating monitoring, and abandoning of wells; and includes protection, performance and confirmation monitoring. The three types of compliance monitoring to be conducted include the following:

- **Protection Monitoring** to confirm that human health and the environment are adequately protected during construction and the operation and maintenance period of the cleanup action.
- **Performance Monitoring** to confirm that the cleanup action has attained cleanup standards and other performance standards.
- **Confirmation Monitoring** to confirm the long-term effectiveness of the cleanup action once cleanup actions and other performance standards have been attained.

Points of Compliance:

Soil. The determination of adequate soil containment will be based on the remedial action's ability to comply with the ground water/surface water cleanup standards for the Site at the points of seep discharges and to meet performance standards designed to minimize human health or environmental exposure to soils above cleanup levels (0 to 15 feet below ground surface). Performance standards designed to minimize human and environmental exposure to soils above the cleanup levels set for the Site shall include: Performance monitoring as outlined in EXHIBIT E for the Site and a covenant on the property which limits the Site to specific uses only and prohibits any activity which may interfere with the protectiveness of the remedial action.

Ground Water/Surface Water. The achievement of cleanup levels in ground water shall be measured at points of compliance located at the downgradient edge of the Site. These points of compliance shall consist of seep locations along the shoreline. The point of

compliance for surface water at the Holly Street Landfill Site is the point at which hazardous substances are released to waters of the state, which corresponds to seepage discharges along the landfill shoreline. The point of compliance for these seeps is within the biologically active zone of shoreline sediments, or between approximately 0 and 12 centimeters below mud line, for protection of aquatic life and human health and the environment. The location of these seep monitoring stations are identified in EXHIBIT E, the Compliance Monitoring and Contingency Response Plan for the Site.

6.0 RESTRICTIVE COVENANT AND INSTITUTIONAL CONTROLS

Institutional controls are measures undertaken to limit or prohibit activities that may interfere with the integrity of a cleanup action or result in exposure to hazardous substances at the site. Such measures are required to assure continued protection of human health and the environment when a cleanup action results in residual concentrations of IHSs that exceed MTCA Method A or B cleanup levels and where conditional points of compliance are established. Installing temporary fencing around the active landfill removal area during construction will provide access restrictions. Site uses would be constrained by restrictive covenants that are required by MTCA (WAC 170-340-440(4)(a)). Elements of the restrictive covenants for the site include prohibition on activities that would damage the integrity of the soil cover or equivalent structural cap placed over the waste material and require specific controls for methane areas. The City and all other landowners within the site boundary will add a restrictive covenant to their property deed that will restrict property use in accordance with the remedial action proposed in this document. A copy of the model Restrictive Covenant that will be tailored to each specific property is contained in EXHIBIT D, of the Consent Decree.

6.1 WORK CONSTRUCTION

The Engineering Design Report and Construction Plans and Specifications will provide the necessary technical drawings and specifications to allow a contractor to implement the methods described in the Final CAP for cleaning up the site. Construction documentation will be provided to include as-built drawings and documentation of construction and any changes or modifications that were necessary during the course of implementing the remedial actions. The Construction Quality Assurance Project Plan will incorporate relevant sections of EXHIBIT E, of the Consent Decree concerning protection monitoring to confirm that human health and the environment are adequately protected during construction, and performance monitoring to confirm that the construction action attains cleanup goals.

The Operation, Maintenance and Monitoring Plan (OMMP) will incorporate relevant sections of EXHIBIT E, of the Consent Decree concerning protection monitoring to confirm that human health and the environment are adequately protected during the operation and maintenance period of the cleanup action. The OMMP will also include

confirmational monitoring to confirm the long-term effectiveness of the cleanup action once cleanup goals have been attained.

Schedules to submit the Remedial Design (RD) the Construction Plan and Specification and begin work under this CAP are contained in EXHIBIT C, of the Consent Decree. The City shall submit a Remedial Design report as outlined under WAC 173-340-400 (4) (a) and a Work Construction and Specification Plan as outlined under WAC 173-340-400 (4) (b) to Ecology for review and the work will be conducted under a Safety and Health Plan prepared under WAC 173-340-810.

7.0 JUSTIFICATION FOR SELECTED CLEANUP ALTERNATIVE

The goal of the RI/FS was to identify a preferred remedial action alternative that meets MTCA requirements and site-specific remedial action objectives. The cleanup action, as proposed in this CAP, EXHIBIT A, of the Consent Decree, is designed to accomplish the following WAC 173-340-360(2), (3) and (4), threshold requirements:

- protect human health and the environment per WAC 173-340-360 (2) (i)
- provide net environmental benefits per WAC 173-340 and WAC 173-204
- comply with cleanup standards per WAC 173-340-700
- comply with applicable state and federal laws per WAC 173-340-710
- provide compliance monitoring per WAC 173-340-410
- use permanent solutions to the maximum extent practicable per WAC 173-340-360 (3)
- provide a reasonable time restoration per WAC 173-340-360 (4) and
- consider public concerns per WAC 173-340-600.

The following sections discuss how the proposed cleanup action will meet these requirements.

7.1 Protection of Human Health and the Environment

Contaminated soils within the landfill inland areas will be capped with a minimum of 2 feet of clean soil or equivalent structural materials to prevent direct contact. Institutional controls and compliance monitoring will be implemented to provide additional protection and to ensure that appropriate measures are taken to maintain the integrity of the cap and limit future exposure to affected soils. Engineered passive venting under structures as appropriate will provide indoor air quality controls and ambient compliance monitoring will ensure the protection of human health and the environment. The capping at the shoreline and the contingency response action outlined in the Compliance Monitoring and Contingency Response Plan for the biological active zone for the shoreline area is a backup plan to ensure the continued protection of human health and the environment.

7.2 Net Environmental Benefits

The net environmental benefits criterion evaluates overall benefits to the natural environment that result from the alternative, such as restoration of habitat, improved public access, land use/redevelopment, and other values as generally outlined in

Chapter 10 of the RI/FS, and in the Bellingham Bay Comprehensive Strategy Environmental Impact Statement (EIS; Ecology 2000). The EIS provided a broad evaluation of these factors, and provides the context to assess net environmental benefits of alternative actions at the Holly Street Landfill Site. The EIS also includes additional sites, actions, and evaluation criteria to address bay-wide strategic environmental planning and project integration to incorporate cleanup, source control, habitat restoration, and shoreline property management components.

7.3 Comply with Cleanup Standards

The overall goal of soil cleanup standards for metals and carcinogenic aromatic polynuclear hydrocarbons (CPAHs) are to protect human health from direct contact and the surface water ecosystem from surface runoff. Capping of the inland portion of the site will achieve cleanup standards for direct contact, and the shoreline excavation of municipal refuse and capping will achieve cleanup standards at the ground water/surface water points of compliance by limiting tidal mixing with upland refuse. Future construction of buildings within Maritime Heritage Park will achieve soil gas cleanup standards either by additional supplemental soil gas sampling and analysis to evaluate that gas levels are below LEL at shallow depths below ground surface of anticipated structures and/or construction and monitoring of an engineered passive gas venting system below the structure. Institutional controls and compliance monitoring will be implemented to ensure that the cleanup objectives are met in a timely manner and that human health and the environment are adequately protected.

7.4 Compliance with Applicable State and Federal Laws

The preferred alternative meets all state and federal laws. All activities carried out to implement the preferred alternative will meet any laws requiring or authorizing local government permits or approval for the remedial action on the site.

The preferred alternative has been evaluated in an Environmental Checklist as required under the State Environmental Policy Act. Based upon this evaluation Ecology has determined that the project does not have a probable adverse impact on the environment. The Checklist and Ecology determination were distributed for public review and comment concurrent with the draft Consent Decree/Cleanup Action Plan.

7.5 Provide Compliance Monitoring

The preferred alternative provides for long-term monitoring to ensure that ground water continues to meet cleanup standards after remedial actions have been completed. During the remedial actions, performance monitoring will be conducted to confirm that cleanup actions have attained cleanup standards. After remedial actions, confirmation monitoring will be conducted to confirm and ensure that cleanup actions have attained cleanup standards and performance standards. Protection monitoring will be used to ensure that human health and the environment are being adequately protected during construction and operation of the cleanup actions. The specifics and details of these monitoring activities, locations, number and type of analytes, frequency, duration, and contingency plans are described in the Compliance Monitoring and Contingency Response Plan in EXHIBIT E, for the Site. Schedule for this activity is contained in EXHIBIT C, of the Consent Decree.

7.6 Use of Permanent Solutions to the Maximum Extent Practicable

Ecology recognizes that permanent solutions may not be practicable for all sites and provides the following criteria for determining whether a cleanup action is "permanent to the maximum extent practicable":

- Overall protectiveness of human health and the environment including the degree to which existing risks are reduced, time required to reduce risk at the facility and attain cleanup standards, on-site and off-site risks resulting from implementing the alternative, the degree the cleanup action may perform to a higher level than specific standards in MTCA and improvement of overall environmental quality.
- Long-term effectiveness including degree of certainty that the alternative will be successful, long-term reliability, magnitude of residual risk, and effectiveness of controls required to manage treatment resides or remaining wastes.
- Short-term effectiveness including protection of human health and the environment during construction and implementation of the alternative, and the degree of risk to human health and the environment prior to attainment of cleanup standards.

- Permanent reduction of toxicity, mobility and volume of the hazardous substance.
- Implementability including administrative and regulatory requirements, scheduling, size complexity, access for construction, and integration with existing site uses.
- Cleanup costs including capital costs and operation and maintenance costs. If the cost of an action is substantial and disproportionate to the incremental degree of protection it would achieve over a lower preference action it is not considered practicable.
- The degree to which community concerns are addressed.

Excavation of upland municipal refuse along the shoreline that is within tidal influence, backfilling with clean soils, capping of the site with a minimum 2-foot-thick material and the use of engineered passive venting systems under structures are permanent solutions that will maintain air quality within buildings, prevent direct contact with contaminated soils, and expedite restoration of shoreline ground water and surface water quality in a timely manner.

7.7 Provide for a Reasonable Restoration Time Frame

WAC 173-340-360(6)(a) requires that cleanup actions shall be completed in a reasonable time frame. The factors to consider when establishing if a time frame is "reasonable" include:

- Potential risks posed by the site to human health and the environment
- Practicability of achieving a shorter restoration time frame
- Current use of the site, surrounding areas, and associated resources that are or may be affected by releases from the site
- Potential future use of the site, surrounding areas and associated resources that are or may be affected by releases from the site
- Likely effectiveness and reliability of institutional controls
- Ability to control and monitor migration of hazardous substances from the site
- Toxicity of the hazardous substances at the site

Natural attenuation with active excavation of municipal refuse from the shoreline, backfilling with clean soils, capping of the site with a 2 foot material will provide for a reasonable restoration time frame of 10 years to meet remedial action objectives for the site along the seep locations and the biological active zones (approximately 0 to 12 centimeters below the mud line), and protect humans from direct contact of contaminated soils. The time clock for the restoration time frame begins upon the completion of the remedial action implementation as outlined in EXHIBIT C, the Schedule of the Consent Decree. If a contingency plan is implemented, the restoration time frame begins immediately after contingency implementation activity. Where contingency plan implementation is not necessary, restoration time for the site is 10 years and the restoration clock begins 30 days after implementation of the Preferred Remedial Action Alternative for the site. This is the time required to:

- Mitigate landfill seepages to levels that do not pose a threat to the surface water and its ecosystem including the active biological zones;
- Ensure that the methane emanating from the site through passive venting systems does not pose a threat to the ambient air at the site; and
- Collect meaningful statistical data to evaluate ground water/surface water and other pertinent data relevant to the compliance monitoring requirements.

Other specific time lines are outlined in EXHIBIT C, Schedule, and compliance requirements are discussed in detail in the attached Compliance Monitoring and Contingency Response Plan, EXHIBIT E, for the Holly Street Landfill Site.

7.8 Consider Public Concerns

The RI/FS report for the Holly Street Landfill was conducted under Ecology's voluntary cleanup program (VCP). During the VCP for the RI/FS, the City solicited public comments in June and July 2001, including a public meeting held on June 13, 2001. Public and stakeholder comments received on the draft RI/FS report were incorporated into a draft final RI/FS document. This RI/FS, along with the draft Consent Decree (CD), Cleanup Action Plan (CAP) and associated documents, were issued for public review and comment from August 12, 2002 through September 20, 2002. A public meeting was held on August 20, 2002.

No comments were received on the RI/FS. Comments received on the draft CD/ CAP package have been addressed and are summarized in a Responsiveness Summary issued by Ecology in March 2003.

8.0 SCHEDULE FOR IMPLEMENTATION

EXHIBIT C, of the Consent Decree contains an outline of the schedule for the remedial design and implementation activities. The Consent Decree will be entered in court, and will become effective once entered.

Consistent with Chapter 70.105D RCW, "Model Toxics Control Act", as implemented by Chapter 173-340 WAC, "Model Toxics Control Act Cleanup Regulation", Ecology has made a determination that both the Proposed Cleanup Action and Alternative Integrated Cleanup/Restoration Action summarized above and described more fully in the RI/FS are protective of human health and the environment, attain federal and state requirements which are applicable or relevant and appropriate, comply with cleanup standards, and provide for compliance monitoring. These prospective cleanup actions satisfy the preference expressed in WAC 173-340-360 for the use of permanent solutions to the maximum extent practicable, and provide for a reasonable restoration time frame. Ecology has considered public concerns raised during public comment on the draft CAP and has approved this Cleanup Action Plan for the Holly Street Landfill Site.

REFERENCES

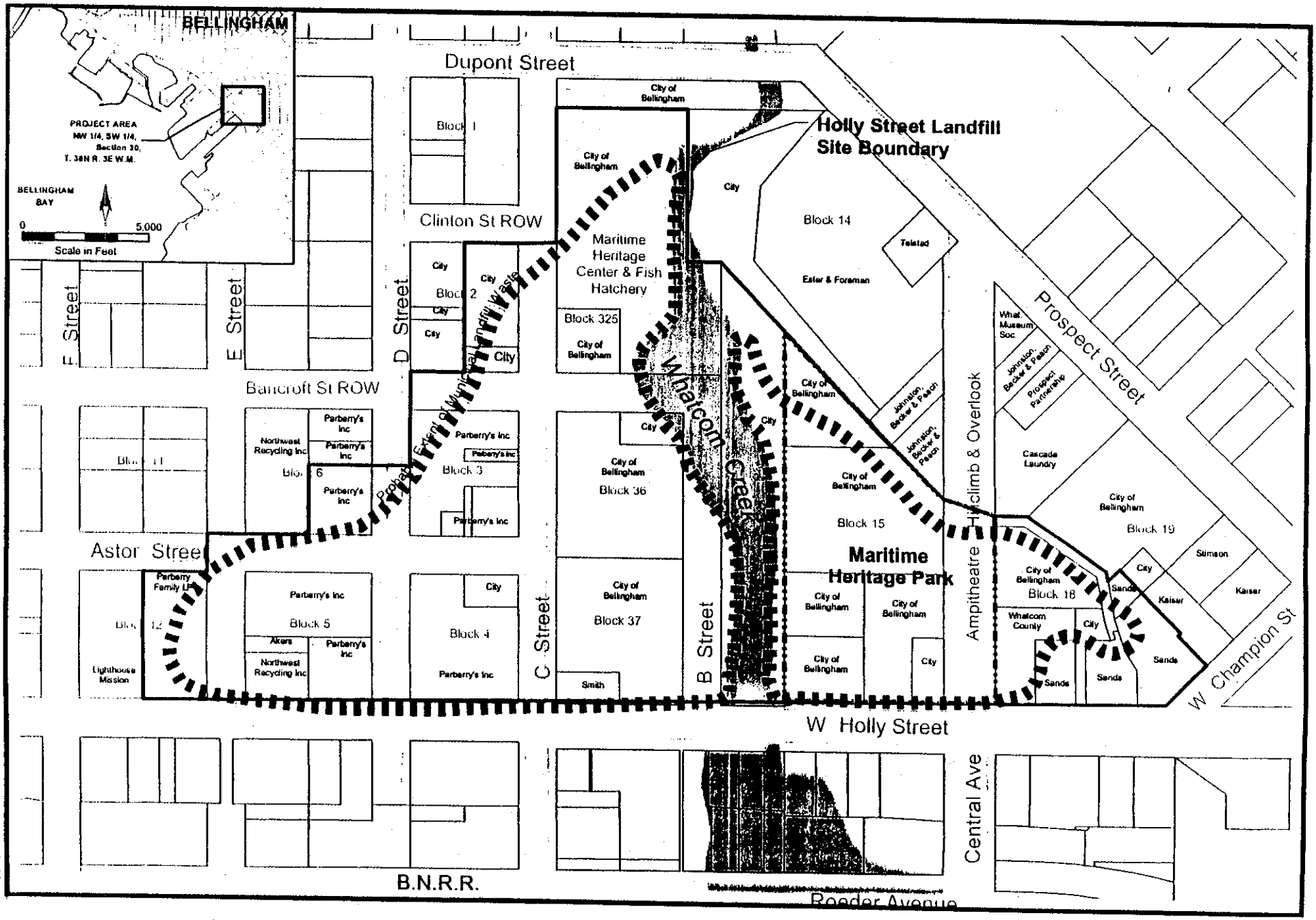
Anchor and AESI 2000. Work Plan/Sampling and Analysis Plan, Focused Site Characterization, Holly Street Landfill Redevelopment Project. Report prepared for City of Bellingham by Anchor Environmental, LLC and Associated Earth Sciences, Inc. March 2000.

Anchor and Aspect, 2001. Remedial Investigation/Feasibility Study, Holly Street Landfill Redevelopment Project. Draft Final Report prepared for City of Bellingham by Anchor Environmental, L.L.C, Seattle, WA and Aspect Consulting, L.L.C. November 2001.

Ecology, 2000. Bellingham Bay Comprehensive Strategy: Final Environmental Impact Statement. Washington Department of Ecology, Olympia, WA September 2000.

GeoEnginners, 2002. Geotechnical Engineering Report- Maritime Heritage Park Building, prepared for the City of Bellingham Office of Neighborhoods. GeoEngineers, Inc. January 22, 2002.

Thom, R. M., Borde, A., and Woodruff, D. L., 2000. Tidal Wetland Plants Distribution and Primary Control Factors in Commencement Bay. Report prepared for NOAA Damage Assessment and Restoration Center NW, Seattle, WA. April 2000.



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ANCHOR ENVIRONMENTAL L.L.C.

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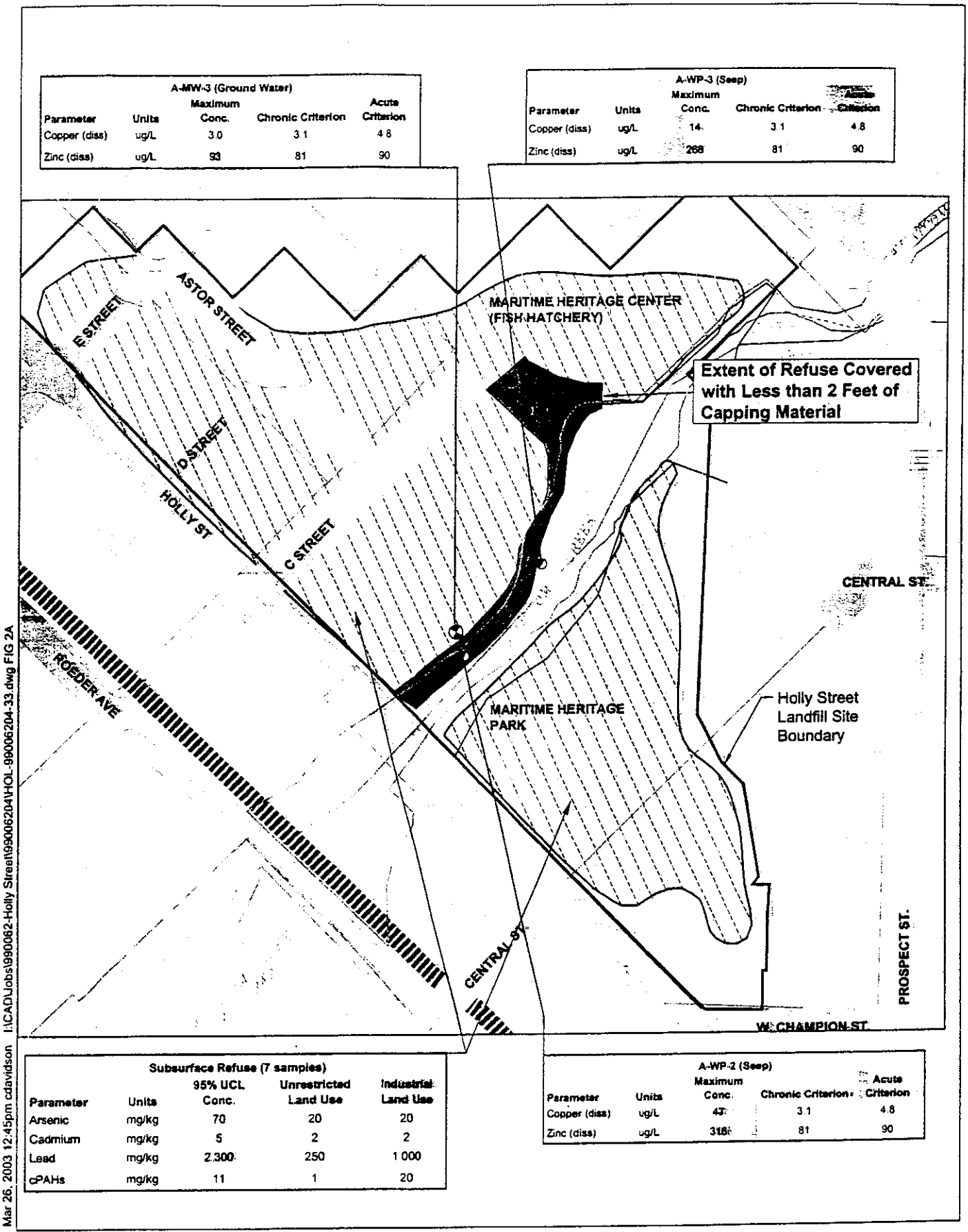
Scale in Feet

Note: Basemap prepared from GIS data pr d by City of Bellingham.

Figure 1
Project Area
Holly Stree ndfill



Mar 26, 2003 12:45pm cdavidson I:\CAD\Jobs\990062-Holly Street\99006204\HOL-99006204-33.dwg FIG 2A

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Scale in Feet

Figure 2A
Geographic Extent of MTCA Risk-Based Cleanup Level Exceedance - Soil and Water
Holly Street Landfill

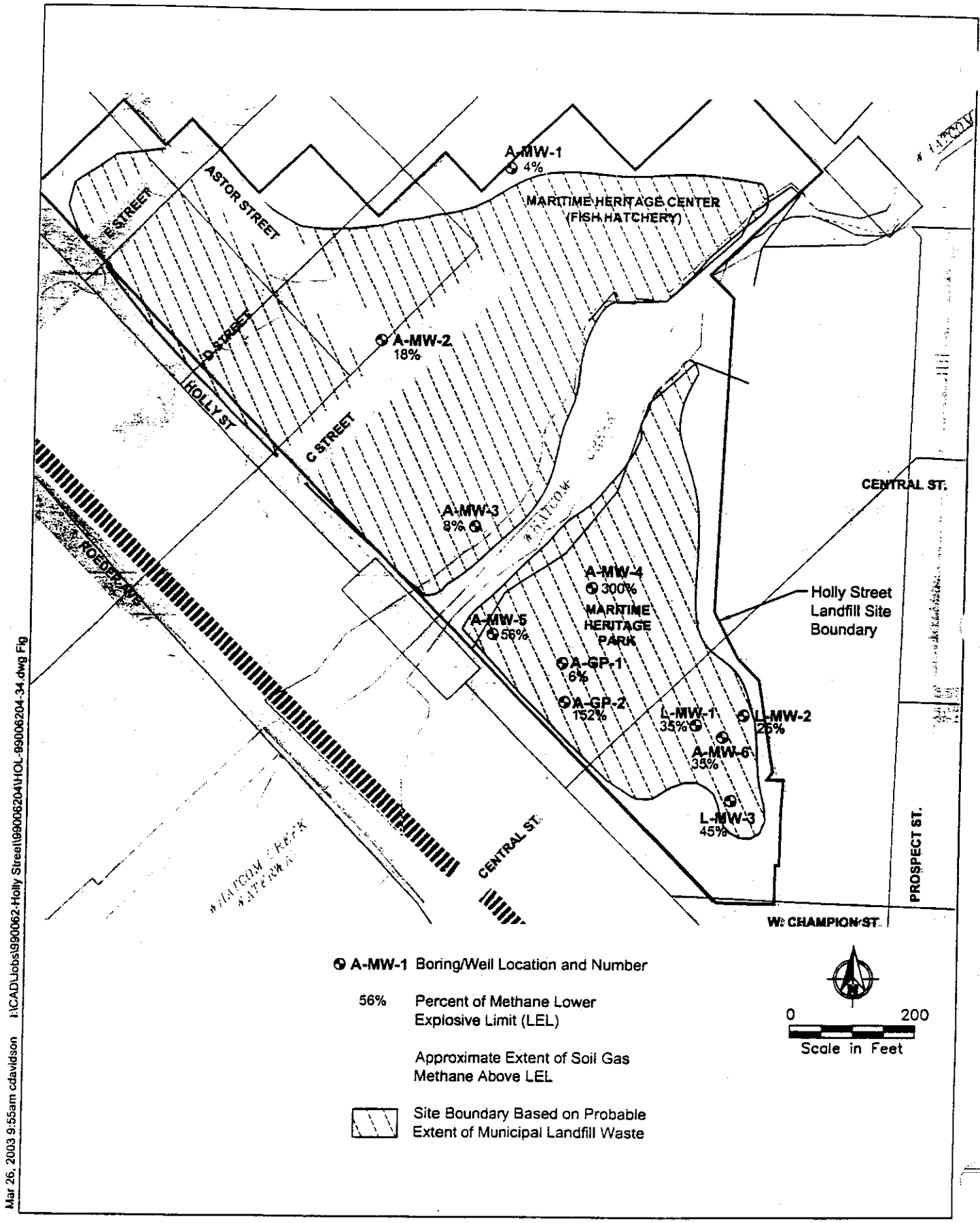

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Figure 2B
Geographic Extent of Soil Gas Methane
Exceeding Lower Explosive Limit
Holly Street Landfill

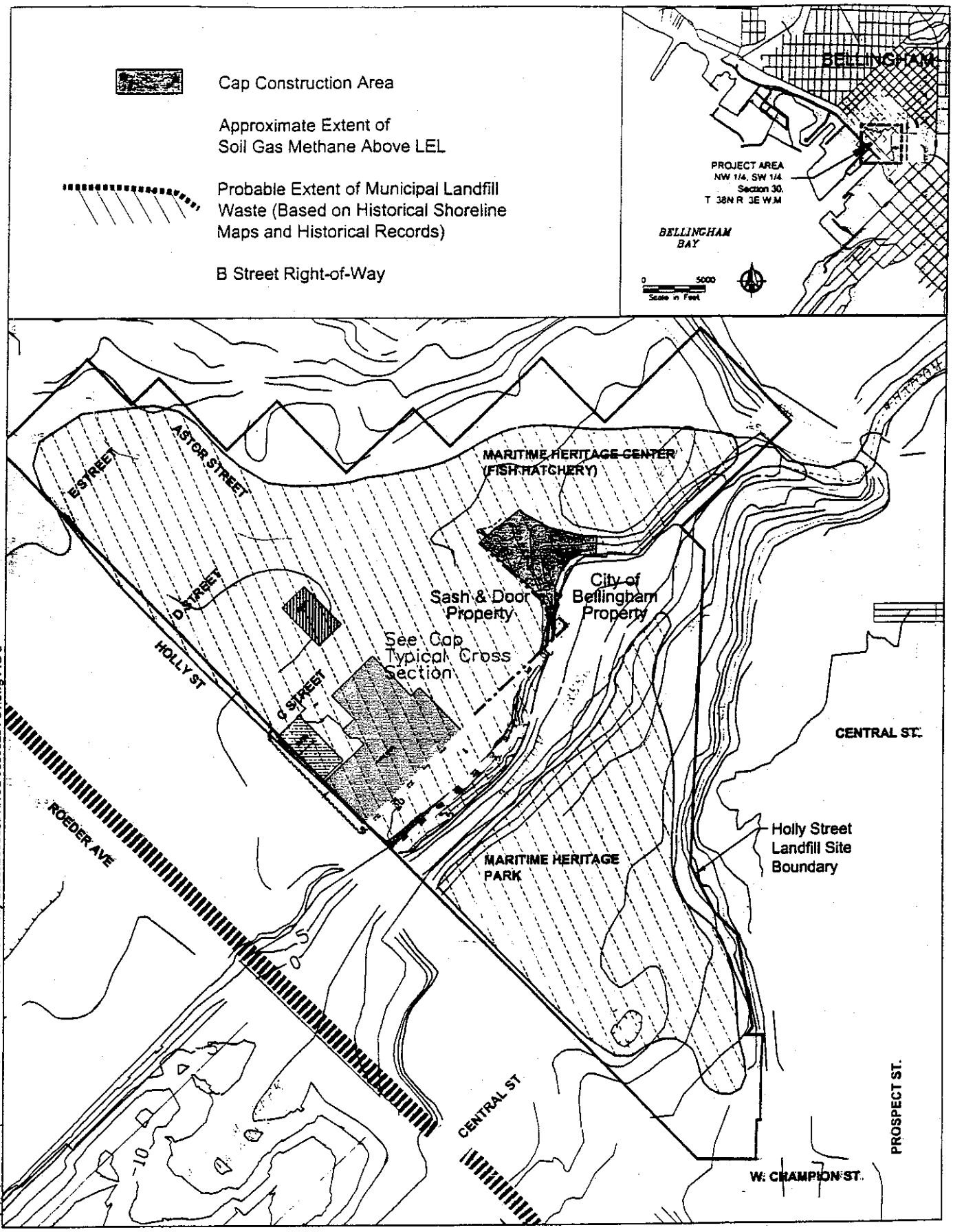

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Figure 3
Proposed Cleanup Action Plan
Holly Street Landfill

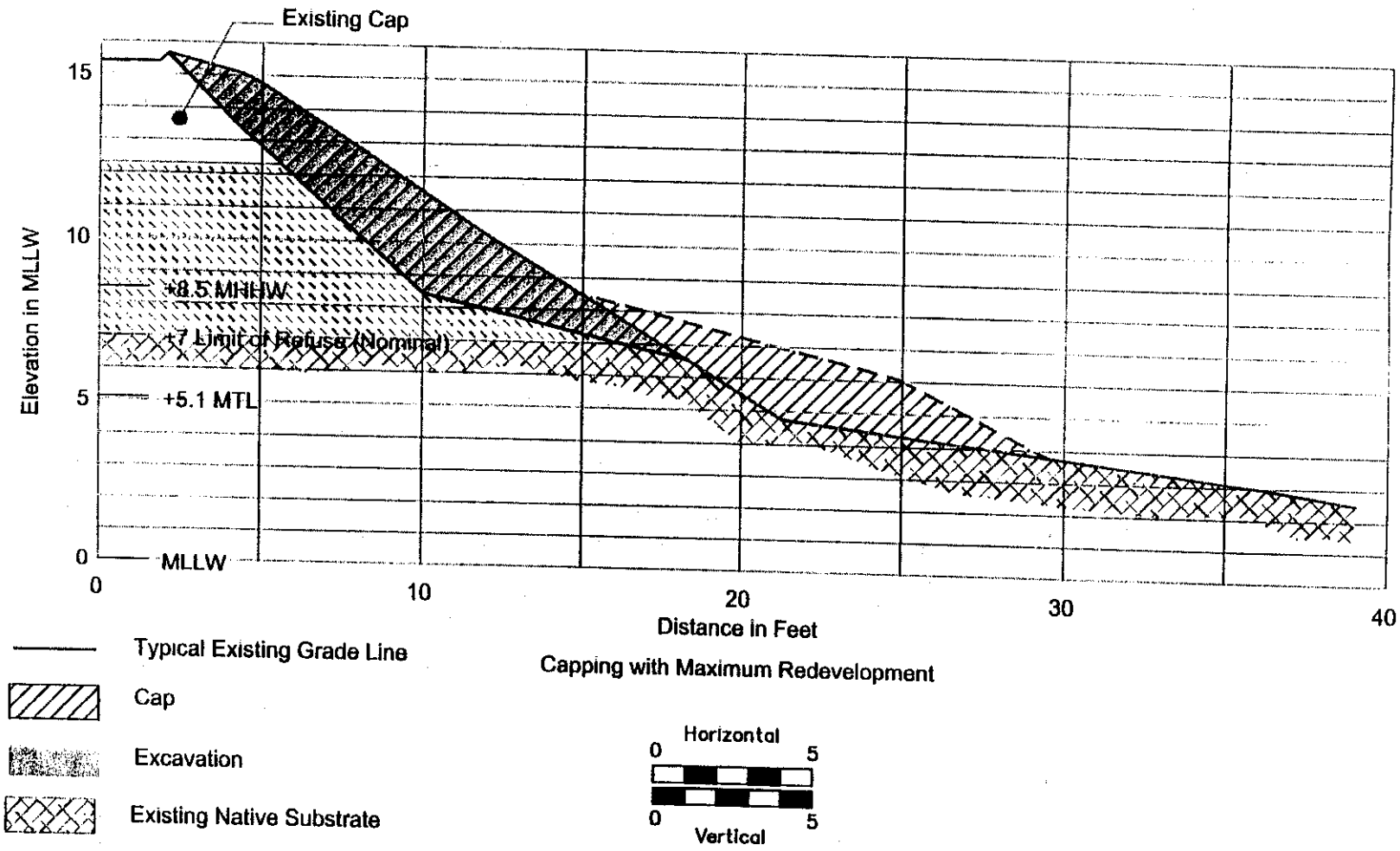

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Figure 4
Proposed Cleanup Action Cross Section
Holly Street Landfill

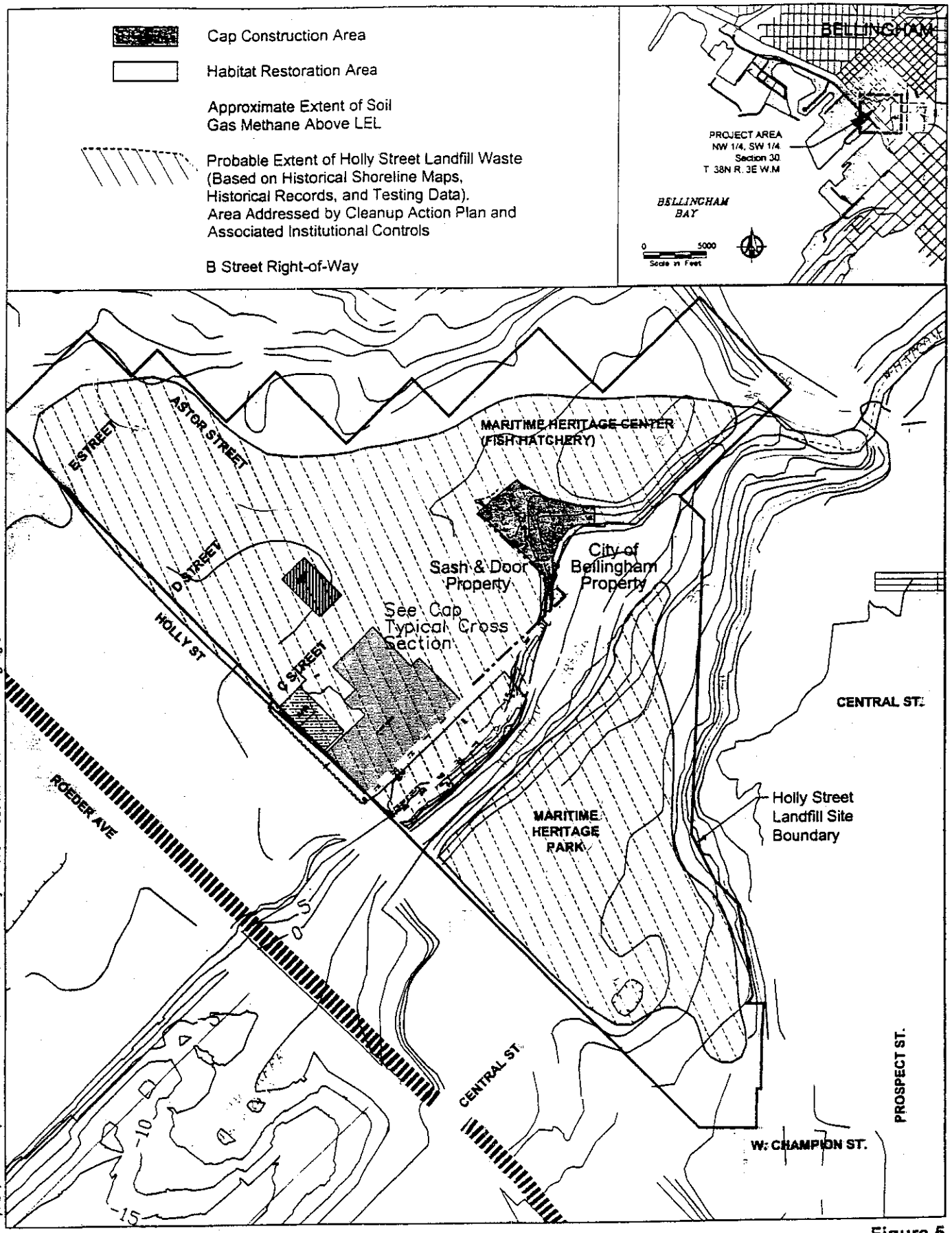
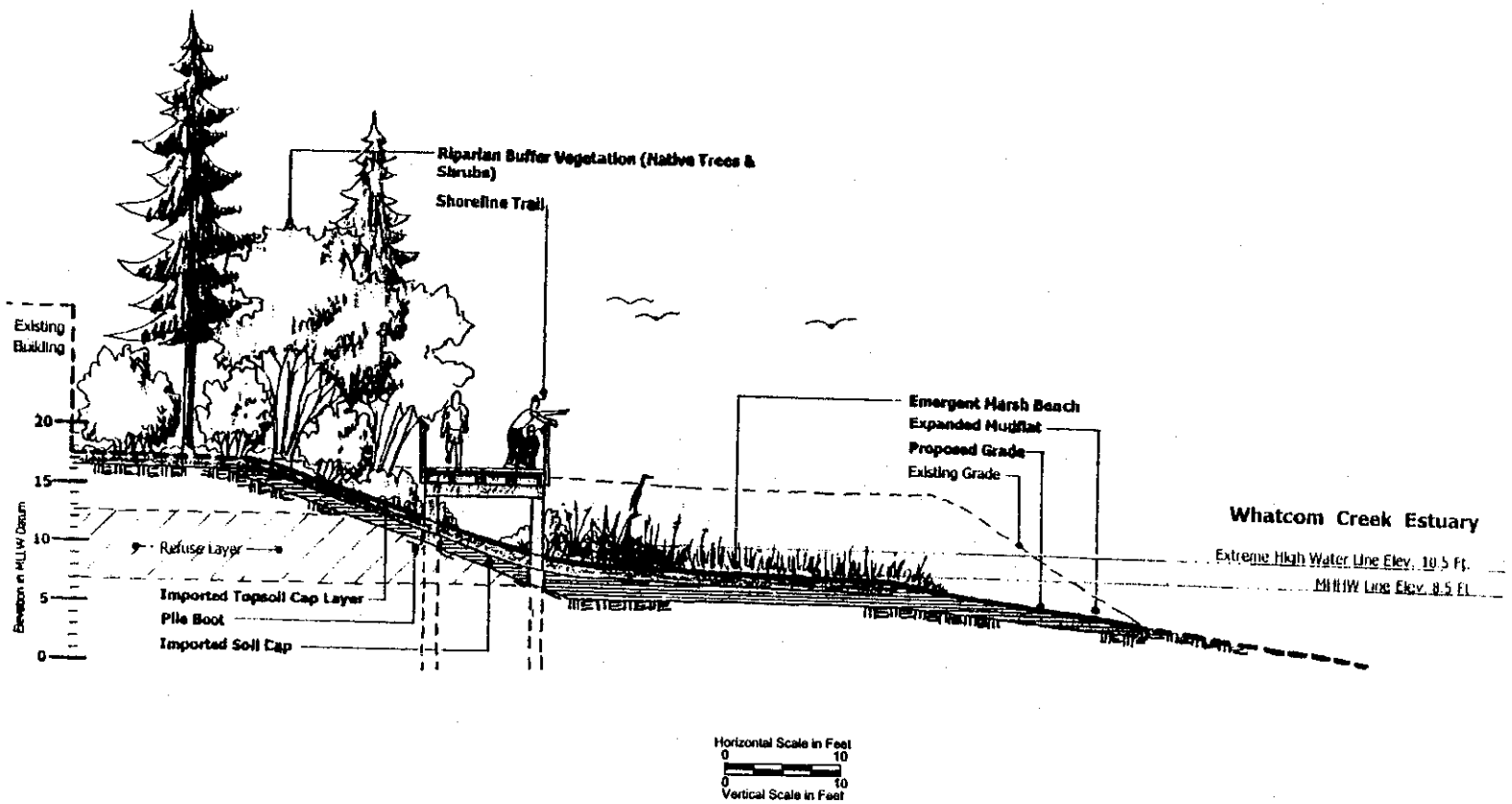


Figure 5
Alternative Integrated Cleanup/Habitat Restoration Action Plan
Holly Street Landfill



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ANCHOR

Figure 6
Alternative Integrated Cleanup
and Habitat Restoration Cross Section
Holly Street Landfill

Table 1
Contaminants of Concern and Proposed Cleanup Levels - Holly Street Landfill

Contaminant	Soil/Cap Cleanup Level (mg/kg dry weight)	Surface Water Cleanup Level	
		4-Day Average Conc. (ug/L; dissolved basis)	1-Hour Maximum Conc. (ug/L; dissolved basis)
Metals			
Arsenic	**20**	N/A	N/A
Cadmium	**2.0**	N/A	N/A
Copper	N/A	**3.1**	**4.8**
Lead	**250**	N/A	N/A
Zinc	N/A	**81**	**90**
Polynuclear Aromatic Hydrocarbons (PAHs):			
Benzo(a)pyrene	**0.14**	N/A	N/A
Total Carcinogenic PAHs [(a)]	**1.4**	N/A	N/A

NOTES:

(a) Based on the sum of the benzo(a)pyrene toxicity equivalent concentration, using procedures set forth in MTCA.

N/A - Not applicable

EXHIBIT B

SITE DIAGRAM

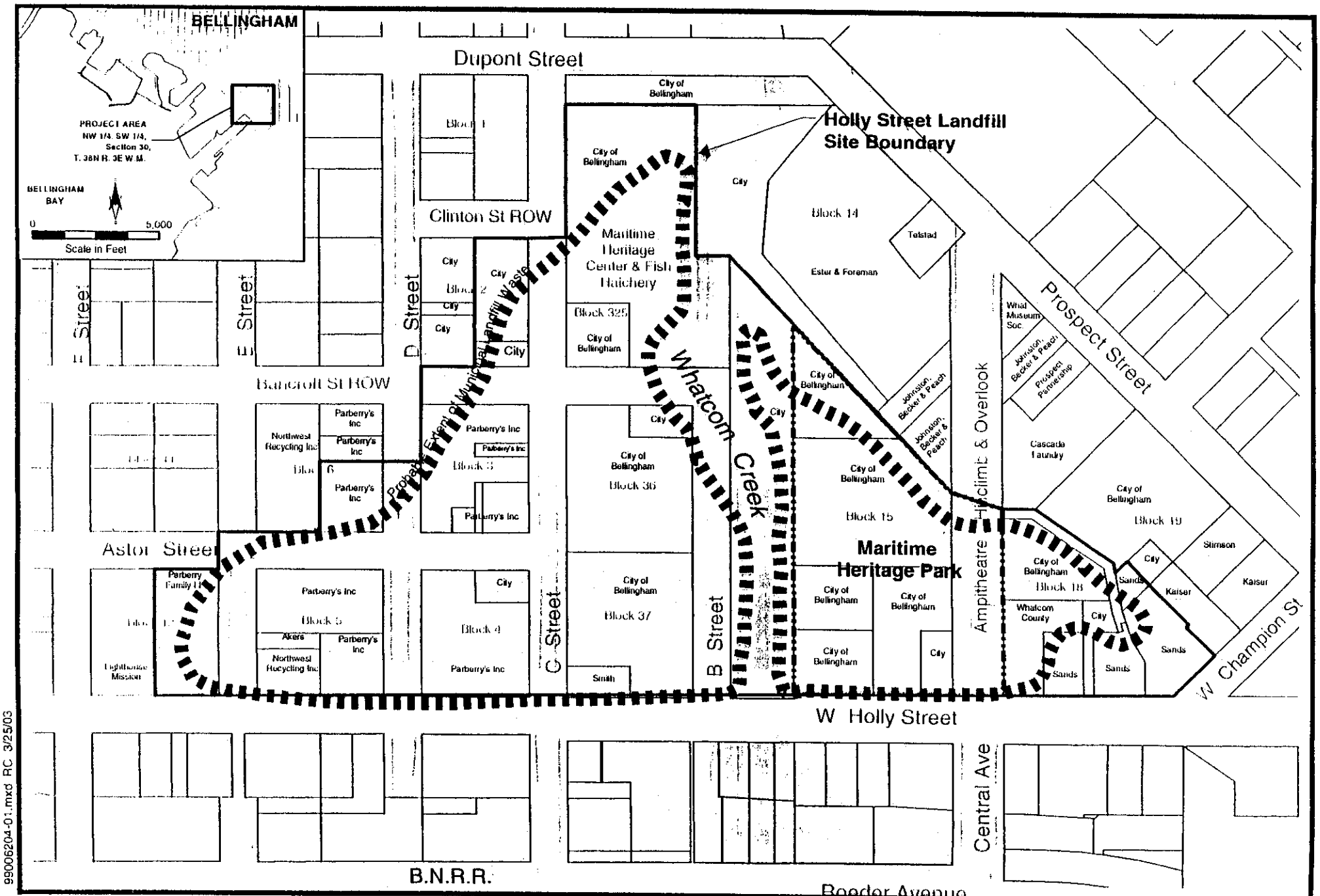

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Exhibit B

Project Area

Holly Street Landfill

EXHIBIT C

CONSENT DECREE SCHEDULE

HOLLY STREET LANDFILL REMEDIAL DESIGN (RD) CONSENT DECREE SCHEDULE

EXHIBIT C

April 2003

Written Notification to Ecology with name and qualifications of RD/RA coordinating contractor	Within 10 days after signing of this Consent Decree (CD) by the Court
Draft RD Data Collection Work Plan	Within 30 days after entry of this CD
Ecology Review and Comment	Within 50 days of Work Plan Submittal
Draft RD Data Collection Report to Ecology	Within 87 days of Ecology's written approval of Final RD Data Collection Work Plan.
30% RD to Ecology	Within 90 days of receipt of Ecology's written approval of Final Data Collection Report
Ecology Review and Comment	Within 30 days of receipt of 30% RD
90% RD to Ecology	Within 60 days of receipt of Ecology's written comments on the 30% RD
Ecology Review and Comment	Within 30 days of receipt of 90% RD
Draft Final 100% RD to Ecology	Within 30 days of receipt of Ecology's written comments on the 90% RD.
Public Review and Comment	Within 60 days of receipt of Draft Final 100% RD.
Final 100% RD to Ecology	Within 30 days of receipt of Ecology's written comments on Draft Final 100% RD.
Construction Plans and Specifications to Ecology/ Obtain All Relevant Permits	Within 356 days of Ecology's Approval of Final RD
Ecology Review and Approval	Within 30 days of receipt of Construction Plans and Specifications

Mobilization	Within 90 days of Ecology's Construction Approval
Begin Construction	Within 90 days of Mobilization
File Deed Restriction, Exhibit D	Within 30 days of the Court Signing the CD
Implement Confirmational Sampling, Exhibit E	Within 60 days of Work Completion
Implement contingency plans	Within 30 days of Contingency Determination by Ecology
SITE Restoration Clock Begins	Within 30 days of Work Completion

EXHIBIT D

RESTRICTIVE COVENANT

EXHIBIT D

RESTRICTIVE COVENANT

HOLLY STREET LANDFILL

500 – 600 West Holly Street

Bellingham, WA 98225

This Declaration of Restrictive Covenant is made pursuant to RCW 70.105D.030(1)(f) and (g) and WAC 173-340-440 by _____ *[NAME of property owner]* and its successors and assigns ("_____") *[NAME]*, in favor of the State of Washington Department of Ecology and its successors and assigns ("Ecology").

The property that is the subject of this Restrictive Covenant is the subject of remedial action under the Washington State Model Toxics Control Act ("MTCA"), Chapter 70.105D RCW, ("Remedial Action") pursuant to a Consent Decree in the matter State of Washington, Department of Ecology v. City of Bellingham, et al., Cause No. _____ which was entered by the Whatcom County Superior Court on _____, 2003 ("Consent Decree"). The property is part of the larger Holly Street Landfill Site (the Site). The Site is defined in Exhibit B to the Consent Decree. The Remedial Action to be conducted pursuant to the Consent Decree at the property is described in the *Holly Street Landfill Final Cleanup Action Plan*, dated April, 2003, ("Cleanup Action Plan"), which is Exhibit A to the Consent Decree and is located at Ecology's Northwest Regional Office (NWRO) in Bellevue, Washington.

This Restrictive Covenant is required because the Remedial Action will result in the

containment of municipal type waste with residual concentrations of hazardous substances at the Site which exceed the MTCA unrestricted land use (e.g., residential) cleanup level for soil established under WAC 173-340-740. Further, certain geochemical oxidation processes acting within the immediate shoreline zones result in exceedances of surface water cleanup standards established under WAC 173-340-730 at the points of groundwater discharge into surface water. The extent of contamination and the Remedial Action to be conducted at the site are contained in the following Reports:

1. *Remedial Investigation/Feasibility Study, Holly Street Landfill Development Project Final Report – City of Bellingham*, by Anchor Environmental, LLC, April, 2003

2. *Holly Street Landfill Final Cleanup Action Plan* (Exhibit A to the Consent Decree).

These documents are on file at Ecology's NWRO.

The undersigned, _____ *[NAME of property owner]*, is the fee owner of real property (hereafter "Property") in the City of Bellingham, State of Washington, which is subject to this Restrictive Covenant. The Property is part of the former Holly Street Landfill situated in the City of Bellingham, State of Washington, and is legally described in Attachment A, 'LEGAL DESCRIPTION' and identified in Attachment B, Site Diagram.

[NAME of property owner] makes the following declaration as to limitations, restrictions, and uses to which the Property may be put and specifies that such declarations shall constitute covenants to run with the land, as provided by law and shall be binding on all parties and all persons claiming under them, including all current and future owners of any portion of or interest in the Property (hereafter "Owner").

Section 1. Future use of the Property shall be limited to those uses defined in and allowed under the City of Bellingham zoning and Shoreline Management regulations codified in

the City of Bellingham Municipal Code as of the date of this Restrictive Covenant and as they may be amended from time to time. No groundwater may be withdrawn from the property for any use that is inconsistent with the remedial action implementation. The Property shall not be used for ground floor residential or day care center uses.

Section 2. Pursuant to the Cleanup Action Plan, Owner must maintain the integrity of the Remedial Action. Specifically, Owner must maintain two feet of soil cap or equivalent structural cover (e.g., building or two inch paving layer overlying ballast) over the Property. [[*Following language to be included only in covenants applicable to property within the Maritime Heritage Park portion of the Site* -- For building structures within the Maritime Heritage Park portion of the Site, Owner must conduct supplemental soil gas monitoring and/or use engineered passive gas venting systems as required under the Cleanup Action Plan and described in the *Compliance Monitoring and Contingency Response Plan*, which is Exhibit E to the Consent Decree.]] Any activity on the Property that may interfere with the integrity of the Remedial Action and continued protection of human health and the environment is prohibited. These activities include those that may result in the release or exposure to the environment of the municipal type waste or contaminated soil, soil-gas and shoreline seepage that was contained as part of the Remedial Action, or that create an exposure pathway, unless such activities are authorized by the Cleanup Action Plan or this Restrictive Covenant. Where utility or other work at the Property requires excavation, Owner must comply with state and City standards, and must provide one foot of overexcavation or use geofabric lining to provide a clean perimeter around the excavation. All refuse materials excavated from the Property must be disposed off-site at a permitted solid waste disposal facility or contained on-site below an engineered cap meeting the specifications outlined in the Cleanup Action Plan or subsequent Remedial Design (RD) documents (i.e., two feet of soil

cap or equivalent structural cover). Personnel performing excavation at the Property should be familiar with the applicable health and safety training requirements, and should take the necessary precautions to minimize direct contact with municipal type waste and contaminated soils that are above state standards and are contained at the Site as part of the Remedial Action. Excavations conducted in accordance with the above conditions shall not constitute activities that interfere with the Remedial Action or continued protection of human health and the environment.

Section 3. Any activity on the Property that may interfere with the integrity of the Remedial Action, operation and maintenance, or monitoring and continued protection of human health and the environment is prohibited without prior written approval from Ecology, which approval shall not be unreasonably withheld. Details about the compliance monitoring requirements to ensure continued protection of human health and the environment are contained in EXHIBIT E of the Consent Decree.

Section 4. The Owner of the Property must give thirty (30) day advance written notice to Ecology of the Owner's intent to convey any title or easement interest in the Property. No conveyance of title, easement, lease, or other interest in the Property shall be consummated by the Owner without adequate and complete provision for continued monitoring, operation, and maintenance of the Remedial Action.

Section 5. The Owner must restrict leases to uses and activities consistent with the Restrictive Covenant and notify all lessees of the restrictions on the use of the Property.

Section 6. The Owner must notify and obtain approval from Ecology prior to any use of the Property that is inconsistent with the terms of this Restrictive Covenant. Ecology may approve any inconsistent use only after public notice and comment.

Section 7. The Owner shall allow authorized representatives of Ecology the right to enter

the Property at reasonable times for the purpose of evaluating the Remedial Action; to take samples, to inspect remedial actions conducted at the property, and to inspect records that are related to the Remedial Action. Ecology will provide Owner advance notice of its entry onto the Property when feasible.

Section 8. The Owner reserves the right under WAC 173-340-440 to record an instrument that provides that this Restrictive Covenant shall no longer limit use of the Property or be of any further force or effect. However, such an instrument may be recorded only if Ecology, after public notice and opportunity to comment, concurs.

DATED this _____ day of _____, 20033.

BY: _____

_____
(Printed Name)

STATE OF WASHINGTON)

)ss.

COUNTY OF WHATCOM)

On this _____ day of _____, 2002, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____ _____, to me known to be the person who signed as _____ _____ of _____, the corporation that executed the within and foregoing instrument, and acknowledged said instrument to be the free and voluntary act and deed of said corporation for the uses and purposes therein mentioned, and on oath stated that he was duly elected, qualified and action as said officer of the corporation, that he was authorized to execute said instrument and that the seal affixed, if any, is the corporate seal of said corporation.

IN WITNESS WHEREOF I have hereunto set my hand and official seal the day and year first above written.

_____

Print Name: _____

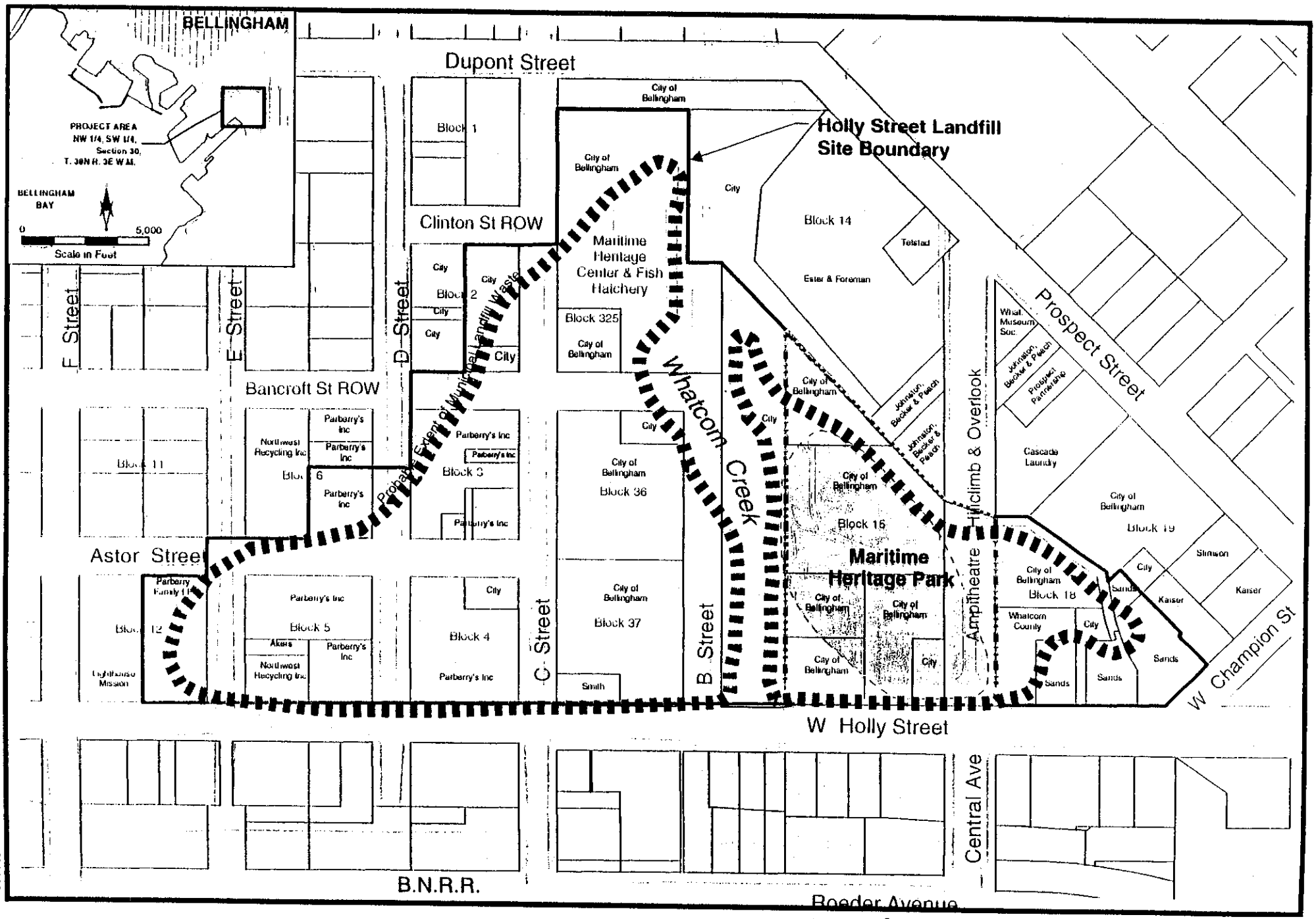
Notary Public in and for the State of Washington,

Residing at _____

My commission expires: _____

ATTACHMENT A
PROPERTY DESCRIPTION

Will be inserted at time the Covenant is finalized by individual property owners.



0 100 200 400
Scale in Feet

Approximate Extent of Soil Gas Methane Above Lower Explosive Limit (LEL)

Note: Basemap prepared from GIS data provided by City of Bellingham.

Attachment "B"
Project Area
Holly Street Landfill

EXHIBIT E

COMPLIANCE MONITORING & CONTINGENCY RESPONSE PLAN

HOLLY STREET LANDFILL BELLINGHAM, WASHINGTON

ISSUED BY:

WASHINGTON STATE DEPARTMENT OF ECOLOGY

TOXICS CLEANUP PROGRAM

NORTHWEST REGIONAL OFFICE, BELLEVUE

April 2003

Table of Contents

1.0 INTRODUCTION

This Compliance Monitoring and Contingency Response Plan describes the general procedures that will be used to confirm that cleanup requirements have been achieved at the Holly Street Landfill Site, Bellingham, Washington (Site). This plan has been prepared to satisfy the requirements of the Model Toxics Control Act (MTCA) administered by the Department of Ecology (Ecology), and specifically to satisfy the requirements of the MTCA regulations contained in WAC 173-340-410, Compliance Monitoring Requirements. The remedial actions selected for the Site are to occur under the legal framework of a Consent Decree between Ecology, the City of Bellingham (City), and other Defendants.

More detailed elements of the Compliance Monitoring and Contingency Response Plan for the Site will be developed during forthcoming remedial design to be performed under the Consent Decree. Specific monitoring requirements will be described in the Construction Quality Assurance Project Plan (CQAP) and Operations, Maintenance, and Monitoring Plan (OMMP) to be submitted for Ecology review along with other elements of remedial design documentation. The Compliance Monitoring and Contingency Response Plan may thus be amended during remedial design and work construction under the terms of the Consent Decree.

The purpose of this Compliance Monitoring and Contingency Response Plan is to describe and explain environmental monitoring activities and the rationale used to develop these activities for the Holly Street Landfill cleanup project. The objective of the Plan is to confirm that cleanup standards have been achieved, and to confirm the long-term effectiveness of cleanup actions at the Holly Street Landfill Site. This plan contains discussions on duration and frequency of monitoring; the trigger for contingency response action along the shoreline; and the rationale for terminating monitoring. The three types of compliance monitoring to be conducted include the following:

- **Protection Monitoring** to confirm that human health and the environment are adequately protected during the construction period of the cleanup action.
- **Performance Monitoring** to confirm that the cleanup action has attained cleanup standards and other performance standards.
- **Confirmation Monitoring** to confirm the long-term effectiveness of the cleanup action once performance standards have been attained.

1.1 Site Description

The Holly Street Landfill site is a 13-acre historic municipal solid waste landfill located in the Old Town district of Bellingham, Washington (see EXHIBIT B of the Consent Decree). In the late 1800s, the Holly Street Landfill Site was part of the original Whatcom Creek estuary and mudflat. Around 1905, private property owners began filling portions of the site with dredge spoils and other materials to increase useable upland areas. From 1937 to 1953, landowners used municipal waste to fill private tidelands within the former Whatcom Creek Estuary. Wastes disposed at the Site included debris and scrap materials, consistent with landfill disposal practices of the time.

Municipal solid waste is located on both sides of Whatcom Creek. The City currently owns 8.3 acres of the 13-acre landfill Site, including all landfill properties located along the Whatcom Creek shoreline. Various private property owners own land around the upland/inland perimeter of the landfill.

1.2 Nature and Extent of Contamination

The current ground surface of the landfill consists predominantly of silty sand and gravel of variable thickness, overlain in many areas by asphalt (northern fill unit) or landscaping (southern fill unit). Cover material thickness ranges from approximately 1 to 20 feet, and is generally thicker in the southeast portion of the site (Maritime Heritage Park; MHP), where it ranges from about 3 to 20 feet thick.

The extent of refuse at the Site, determined from more than 50 soil explorations within the general Site area, closely follows the historical shoreline and is also bounded by Holly Street, which was constructed prior to filling the Site. The refuse on the northwest lobe of the Site near the former Sash & Door property was encountered to a maximum depth of 18 feet below ground surface. Refuse on the southeast portion of the Site at MHP was present at deeper depths, extending up to approximately 40 feet below ground surface.

1.2.1 Soil

A range of metals (arsenic, cadmium, and lead) and hydrocarbon compounds were detected in soil/refuse at the Holly Street Landfill site at concentrations that exceed MTCA cleanup standards for unrestricted (residential) site uses. As with other regional landfills, performance-based cleanup standards are needed at the Holly Street Landfill site to minimize potential human and environmental exposure to refuse and associated soil contaminants.

1.2.2 Soil Gases (Methane)

Methane concentrations measured within soil gas at the Holly Street Landfill are generally well below potential explosive limits. Two soil gas monitoring sites located within the central area of the MHP contained subsurface soil gas that exceeded the lower explosive limit (LEL). Soil gas samples collected near the margins of the MHP, and throughout the rest of the landfill Site, were well below potential explosive levels. Future development in the MHP lobe of the Site will need to include supplemental gas monitoring and/or a passive gas venting system below the structure and compliance monitoring conducted as outlined in EXHIBIT E of the Consent Decree to ensure continued protection of human health and the environment.

1.2.3 Ground Water

Ground water was encountered within the base of the refuse during soil explorations. However, no chemicals were detected at concentrations exceeding potential drinking water use health-based criteria. Moreover, no human health risks are likely to be associated with potential drinking water consumption of ground water at the Holly Street Landfill Site because the City supplies drinking water throughout this area from sources removed from potential Site influence.

1.2.4 Surface Water

Although ground water in the interior portions of the landfill contains low concentrations of hazardous substances, geochemical oxidation processes acting within the immediate shoreline zone mobilize certain metals present in landfill refuse. As a result, shoreline seepage discharges from portions of the Holly Street Landfill Site near the former Sash & Door property have the potential to

result in both chronic and acute toxicity to sensitive aquatic life. Copper and zinc concentrations peak in shoreline seeps adjacent to the northwest lobe of the Site (but not on southeast lobe of the Site), before being diluted upon discharge into Whatcom Creek. The large dilution potential of Whatcom Creek restricts such exceedances to the immediate shoreline area of the estuary.

1.2.5 Sediment

Sediment samples have been collected in the shoreline area adjacent to the Holly Street Landfill Site. Although other contaminated sediment cleanup sites are present downstream of the landfill, all sediment samples collected immediately adjacent to the Holly Street Landfill were below State Sediment Management Standards chemical criteria.

1.3 Selected Cleanup Action

The selected cleanup action for the Holly Street Landfill will consist of in situ containment. The cleanup plan includes:

- Enhancing the existing soil cap in portions of the Maritime Heritage Center to be consistent with other landfill areas already capped to ensure that humans and the environment are protected from buried solid waste;

- Installing a gas barrier system, including membrane and gas collection piping components, at the Maritime Heritage Park Building. The piping will be brought to a single edge-of-building stack in which a carbon treatment system and monitoring ports will be provided. The outgas stack will be attached to the side of the building and terminated above the roof;

- Constructing a shoreline cap system designed to restrict tidal mixing (lateral recharge) and associated oxygen transfer into nearshore refuse deposits of the northwest landfill lobe; and

- Excavating and disposing off-site, a sufficient amount of shoreline solid waste as necessary to avoid loss of aquatic habitat resulting from the shoreline capping action, and disposing the material off-site.

Upland capping would be implemented concurrently with the shoreline remedy. Each of these elements is described below.

1.3.1 Upland Cleanup

Below the existing surface cap, the landfill is characterized by mostly inert material composed of soil, gravel, metal, glass, concrete, ash, and other constituents. This material will remain on Site. Chemical analysis of this material detected residual contamination of metals and hydrocarbon compounds, typical of municipal waste. As evidenced by the low concentrations of hazardous substances detected in ground water within the interior portions of the landfill, these contaminants have low mobility and low solubility, and will not likely be transported from their source areas, particularly following construction of the shoreline cap.

Within those areas of the Holly Street Landfill Site that already have a suitable cap meeting containment specifications (e.g., all of MHP and most of the northwest landfill lobe), the existing cap section would be maintained. In limited areas of the Site where the existing cap is insufficient (e.g., less than 2 feet-thick and also not overlain by asphalt or concrete barriers), the cap would be augmented to meet containment specifications. Based on available data, approximately 0.4 acres within the Maritime Heritage Center (fish hatchery) may require a cap amendment. This area would be capped concurrent with the shoreline remedy.

In those areas of the Site that are not currently covered with 2 feet or more of soil cap materials or equivalent structural cover, the upland cap will be placed on top of the landfill material to prevent direct contact exposures. The upland cap will be constructed concurrent with the shoreline capping action discussed below, using one of two methods:

1) To achieve a minimum 2-foot total thickness of clean soil materials (e.g., silty sand and gravel) overlying refuse; or

2) With an equivalent structural cover such as standard concrete cap or asphalt section (e.g., 2-inch paving layer overlying ballast).

Surface water will be allowed to infiltrate through the cap material into the underlying waste. The soil cap will be graded and storm water will be channeled and managed to control erosion. After the soil cap is installed, it will be re-vegetated.

Future construction of buildings within Maritime Heritage Park would include one of the following cleanup actions:

1) Additional supplemental soil gas sampling and analysis to evaluate whether gas levels are below the LEL beneath the ground surface of anticipated structures; or

2) Construction and monitoring of an engineered passive gas venting system beneath the structure.

A Future Site Use Conceptual Plan for the Maritime Heritage Park is depicted in EXHIBIT G of the Consent Decree. Potential future additional structures as may be constructed within the Maritime Heritage Park will require either monitoring or an appropriate methane venting system that meets with Ecology approval, as set forth in Section 2.2.1.

1.3.2 Shoreline Cleanup

A shoreline cap would be constructed adjacent to the northwest lobe of the landfill, extending into the Whatcom Creek estuary. In order to achieve no net loss of aquatic habitat and avoid the need for off-site aquatic habitat mitigation, localized excavation of approximately 3 to 5 feet of material would be performed along the northwest bank of the creek, prior to placing a cap over the exposed face. Approximately 900 tons of shoreline refuse materials would be removed

(likely using an upland excavator) and transported to an off-site landfill for disposal. Approximately twice this quantity of material (1,800 tons) would be backfilled to construct the shoreline cap. The project would be designed to achieve no net loss of aquatic habitat area or function associated with implementation of this alternative. Water quality controls such as restriction of in-water work windows to low tide conditions would be implemented as practicable as a part of this action.

Connecting with the upland cap section discussed above, the shoreline cap would be constructed of quarry spalls or equivalent materials to a minimum thickness of 2 feet from the top of bank down to extreme high water. The cap would then grade into a minimum thickness of five feet at and below the ordinary high water elevation (+8.5 feet MLLW). Cap thickness in this case is measured horizontally (the nominal ground water flow direction). In order to improve habitat functions of the cap and also to ensure long-term integrity of the cap, a shelf with a nominal slope of 4H:1V would be constructed of sand and gravel materials between approximately +8.5 feet MLLW and +6.0 feet MLLW. Cap specifications would be refined during remedial design, incorporating detailed seismic, erosion, water quality protection, and other evaluations to ensure the long-term integrity and effectiveness of the containment structure.

1.3.3 Alternative Integrated Cleanup/Restoration Action

Contingent on continuing participation at the Site by the U.S. Army Corps of Engineers (Corps) Civil Works program or other ecosystem restoration funding sources, the cleanup action alternative for the Holly Street Landfill could be modified by combining cleanup, habitat restoration, public access, and land use into a single integrated remedy. While the habitat restoration elements of this integrated alternative are consistent with remedial action objectives, they are not necessary to achieve cleanup goals. The integrated plan includes:

1) Excavating and disposing off-site approximately 8,000 tons of shoreline solid waste within the 1/3-acre "B" Street right-of-way or another similar area of the site;

2) Backfilling the excavation area with a clean cap graded to relatively flat slopes, restoring historically lost aquatic habitat in this important estuary;

3) Enhancing the existing soil cap in portions of the Maritime Heritage Center to be consistent with other landfill areas already capped to ensure that humans and the environment are protected from buried solid waste; and

4) Incorporating public access into the overall project design to address existing community open space goals and planning objectives.

Habitat restoration would be incorporated into this alternative by removing refuse within an approximate 0.3-acre area within existing City right-of-way, along with additional enhancements. Alternatively, other shoreline refuse areas adjacent to the Whatcom Creek Estuary could be removed. Regardless of the location of the excavation, such an action would restore critical estuarine riparian buffer, marsh, and mudflat banks that existed historically in this area of Bellingham Bay, and could also be designed to provide a park-like setting allowing citizens trail access along this stretch of Whatcom Creek to the Maritime Heritage Center, potentially linked into the larger Whatcom Creek Trail Master Plan. Incorporating public access design with cleanup and habitat restoration could meet community open space goals and planning objectives, leverage additional community support and funding, and provide an opportunity to educate the public about critical estuarine environments. Future Site plans are consistent with maintaining long-term habitat restoration and public access benefits. However, while the habitat restoration and public access components are consistent with remedial action objectives, they are not necessary to achieve cleanup goals.

1.4 Indicator Hazardous Substances and Cleanup Levels

Indicator hazardous substances (IHSs) have been identified for the Holly Street Landfill Site using the criteria outlined in WAC 173-340-708(2). The final list of IHSs for surface water and soil cleanup actions are a subset of the contaminants detected at the Site, and

were developed for protection of surface water and propagation of aquatic life, and protection of human health from the consumption of potentially contaminated marine organisms and exposure to landfill gases.

Remedial action is necessary at the Holly Street Landfill Site to address soil and surface water contamination. Cleanup levels and associated points of compliance for these media are presented below. Because chemical concentrations in aquatic sediment are below cleanup levels, no sediment remedial action is necessary. The portion of the ground water that is of concern is next to the surface water interface, where tidal influence interacts with the upland refuse, thereby mobilizing some metals in the ground water next to the surface water body. As a result, the ground water cleanup strategy is focused on shoreline soil areas affected by tidal exchange, for the protection of the surface water and its ecosystem. Ground water cleanup is not necessary at the inland portion; therefore ground water cleanup levels are not applicable. Because of the landfill seeps at the shoreline, a surface water cleanup level is applicable to protect the surface water media and its ecosystem. Surface water at the Holly Street Landfill Site discharges its hazardous substances as seeps along the landfill shoreline, therefore the point of compliance for these seeps is within the biologically active zone of shoreline sediments, or between approximately 0 and 12 centimeters below the mud line.

1.4.1 Soil

The IHSs and cleanup levels for soil are summarized below. The remedial action objective for soil is to protect human health and the following cleanup levels are applicable from 0 to 15 feet below ground surface:

Arsenic	20 mg/kg
Cadmium	2 mg/kg
Copper	2,960 mg/kg
Lead	250 mg/kg
Zinc	24,000 mg/kg
Benzo(a)pyrene (CPAH)	0.14 mg/kg
Methane (in soil gas)	LEL (NIOSH)

1.4.2 Surface Water

The IHSs and cleanup levels for surface water are summarized below. The remedial action objective for surface water is to protect sensitive ecological receptors, and human health from the consumption of potentially contaminated organisms. The point of compliance for surface water at the Holly Street Landfill Site is the point at which hazardous substances are released to the surface waters of the state, which corresponds to seepage discharge locations along the landfill shoreline. The following Ambient Surface Water cleanup levels for the protection of aquatic life and humans are applicable:

Arsenic	36 ug/l
Cadmium	9.3 ug/l
Copper	3.1 ug/l
Lead	8.1 ug/l
Zinc	81.0 ug/l
Benzo(a)pyrene (CPAH)	0.031 ug/l

1.5 Monitoring Objectives and Rationale

The cleanup action incorporates monitoring to determine whether cleanup standards have been achieved during and after remedial action. Protection monitoring will be used to adequately protect human health and the environment during construction. Shortly after construction, performance monitoring will be conducted to confirm that cleanup actions are performing as anticipated and have attained cleanup standards and other performance monitoring objectives. After remedial actions are performed, confirmation monitoring will be conducted to confirm that cleanup actions continue to attain cleanup standards.

Four broad categories of compliance monitoring will be undertaken at the Holly Street Landfill Site as follows:

- **Physical Integrity** (Protection and Confirmation Monitoring) – Monitoring will be conducted during the remedial action to ensure that worker and public health and safety are protected during construction. In addition, following completion

of construction, long-term physical monitoring of the cap surface will be performed to verify that upland and shoreline caps area not substantially eroded over time by natural and anthropogenic forces. Cap thickness will be periodically assessed, and compared with the minimum thickness described in the Cleanup Action Plan to ensure integrity of the caps and to protect human health and the environment.

- **Soil Gas** (Performance Monitoring) – Any future building construction in the MHP portion of the Site will include either supplemental soil gas sampling and analysis to evaluate whether gas levels are below the LEL beneath the ground surface of anticipated structures, or construction and monitoring of an engineered passive gas venting system beneath the structure. In either case, soil gas performance monitoring activities conducted either prior to or immediately following construction activities in the MHP will be undertaken to ensure continued protection of human health and the environment. Upon completion of site construction, the City shall submit to Ecology for review and approval a technical memorandum that outlines specific monitoring locations and monitoring frequency.

- **Water Quality** (Protection and Performance Monitoring) – During remedial action, various construction controls will be implemented as practicable to ensure water quality protection within Whatcom Creek. Protection monitoring will be implemented during these activities to verify that such controls are effective, and to identify the need for further controls as appropriate. During Years 2, 5, and 10 (if necessary) following completion of construction, the water quality of intertidal seeps discharging from the shoreline cap system will be monitored to document attainment of surface water quality protection objectives within the nearshore seepage zone of the cap. Upon completion of site construction, the City shall submit to Ecology for review and approval a technical memorandum that outlines specific monitoring locations and monitoring frequency.

- Habitat Functions (Performance Monitoring) - During Years 2 and 5 (if necessary) following completion of construction, monitoring of the performance of the habitat restoration will be performed to document the rate of epibenthic and benthic infauna recolonization and utilization by juvenile salmonids, to ensure that productive biological communities become established in the Holly Street Landfill shoreline area. Baseline biological sampling was performed during pre-remedial design.

All remedial and restoration actions to be implemented within the Holly Street Landfill Site will utilize demonstrated technologies with at least a 15 to 20-year record of successful performance. Additional research is not necessary to demonstrate the effectiveness of the technologies. Accordingly, long-term monitoring is appropriately focused toward routine maintenance objectives and verification that the cleanup action is achieving its intended goals.

Monitoring methods and types of analyses were selected to monitor the effectiveness of the cleanup actions in attaining the soil and surface water cleanup standards for the Site. Upon completion of site construction, the City shall submit to Ecology for review and approval a technical memorandum that outlines specific monitoring locations and frequency for the various media discussed above as appropriate. Further discussion of these monitoring activities is presented in subsequent sections of this document. More detailed elements of the Compliance Monitoring and Contingency Response Plan for the Site will be developed during forthcoming remedial design, and presented in the CQAP and OMMP as appropriate.

1.6 Existing Site Monitoring Wells

There are currently 6 groundwater monitoring wells at the Holly Street Landfill Site: 1 upgradient well (A-MW-1); 2 wells located within the northwest landfill lobe (A-MW-2 and A-MW-3); and 3 wells located within the Maritime Heritage Park (A-MW-4 through A-MW-6). The upgradient well A-MW-1 shall be retained as part of the groundwater compliance monitoring program to monitor groundwater quality recharging the Site, subject to quality assurance requirements and detailed plans to be described in the OMMP. As none of the on-site landfill wells have chemical concentrations exceeding

risk-based MTCA criteria (see Section 1.2.3 above), no further monitoring of these wells is required at this time. Consistent with the conceptual model of chemical releases in the shoreline area that result from geochemical oxidation processes (see Section 1.2.4 above), required water quality monitoring will focus on the critical shoreline zone. Nevertheless, the existing on-site monitoring wells will initially be retained to allow for their possible use in the future as a means to gauge groundwater dynamics, as necessary, between the upgradient monitoring locations and the points of compliance along the shorelines. All other wells not utilized as part of the groundwater compliance monitoring protocol shall be abandoned as required by WAC 173-160 (well construction and abandonment). Upon completion of site construction, the City shall submit to Ecology for review and approval a technical memorandum that outlines specific monitoring well locations, their rationale and frequency for the various media discussed above as appropriate.

2.0 COMPLIANCE MONITORING

Compliance monitoring will begin with the initiation of remedial actions at the Holly Street Landfill Site, and will continue for up to ten (10) years after completion of construction. Ecology and the City will review the data after 2 and 5 years following completion of construction. If monitoring data shows that performance monitoring objectives and cleanup standards have been achieved, the sampling frequency and/or number of parameters may be reduced.

2.1 Protection Monitoring

The objective of protection monitoring is to confirm that human health and the environment are adequately protected during construction of the cleanup action [WAC 173-340-410(1)(a)]. Protection monitoring will be addressed in the health and safety plan prepared in conjunction with the engineering design report, construction plans and specifications, and CQAP (WAC 173-340-400), to be submitted for Ecology approval under the Consent Decree. Protection monitoring of water quality within Whatcom Creek will also be detailed in the forthcoming Biological Assessment required for this cleanup project as part of Endangered Species Act consultation with the National Marine Fisheries Service and U.S. Fish and Wildlife Service.

2.2 Performance Monitoring

The objective of performance monitoring is to confirm that the cleanup action has attained cleanup standards and other performance standards as appropriate [WAC 173-340-410(1)(b)]. Performance monitoring will consist of soil gas, water quality, and habitat function components, as described below.

2.2.1 Soil Gas Performance Monitoring

The soil gas performance monitoring program within the Holly Street Landfill Site is limited to situations involving construction of buildings within the MHP lobe of the Site. Potential future additional structures as may be constructed within the Maritime Heritage Park will require either monitoring or an appropriate methane venting system that meets with Ecology approval. Prior to construction of future buildings, the property owner (currently limited to the City) would elect to undertake one of the following response actions:

1) Supplemental soil gas sampling and analysis to evaluate whether gas levels are below the LEL beneath the ground surface of anticipated structures. In this situation, soil gas monitoring wells or equivalent sampling devices would be installed at a minimum of two (2) locations within the general footprint of the proposed building, and soil gas samples collected from wells screened at the maximum depth of the proposed foundation structure or utility corridor, whichever is deeper (but no deeper than 15 feet below ground surface). Each well would be sampled on two separate occasions during representative off-gas periods (e.g., during the onset of low pressure and high pressure weather systems), and the soil gas analyzed for methane and hydrogen sulfide. Depending on whether the soil gas data exceeds applicable MTCA cleanup standards (incorporating Method B air cleanup levels as appropriate), the data collected from the performance monitoring sampling will be used either to verify that no further soil gas controls are needed, or to identify the need for an engineered passive venting system, as described below. A report presenting the soil gas characterization data and recommendations would be submitted to Ecology for approval. Building construction (in this case without any further soil gas controls) would not commence until receipt of Ecology approval. Alternatively, the City and Ecology may determine that construction of a passive venting system is needed beneath the facility, with monitoring as described below.

2) **Construction and monitoring of an engineered passive gas venting system beneath the structure**. In this situation, a gas barrier system would be designed for the building and the design approved by Ecology prior to construction. A gas barrier system, including membrane and gas collection piping components, will be installed at the Maritime Heritage Park Building depicted in EXHIBIT G of the Consent Decree. In this case, the piping will be brought to a single edge-of-building stack in which a treatment system and monitoring ports will be provided. The outgas stack will be attached to the side of the building and terminated above the roof. Consistent with the soil gas characterization option #1 described above, and following a 3-month

equilibration period, influent and effluent gas would be sampled at the monitoring ports on two separate occasions during representative off-gas periods (e.g., during the onset of low pressure and high pressure weather systems), and the soil gas analyzed for methane and hydrogen sulfide. Depending on whether the soil gas data exceeds applicable MTCA cleanup standards (incorporating Method B air cleanup levels as appropriate), the data collected from the performance monitoring sampling will be used to verify that no further performance or compliance monitoring is needed. A report presenting the soil gas data and recommendations for further monitoring and/or maintenance of the system (if needed) will be submitted to Ecology for approval. Potential contingency response actions are described below in Section 3.1.1.

2.2.2 Water Quality Performance Monitoring

The objective of water quality performance monitoring at the Holly Street Landfill is to verify compliance of seepage discharges with MTCA surface water cleanup levels and State Surface Water Quality Standards (Chapter 173-201A WAC). During the RI/FS and pre-remedial design, primary seepage pathways to the Whatcom Creek shoreline were sampled using temporary well points. A total of 2 well point samples were collected within discernable seepage zones (WP-2 and -3); other locations evaluated either did not produce sufficient sample volumes for chemical analyses or contained chemical concentrations well below cleanup levels. The well points consisted of a 1-foot-long screen section positioned below the sediment surface, within the zone of saturation encountered at low tide. Sampling of the well points occurred near the end of an outgoing (ebb) tide cycle to characterize minimum tidal dilution conditions. The RI/FS and pre-remedial design sampling data will be used to design the cap section to provide water quality protection.

Monitoring during Years 2, 5, and 10 (as necessary) following completion of the capping action, when compared with baseline measurements collected during remedial design, should be sufficient to document attainment and maintenance of surface water quality protection objectives within the nearshore seepage zone

of the cap. The well points will be sampled during the month of April, corresponding to typical maximum seasonal groundwater discharge conditions. After receipt of each round of monitoring data, the information will be evaluated to determine whether adjustments to the scope of future monitoring are appropriate. After the 5-year and 10-year monitoring periods, the data will be summarized and reviewed by Ecology (in consultation with the City) as part of the 5 year MTCA remedial action review.

Upon completion of site construction, the City shall submit to Ecology for review and approval a technical memorandum that outlines specific monitoring locations and sampling frequencies. The approved sampling locations shall be marked permanently with a stake driven into the sediments to facilitate ease of detection by sampling personnel, and to serve as a local reference to determine water level elevations within the well points.

Well points will be constructed within 3-inch diameter hand-auger borings advanced up to 1 foot into the shoreline. The hand-auger equipment will be backed out of the boring, leaving a 3-inch-diameter hole. The boring cuttings will be left next to the boring and backfilled into the hole after the well points are removed. The well point, consisting of a 1-inch-diameter pre-cleaned stainless steel or PVC assembly with a 12-cm-long screen section, will be lowered into the hole and placed within the upper zone of saturation encountered at low tide. The outer annulus of the screen will be backfilled with 10/20 sand pack. Prior to sampling, each well point will be developed by purging slowly with a peristaltic pump to improve hydraulic connection and minimize turbidity. Following water quality sampling, the well points will be extracted and the cuttings backfilled.

At the time of sampling, a peristaltic pump and pre-cleaned tubing assembly will be installed in each well point, and water withdrawn at a relatively low rate (determined in the field) to reduce turbidity. At least three pore volumes from the well points will be removed using a peristaltic pump prior to sampling. All purge water obtained from the well points will be contained in PVC drums and

properly disposed within the City's wastewater treatment plant. Sampling of well points will occur near the end of the outgoing (ebb) tide cycle to characterize minimum tidal dilution conditions.

Water samples will be collected from the peristaltic pump/tubing assembly, and placed into sample containers provided by the laboratory. Samples will be immediately placed in an iced cooler. All samples designated for dissolved metals analysis will be filtered in the field through a 0.45-micron membrane filter. Field measurements will be performed near the end of the sampling period and will include determinations of temperature, pH, redox potential, specific conductance, turbidity, and dissolved oxygen.

All water samples, plus QA/QC samples, will be analyzed for the following parameters:

- Dissolved arsenic, cadmium, copper, lead, and zinc;
- Total suspended solids; and
- Salinity.

Data quality objectives for the well point sampling will be equivalent to those used during the RI/FS and pre-remedial design.

Data evaluation, reporting, and contingency plans are discussed in Section 3.1.

2.2.3 Habitat Function Performance Monitoring

The objectives of habitat monitoring at the Holly Street Landfill Site are as follows:

- To document recolonization of epibenthic and benthic macroinvertebrates;
- To document utilization by juvenile salmonids; and
- To ensure that productive biological communities become established in the area.

Significant long-term habitat functional benefits expected to be provided by the project include: increased epibenthic production; increased rearing area for juvenile salmonids and other resources; and enhanced migratory corridor and habitat connectivity. The habitat monitoring plan presented below will allow verification of these benefits. Monitoring will focus on epibenthic, benthic infauna, and juvenile salmonid population assessments.

Typical of other similar project implemented in the Puget Sound region, habitat development within the Holly Street Landfill Site area is expected to occur over a period of 3 to 4 years following construction. Baseline monitoring conducted during pre-remedial design and during Years 2 and 5 following completion of the remedial action should be sufficient to document the effectiveness of the restoration action.

Biological monitoring will generally occur during the early summer, in part to allow for consistent interannual comparisons as described in the Puget Sound Estuary Program (PSEP) protocols. After the 5-year monitoring period, the data will be summarized and reviewed by Ecology (in consultation with the City) as part of the 5 year MTCA remedial action review.

Upon completion of site construction, the City shall submit to Ecology for review and approval a technical memorandum that outlines specific biological sampling locations and monitoring frequencies. For evaluation purposes, data collected from these locations will be compared with baseline information, and with other sampling data collected concurrently by others from reference sites within Bellingham Bay.

Benthic Macroinvertebrates

Benthic macroinvertebrate samples will be collected using a petite Ponar grab sampler or equivalent sampling device in accordance with PSEP protocols. Three replicate samples will be collected from locations that will be outlined in a technical memorandum to be submitted to Ecology for review and approval. Benthic sampling will occur in early summer, to allow for interannual

comparisons. Samples will be processed through a sluice box and washed through a 0.5-millimeter (mm) sieve. Organisms, sediment, and debris retained on the sieve surface will be washed into a collection jar and preserved for sorting and taxonomic identification at a laboratory.

Each replicate sample will be sorted to the major taxonomic group level (i.e., crustacea, molluscs, polychaetes, echinoderms, and other), and the biomass of each group determined. The habitat function assessment will consist of comparing abundance, biomass, and diversity indices from the sample sites (likely pooled together) to the regional reference sites.

Epibenthic Macroinvertebrates

Epibenthic macroinvertebrates will be sampled using an epibenthic suction pump, following methods outlined in the PSEP Estuarine Habitat Assessment Protocols. A suction pump device that encompasses 0.1 square meters of the bottom will be used to collect samples from locations that will be outlined in a technical memorandum to be submitted to Ecology for review and approval. Samples will be collected during a single discrete sampling event within the juvenile salmon outmigration period (early summer). The sampler will be equipped with fine mesh (0.130 mm) screened ports to allow water to be pulled through the sample area, but screening any organisms from outside the sampling quadrant to enter the sample itself. Approximately three volumes of water will be flushed through the system to ensure that all organisms encompassed within the sampler are captured in the sample. The pumped water and epibenthic organisms will be sieved through a 0.253-mm mesh sieve. All organisms/debris retained on the sieve will be washed into a sample jar, and preserved for later sorting and taxonomic identification at a laboratory. Three replicate samples will be collected at each sampling station that will be outlined in a technical memorandum to be submitted to Ecology for review and approval to support statistical analyses of the data.

Each sample will be sorted to the lowest taxonomic level practical. The habitat function assessment will consist of comparing abundance and diversity indices from the sample sites (likely pooled together) to the regional reference sites.

Juvenile Salmonid Sampling

Juvenile salmonids in the Holly Street Landfill Site area will be sampled using a beach seine measuring approximately 100 ft long by 5 ft high made of 6-mm mesh. The sampling locations that will be outlined in a technical memorandum to be submitted to Ecology for review and approval will be sampled once during the juvenile salmonid outmigration period (likely in early summer). All salmonid fish captured during each beach seine set will be identified to species, enumerated, and released back into the water at their point of capture. No fish will be sacrificed for study purposes.

Trends in abundance and species composition at the Holly Street Landfill Site will be determined over the length of the outmigration period. Results of the seining efforts will be used to verify that juvenile salmon are migrating through the Holly Street Site area and using the restored habitat surface.

2.3 Confirmation Monitoring

The objective of confirmation monitoring is to verify the long-term effectiveness of the cleanup action once cleanup actions and other performance standards have been attained. Confirmation monitoring at the Holly Street Landfill Site is limited to long-term physical monitoring of the cap surface to verify that upland and shoreline caps area not substantially eroded over time by natural and anthropogenic forces. Cap thickness will be periodically assessed, and compared with minimum thickness generally described in the Cleanup Action Plan to ensure integrity of the caps and to protect human health and the environment.

2.3.1 Physical Integrity Monitoring

The objective of long-term cap monitoring at the Holly Street Landfill Site is to verify that flood flows or other forces do not erode shoreline capping materials

placed at the Site. Concurrently, the continued integrity of upland caps will also be verified.

During remedial design, a cap specification will be developed that will resist erosion from the maximum anticipated flood event or other erosional forces. Specifying the grain size of the capping material that will resist movement by such forces is one way of ensuring long-term stability of the cap/habitat system. Nevertheless, periodic disturbances of the surface from variable storm conditions, resulting in dynamic beach equilibrium processes typical of estuarine beaches, are expected to result in periodic disturbances of the shoreline cap/habitat surface, leading to localized areas of accretion and erosion. However, these changes, which are characteristic of such normally dynamic natural systems, are likely to be relatively minor and are unlikely to result in significant adverse effects on cap or habitat functions. Detailed cap design will be undertaken during remedial design to assess these conditions.

Immediately following cap construction, an initial post-construction bathymetric and topographic survey of the Holly Street Landfill remedial action area will be completed, and will provide the basis for performance monitoring /construction completion documentation, and will also serve as the baseline for comparison with subsequent surveys. Bathymetric surveys conducted during Years 2, 5 and 10 (as necessary) following completion of the remedial action should be sufficient to document the integrity of the shoreline cap system.

Bathymetric and topographic surveys will be performed over the full extent of the remedial action area. Transects will be on 25-foot centers with a horizontal accuracy of within 1 foot and a vertical accuracy of 0.1-foot. The bathymetric survey will be completed in general conformance with a USACE Class I survey (EM 1110-2-1003) with the following modifications:

- Track lines will be placed on 25-foot centers (versus 100-foot centers as specified in EM 1110-2-1003); and

- The reported elevation datum will be mean lower low water (MLLW)

Survey methods and transect locations will be similar between the annual surveys to allow detailed comparisons. Changes in bathymetry will be evaluated to identify areas of net erosion or deposition relative to post-construction conditions. A moderate concern will be assigned when an area of potentially significant erosion is observed that approaches the minimum capping thickness specified in the Cleanup Action Plan for the Holly Street Landfill Site. A high concern will be assigned when an area of potentially significant erosion is observed that does not comply with the minimum capping thickness. A moderate concern exceedance may trigger additional bathymetric monitoring to further assess erosion, whereas a high concern exceedance would trigger contingency evaluations (e.g., adding additional capping material).

The City will assess upland cap integrity during Years 2, 5 and 10 following completion of the remedial action. Included in the assessment will be a visual reconnaissance survey of the entire landfill footprint area, along with a summary of permits issued during the intervening years by the City for construction within the landfill footprint. In addition, the City will summarize utility or other work that may have been conducted within the landfill footprint that may have required excavation, and whether the activity provided a clean perimeter around the outside of the utility trench. The disposition of excavated refuse materials will also be summarized (i.e., disposed off-site at a permitted solid waste disposal facility or contained on site below an engineered cap meeting specifications outlined in the Cleanup Action Plan or subsequent remedial design documents). The intent of this review is to ensure that upland caps are present throughout the Holly Street Landfill Site that meets the cap specification (i.e., 2 foot soil cap or equivalent structural cover).

3.0 DATA EVALUATION, REPORTING, AND CONTINGENCY PLANS

All data will be evaluated following collection of the data and/or validation of the laboratory analytical data after each monitoring event. All groundwater level and groundwater quality data will be entered into a Site database. Protection, performance and confirmation monitoring data and information will be provided to Ecology shortly after the data is available. The frequency and content of the reporting is discussed below.

A contingency plan is a "backup" remedial action that may be implemented in the event the preferred option fails or proves ineffective in a timely manner. A general contingency plan is included as part of this Compliance Monitoring and Contingency Response Plan in the event that the remedial actions are not effective within the 10-year restoration time-frame anticipated for site cleanup and monitoring activities to be completed. The contingency plan will be developed in more detail as part of the OMMP.

3.1 Performance Monitoring and Contingencies

As discussed above, the objective of performance monitoring is to confirm that the cleanup action has attained cleanup standards and other performance standards as appropriate [WAC 173-340-410(1)(b)]. Performance monitoring will consist of soil gas, water quality, and habitat function components, as described below.

3.1.1 Soil Gas Performance Monitoring and Contingencies

Soil gas data evaluation and reporting plans are discussed in Section 2.2.1.

The design of the MHP building gas barrier system, as generally described in EXHIBIT A - Cleanup Action Plan, of the Consent Decree, is based on an assumption that relatively little methane gas is available near the surface of the building footprint (i.e., below the LEL), consistent with sampling data available for the Site as presented in the RI/FS. However, the passive gas collection system has been sized to accommodate significantly greater quantities of potential methane release than are anticipated. If larger volumes of methane gas are detected during performance monitoring (i.e., methane levels in the influent to the treatment unit are significantly above the LEL), the City may need to perform additional testing and maintenance of the treatment system to ensure that

performance standards are achieved, and to ensure continued protection of human health and the environment. In this case, the specific testing and maintenance plan will be included in the report presenting the soil gas data and recommendations for further monitoring and/or maintenance of the system. Potential contingency response actions to be evaluated by the City and Ecology in this situation may include installation of additional carbon scrubber units as needed; activation of an after burner attached to the passive venting discharge system to ensure compliance with the ambient air quality; installation of indoor methane sensors for early gas warning; and/or indoor air monitoring as appropriate. Implementation of contingency response actions, as appropriate, will be initiated following Ecology approval of the report.

3.1.2 Water Quality Performance Monitoring and Contingencies

As discussed in the Cleanup Action Plan (EXHIBIT A to the Consent Decree), following cap construction, shoreline ground water in contact with landfill soils will reestablish equilibrium with interior portions of the landfill, and shoreline ground water and surface water seepage concentrations are expected to return to the low concentrations observed throughout the rest of the Site. However, natural attenuation in this case may require a period of up to 10 years in order to meet remedial action objectives for the Site along the seep locations and within the biological active zone (approximately 0 to 12 centimeters below the mud line). The time clock for the restoration time frame begins upon completion of the remedial action implementation as outlined in EXHIBIT C, the Schedule of the Consent Decree.

Water quality data collected under Section 2.2.2 above will be compiled into a data report, including a narrative of quality assurance results. The data reports will be provided to Ecology within 90 days of receipt of the validated laboratory data. Monitoring during Years 2, 5, and 10 (as necessary and as outlined in the technical memorandum to be submitted to Ecology for review and approval) following completion of the capping action, when compared with baseline measurements collected during remedial design, should be sufficient to document attainment and maintenance of surface water quality protection

objectives within the nearshore seepage zone of the cap. After the 5-year and 10-year (as necessary) monitoring periods, water quality data will be summarized and reviewed by Ecology (in consultation with the City) as part of the 5 year MTCA remedial action review. The water quality data will be reviewed relative to the following evaluation criteria:

- Are metal concentrations as compared to baseline exhibiting statistically significant ($P<.05$; t-test or regression) declines over the monitoring period such that future compliance with cleanup standards is anticipated?

- Do the metal concentrations only exceed longer-term chronic aquatic life exposure criteria (i.e., applicable to a 4-day average concentration; WAC 173-201A-040[3]) and are metal concentrations below shorter-term (i.e., 1-hour) acute exposure criteria? In this event, further evaluation may be appropriate to address the effects of tidal dispersion near the seeps, and to assess compliance with water quality criteria set forth in Chapter 173-201A WAC.

If compliance monitoring data collected during the 2-year or 5-year water quality monitoring reviews shows that the water quality criteria are exceeded in the well points but that the answer to either of the above questions is "yes", then future monitoring will continue at an agreed-upon schedule. However, in the unlikely event that the answer to both questions listed above is "no", the City will prepare recommendations for a supplemental response plan for Ecology review. The plan will describe additional source evaluation, monitoring, and/or response actions to be undertaken to ensure the successful performance of the remedial action.

Potential contingency response actions to be evaluated by the City and Ecology in this case may include localized placement of additional semi-permeable capping materials along identified seepage zones at the shoreline, in order to provide further control of oxidation releases from soil to ground water by limiting tidal-induced exchange of oxidized surface waters into the landfill (lateral recharge). Placement of additional capping materials in this case would

need to conform to existing state and federal laws (e.g., no net loss of aquatic habitat). As discussed in the Cleanup Action Plan, if a contingency plan is implemented, a new 10-year restoration time frame would begin immediately after completion of the contingency implementation activity, with associated monitoring as generally outlined above. Contingency response plans will be developed in more detail in the OMMP.

3.1.3 Habitat Function Performance Monitoring

Habitat function performance monitoring is discussed in Section 2.2.3 above. No contingency response actions are required under MTCA for habitat elements. While habitat restoration elements of an integrated cleanup and restoration alternative are consistent with remedial action objectives, they are not necessary to achieve cleanup goals. However, habitat function contingency response actions may be implemented at the Site as required under separate authorities (e.g., as an element of an integrated ecosystem restoration action at the Site).

Epibenthic, bioaccumulation, benthic infauna, and juvenile salmonid monitoring data will be compiled into a data report, including a narrative of quality assurance results. The data reports will be provided to Ecology within 90 days of receipt of the validated laboratory data. As discussed above, habitat development within the Holly Street Landfill Site is expected to occur over a period of years following construction. Monitoring during Years 2 and 5 following completion of the remedial action should be sufficient to document the effectiveness of the action in restoring habitat functions.

3.2 Confirmation Monitoring and Contingencies

As discussed above, the objective of confirmation monitoring is to verify the long-term effectiveness of the remedial action once cleanup actions and other performance standards have been attained.

3.2.1 Physical Integrity Monitoring and Contingencies

Bathymetric and upland monitoring during Years 2, 5 and 10 following completion of the remedial action should be sufficient to document the

continued effectiveness and integrity of the caps. Monitoring will continue for a period of 10 years. The monitoring reports prepared following the Year 2, 5, and 10 monitoring events will summarize bathymetric monitoring data relative to baseline conditions, noting areas of moderate and high concern erosion as defined above. A moderate concern exceedance may trigger additional bathymetric monitoring to further assess erosion, whereas a high concern exceedance would trigger contingency evaluations. In the event that a high concern erosion area is identified, the City will submit recommendations for further monitoring or corrective action for Ecology review. As appropriate, the contingency response plan may include recommendations for cap repair.

More detailed elements of the Compliance Monitoring and Contingency Response Plan for the Site will be developed during forthcoming remedial design to be performed under the Consent Decree. Specific compliance monitoring requirements will be described more fully in the CQAP and OMMP.

EXHIBIT F

PUBLIC PARTICIPATION PLAN

HOLLY STREET LANDFILL CLEANUP SITE
BELLINGHAM, WASHINGTON

APRIL 2003

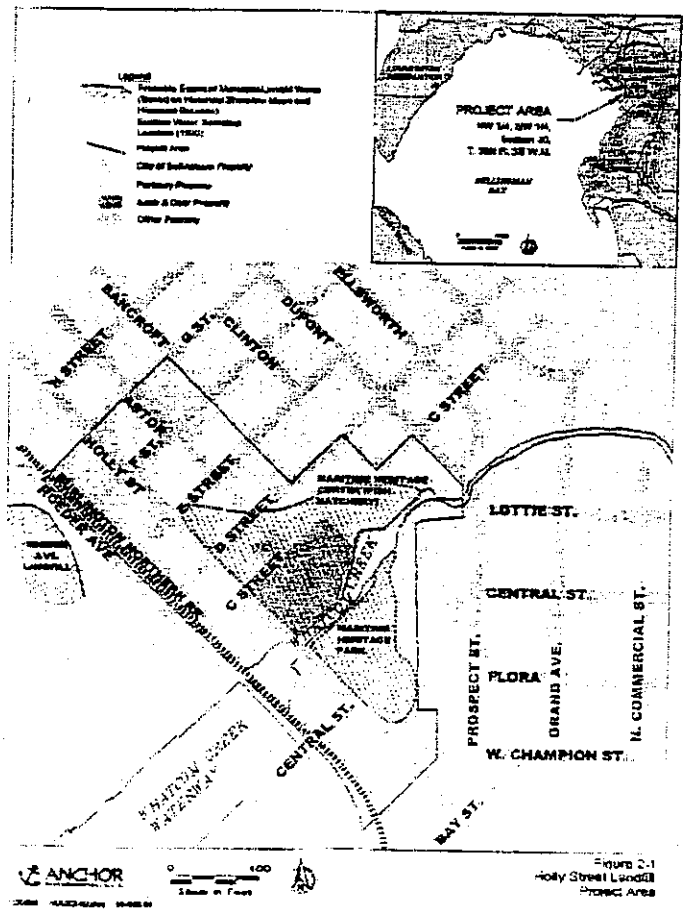
Prepared by the Washington State Department of Ecology
with input from the City of Bellingham

INTRODUCTION

Public participation is essential in reaching informed decisions when addressing community environmental issues such as cleanup of contaminated properties. The purpose of this *public participation plan* (PPP) is to assist in promoting public understanding and participation in the Holly Street Landfill cleanup. This PPP outlines a variety of tools and activities to encourage public involvement. Cleanups conducted under the Washington State Model Toxics Control Act (MTCA) and the regulations that guide site cleanup (Chapter 173-340-WAC), require public notice and encourage public comment and participation. Required elements of public participation under MTCA are incorporated into this plan as well as additional elements added to meet the needs of the community. This *public participation plan* complies with MTCA and MTCA regulations.

This plan has been prepared by the Washington State Department of Ecology (Ecology) in cooperation with the City of Bellingham. Ecology, working with the City of Bellingham, retains lead responsibility for PPP implementation. This *public participation plan* covers Ecology's *remedial investigation and feasibility study* and *consent decree* with exhibits including (but not limited to) the *cleanup action plan* and *state environmental policy act checklist and determination of non significance* for the cleanup of the Holly Street Landfill site.

The goal of this *public participation plan* is to promote public understanding of the cleanup process, including opportunities for public involvement, so that the community can provide comments and be involved in a meaningful way throughout the process. The following sections provide background information on the site and community and outline the public involvement tools and activities for the Holly Street Landfill site.



SITE BACKGROUND

The Holly Street Landfill site is a historic municipal solid waste landfill located in the City of Bellingham's Old Town district, between the 400 to 900 blocks of West Holly (Figure 1).

Solid waste is located on both sides of Whatcom Creek which bisects the site. The Holly Street Landfill site on the northwest bank and the Maritime Heritage Park site on the southeast bank of Whatcom Creek are listed and ranked by the Washington Department of Ecology as contaminated sites subject to the investigation and cleanup requirements of the Washington State Model Toxics Control Act. Since these sites are essentially one site divided by Whatcom Creek, Ecology has combined

the sites into one site known as the Holly Street Landfill.

Based on the findings in the remedial investigation, controls are needed at the site to continue to prevent human and environmental exposure to buried refuse and associated soil contaminants (e.g., metals, hydrocarbon compounds and methane soil gas). The landfill is also currently discharging zinc and copper above state cleanup standards to the Whatcom Creek estuary.

From 1937 to 1953, the landfill was formed when municipal waste was used to fill private tidelands within the former Whatcom Creek estuary. The extent of historic municipal solid waste at the site is estimated at 13 acres on both sides of the Whatcom Creek estuary. Wastes disposed at the site included debris and scrap materials consistent with landfill disposal practices of the time.

The City recently acquired the Sash and Door property which operated from the 1930s until 1993 as a building supply and lumber yard. The City now owns 8.3 acres of the 13-acre landfill site, including all landfill properties located along the Whatcom Creek shoreline. The city properties are primarily in the Maritime Heritage Park, a public park and city-owned fish hatchery. Various private property owners own land around the perimeters of the landfill. Private properties are in commercial and light industrial uses. The largest area of the landfill on the northeasterly side is dominated by the operations of Northwest Recycling which processes scrap metal, materials from curbside recycling and stores shipping containers and other items.

NEIGHBORHOOD PROFILE

COMMUNITY DESCRIPTION

The Holly Street Landfill is located in Bellingham's Old Town area which, connects the civic and commercial downtown core with the Bellingham Bay waterfront. The community on and directly adjacent to the landfill consists of commercial, light industrial and city park uses. An increasing number of residential neighbors also populate the Old Town neighborhood. The residential area of the Lettered Streets Neighborhood lies immediately uphill from the northern landfill lobe.

Old Town is bisected by Whatcom Creek, which flows from Lake Whatcom through downtown into the Whatcom Waterway and Bellingham Bay. Significant improvements since 1997 have been made to Maritime Heritage Park, located on the landfill adjacent to Whatcom Creek. Two new multi-family projects, several rehabilitations, and conversions of buildings to housing have increased the number of downtown residents in recent years who use the area for recreation.

KEY COMMUNITY CONCERNS

Input on the project from the community has been supportive of remediation and redevelopment of this property as part of the revitalization of Old Town. Investigation and cleanup of the Holly Street Landfill was a major action item identified in a 1996 Whatcom Creek action plan by a diverse mix of area stakeholders. Community concerns related to the site have been identified through conversations with stakeholders, comments on the *remedial investigation/feasibility study* (prepared by the City of Bellingham under the voluntary cleanup program), and public meetings held by the City of Bellingham. Concerns and interests expressed included:

- Integration of habitat restoration with the cleanup.
- Level of contamination and threats to human health or the environment.
- Adequate opportunities for public involvement in the cleanup action and redevelopment.
- Remediation of the site in a timely manner to expedite redevelopment.
- Implications of cleanup activities on surrounding property owners.
- Legal obligations for property owners participating in a landfill-wide cleanup action.

SITE CLEANUP

The proposed cleanup action consists of both inland and shoreline action as follows:

PROPOSED UPLAND CLEANUP ACTIONS:

- Capping to maintain a minimum two-foot soil cap throughout the landfill area.
- An engineered passive-gas venting system below the proposed building structure at the Maritime Heritage Park.
- Natural attenuation, institutional controls, and deed restrictions at the site. (Institutional controls are measures taken to limit or prohibit activities that may interfere with the cleanup or result in exposure to hazardous substances at the site. For example, temporary fencing will be installed around the active landfill removal area during construction to provide access restrictions.)
- Compliance monitoring and contingency response plans.

PROPOSED SHORELINE CLEANUP ACTIONS:

- Shoreline capping systems adjacent to the northwest lobe of the landfill to restrict tidal mixing with near shore refuse.
- Excavation and disposal off-site of a sufficient amount of shoreline solid waste to avoid loss of aquatic habitat resulting from the shoreline capping action.
- Natural attenuation, institutional controls, and deed restrictions at the site.
- Compliance monitoring and contingency response plans.

If funding is available, habitat restoration and public access will be integrated into the cleanup action. Under this alternative, approximately 8,000 tons of shoreline refuse materials would be excavated. Backfilling with a clean cap graded to relatively flat slopes would restore aquatic habitat in the Whatcom Creek estuary. The design would provide trail access along the creek bank to the Maritime Heritage Center and linkages to the Whatcom Creek Trail.

Flexibility has been built into the *cleanup action plan* and *consent decree* to accommodate integration with habitat restoration and cleanup work and to provide a timeline for bringing other property owners on-board with the institutional controls that will likely be required as part of the remedy.

PUBLIC PARTICIPATION ACTIVITIES AND RESPONSIBILITIES

The purpose of this Public Participation Plan is to promote public understanding and participation in the cleanup planned for this site. This section of the Plan addresses how Ecology and the City of Bellingham will share information and receive public comments and community input on the site cleanup. Ecology, working with the City of Bellingham, retains lead responsibility for these activities.

PUBLIC INVOLVEMENT TOOLS

Ecology uses a variety of tools that are aimed at facilitating public participation in the planning and cleanup of MTCA sites. The following is a list of these tools, their purposes, and how they will be used during this site cleanup.

Formal Public Comment Period

For the Holly Street Landfill, a 40-day comment period will be held from August 12 through September 20, 2002. During this time, the community will have the opportunity to provide written comments on the following draft documents:

- *remedial investigation/feasibility study*
- *consent decree* which includes (but is not limited to) the *cleanup action plan, restrictive covenant, compliance monitoring plan* and this *public participation plan*
- *state environmental policy act check list* and *determination of non significance*

E-mail and verbal comments (via phone) will also be accepted.

Public Meeting

In addition, a public meeting will be held on August 20, 2002 at 7:00 pm at the Bellingham Public Library to discuss the proposed cleanup actions and respond to questions and concerns.

Organizational Presentations

Community groups can request a presentation on the cleanup action plan, provided these presentations take place within the formal public comment period.

Responsiveness Summary

After the public comment period, Ecology will review and respond to any comments received in a responsiveness summary. Ecology will consider changes or revisions based on input from the public. If significant changes are made in any of the documents then a second comment period will be held. If no significant changes are made, then the *remedial investigation/feasibility study* will be finalized, and the *cleanup action plan* and the *consent decree* finalized and recorded in Washington State Superior Court. A copy of the responsiveness summary will be made available at the information repositories listed below with the other site documents.

Information Repositories
During the comment period, the site documents will be available for review at information repositories. Ecology can also make copies of documents for a fee.

For the Holly Street Landfill cleanup, the information repositories are:

- Bellingham Public Library, 210 Central Avenue, Bellingham
  Phone: (360) 676-6860
- Department of Ecology, Bellingham Field Office, 1204 Railroad Avenue, Suite 200
  Phone (360) 738-6250
- Department of Ecology, Northwest Regional Office, 3190 160th Avenue SE, Bellevue
  Phone: (425) 649-7190
- Site information will also be posted on the Ecology web site at:
  http://www.ecy.wa.gov/programs/tcp/cleanup.html

Site Register
All public meetings, comment periods and many other activities are published every two weeks in Ecology's Site Register. To receive the Site Register, contact Sherrie Minnick at (360) 407-7200 or shan461@ecy.wa.gov.

Mailing List
Ecology, with the City of Bellingham, will jointly compile a mailing list for the site. The list will include landowners adjacent to the site, businesses in the area, residents of the potentially affected community, individuals, groups, public agencies, elected officials, and other interested parties that request site-related mailings. A subset of this mailing list may be compiled to provide notice of site-related activity by Ecology or the City of Bellingham to property owners within or adjacent to the site who may be directly affected by physical activity at the site.

Fact Sheet
A fact sheet (similar to a newsletter) is mailed to potentially affected parties, as well as interested persons, businesses and government agencies in and around affected communities. The fact sheet is used to inform them of public comment periods and important site activities. A fact sheet may also be used to informally update the community regarding progress of the site cleanup.

For this site, a fact sheet will be prepared and mailed out to announce the formal comment period, public meeting, and availability of site documents to be reviewed. Future fact sheets will be prepared as appropriate to periodically update the community on the progress of the site cleanup.

Display Ad
A display ad announcing the formal comment period and public meeting will be placed in the *Bellingham Herald*.

PLAN UPDATE

This Public Participation Plan may be updated as the project proceeds. If an update is necessary, the revised plan will be submitted to the public for comment.

PUBLIC POINTS OF CONTACT

Ecology

Site Managers
Nnamdi Madakor
Department of Ecology
300 Desmond Drive
Lacey, WA 98504-7600
(360) 407-7244

Lucille T. McInerney
Department of Ecology
Northwest Regional Office
3190 160th Avenue SE
Bellevue, WA 98008-5452
(425) 649-7272

Public Involvement
Jessica Paige
Department of Ecology
Bellingham Field Office
1204 Railroad Avenue, Suite 200
Bellingham, WA 98225
(360) 738-6280

City of Bellingham

Project Manager
Sheila Hardy
City of Bellingham
Office of Neighborhoods & Community Development
114 West Magnolia, Suite 501
Bellingham, WA 98225
(360) 676-6880 ext. 208

GLOSSARY

Cleanup: Actions taken to deal with a release, or threatened release of hazardous substances that could affect public health and/or the environment. The term "cleanup" is often used broadly to describe various response actions or phases of remedial responses such as the remedial investigation/feasibility study.

Cleanup Action Plan (CAP): A document that explains which cleanup alternative(s) will be used at sites for the cleanup. The Cleanup Action Plan is based on information and technical analysis generated during the remedial investigation/feasibility study and consideration of public comments and community concerns.

Comment Period: A time period during which the public can review and comment on various documents and Ecology or EPA actions. For example, a comment period is provided to allow community members to review and comment on proposed cleanup action alternatives and proposed plans. Also, a comment period is held to allow community members to review and comment on draft feasibility studies.

Consent Decree: A formal legal document, approved and issued by a court which formalizes an agreement reached between the state (and EPA if involved) and the potentially liable person(s) (PLPs) on what will take place during the Remedial Investigation/Feasibility Study and/or cleanup action. A Consent Decree is similar to an Agreed Order except that a Consent Decree goes through the courts. Consent Decrees are subject to public comment. If a decree is substantially changed, an additional comment period is provided.

Feasibility Study (FS): See Remedial Investigation/Feasibility Study.

Information Repository: A file containing current information, technical reports, and reference documents available for public review. The information repository is usually located in a public building that is convenient for local residents such as a public school, city hall, or library.

Model Toxics Control Act (MTCA): Legislation passed by the State of Washington in 1988. Its purpose is to identify, investigate, and clean up facilities where hazardous substances have been released. It defines the role of Ecology and encourages public involvement in the decision making process. MTCA regulations became effective March 1, 1989 and are administered by the Washington State Department of Ecology.

Public Participation Plan: A plan prepared to encourage coordinated and effective public involvement designed to the public's needs at a particular site.

Remedial Investigation/Feasibility Study: Two distinct but related studies. They are usually performed at the same time, and together referred to as the "RI/FS." They are intended to:

- Gather the data necessary to determine the type and extent of contamination;
- Establish criteria for cleaning up the site;
- Identify and screen cleanup alternatives for remedial action; and
- Analyze in detail the technology and costs of the alternatives.

Responsiveness Summary: A summary of oral and/or written public comments received by Ecology during a comment period on key documents, and Ecology's responses to those comments. The responsiveness summary is especially valuable during the Cleanup Action Plan phase at a site when it highlights community concerns.

EXHIBIT G

CONCEPTUAL SITE USE PLAN
MARITIME HERITAGE PARK

EXHIBIT G
FUTURE SITE USE CONCEPTUAL MODEL PLAN

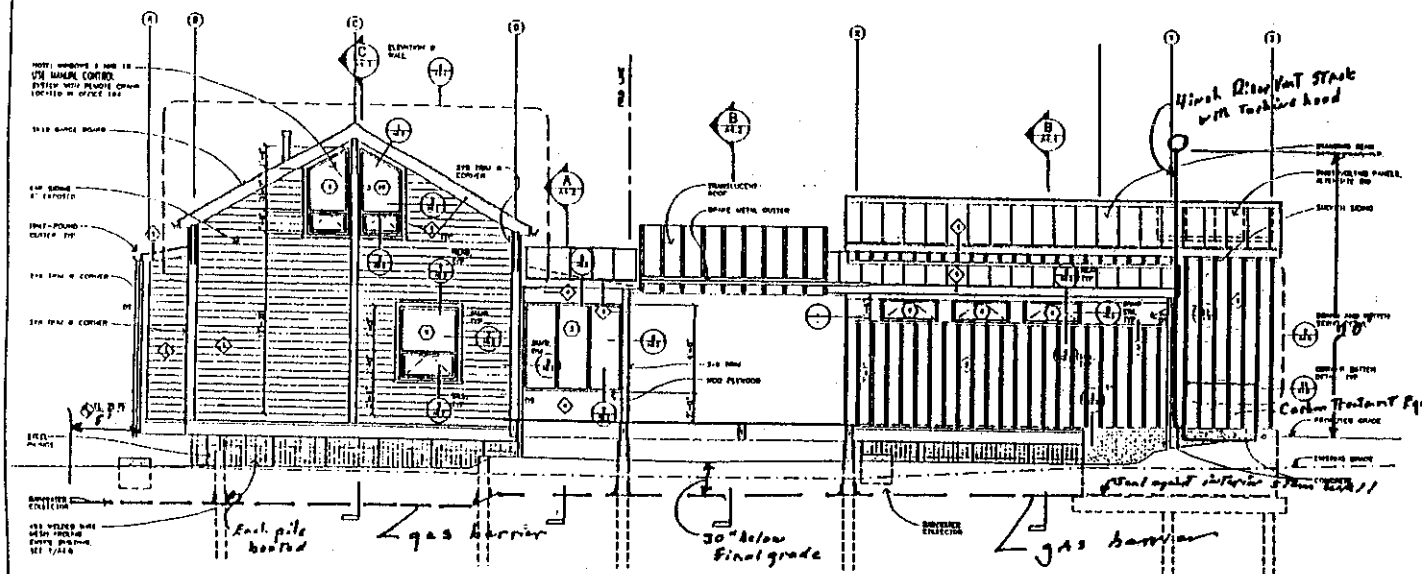
Maritime Heritage Park Building
Methane Gas Barrier Design

Beginning August 2002, the Maritime Heritage Park Building will be constructed in the northwest corner of Maritime Heritage Park. This area is within the Holly Street Landfill Site, and was previously capped with silty sand and gravel cover of variable thickness. Elevated methane concentrations (above the lower explosive level) have been detected in soil gas in this general area at depths greater than 15 feet below ground surface. The proposed building generally is an above grade pier with pile support. A small portion of the building foundation will be an above/below grade stem wall supported by piles.

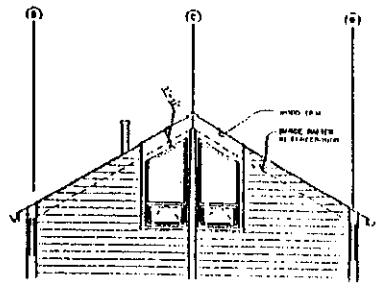
A gas barrier system utilizing a drainage geocomposite with piping connections is currently being designed for the proposed Maritime Heritage Park Building. The piping will be brought to a single edge-of-building stack in which a carbon treatment system and monitoring ports will be provided. The outgas stack will be attached to the side of the building and terminated above the roof.

A modified building plan drawing is attached defining the area of the barrier and location of the treatment stack. After Ecology's comment and approval, final sheets will be prepared and submitted. Construction of the gas barrier system is expected to commence by September 2002.

In mid-August, an initial operation and testing plan for the stack will be prepared to meet Northwest Air Pollution Authority (NWAPA) criteria. A draft of the plan will be submitted for review by Ecology and NWAPA. Upon receipt of comments, a final will be submitted.



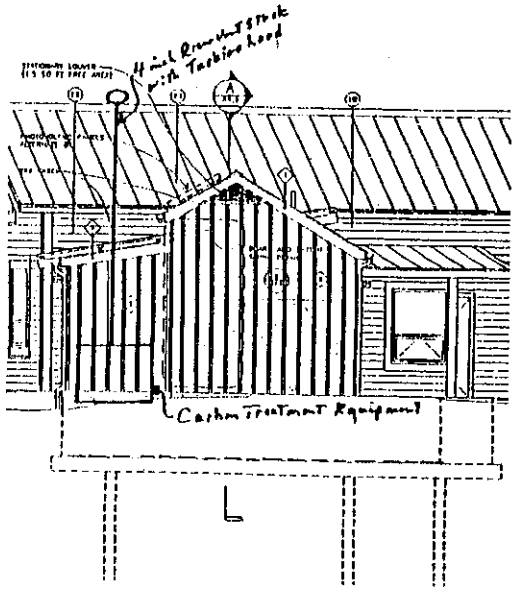
1 SOUTHWEST ELEVATION (VIEW FROM HOLLY STREET)



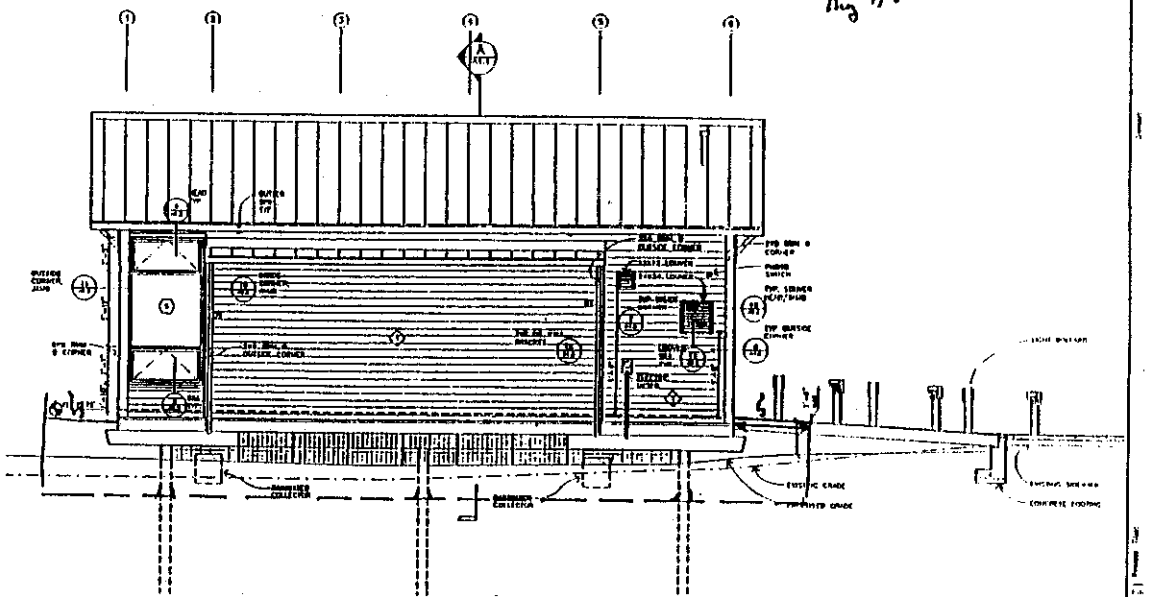
4 SOUTHWEST ELEVATION @ WALL

Gas barrier added Aug 1, 2002 by Aspect Consulting LLC

Vent stack added Aug 7, 2002



3 SOUTHEAST ELEVATION (VIEW FROM FOUNTAIN)



2 NORTHWEST ELEVATION (VIEW FROM WHATCOM CREEK)

CITY OF BELLINGHAM
PARKS & RECREATION
BELLINGHAM WA 98225

MARITIME HERITAGE PARK BUILDING
BELLINGHAM, WASHINGTON

BUILDING ELEVATIONS

440

A3.1

THE HENRY KLEIN PARTNERSHIP, ARCHITECTS 314 PINE ST. SUITE 205 MOUNT VERNON, WA 98273