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STATE OF WASHINGTON
KING COUNTY SUPERIOR COURT

STATE OF WASHINGTON,
DEPARTMENT OF ECOLOGY,

Plaintiff,

v.

Port of Seattle,

Defendant.

NO. _____

CONSENT DECREE RE: LORA LAKE
APARTMENTS SITE, BURIEN,
WASHINGTON

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2 **I. INTRODUCTION**

3 A. The mutual objective of the State of Washington, Department of Ecology
4 (Ecology) and Port of Seattle (Defendant) under this Decree is to provide for remedial action at
5 a facility where there has been a release or threatened release of hazardous substances. This
6 Decree requires Defendant to perform a final cleanup of the Lora Lake Apartments Site in
7 Burien, Washington.

8 Ecology has determined that these actions are necessary to protect human health and
9 the environment.

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

15 C. By signing this Decree, the Parties agree to its entry and agree to be bound by
16 its terms.

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

21 E. This Decree shall not be construed as proof of liability or responsibility for any
22 releases of hazardous substances or cost for remedial action nor an admission of any facts;
23 provided, however, that Defendant shall not challenge the authority of the Attorney General
24 and Ecology to enforce this Decree.
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1 F. The Court is fully advised of the reasons for entry of this Decree, and good
2 cause having been shown:

3 Now, therefore, it is HEREBY ORDERED, ADJUDGED, AND DECREED as follows:
4

5 **II. JURISDICTION**

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

8 B. Authority is conferred upon the Washington State Attorney General by RCW
9 70.105D.040(4)(a) to agree to a settlement with any potentially liable person (PLP) if, after
10 public notice and any required hearing, Ecology finds the proposed settlement would lead to a
11 more expeditious cleanup of hazardous substances. RCW 70.105D.040(4)(b) requires that
12 such a settlement be entered as a consent decree issued by a court of competent jurisdiction.

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

15 D. Ecology has given notice to Defendant of Ecology's determination that
16 Defendant is a PLP for the Site, as required by RCW 70.105D.020(21) and WAC 173-340-500.

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

19 F. This Decree has been subject to public notice and comment.

20 G. Ecology finds that this Decree will lead to a more expeditious cleanup of
21 hazardous substances at the Site in compliance with the cleanup standards established under
22 RCW 70.105D.030(2)(e) and Chapter 173-340 WAC.

23 H. Defendant has agreed to undertake the actions specified in this Decree and
24 consents to the entry of this Decree under MTCA.
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III. PARTIES BOUND

This Decree shall apply to and be binding upon the Parties to this Decree, 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 this Decree. Defendant agrees to undertake all actions required by the terms and conditions of this Decree. No change in ownership or corporate status shall alter Defendant's responsibility under this Decree. Defendant 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 agents, contractors, and subcontractors complies with this Decree.

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IV. DEFINITIONS

Unless otherwise specified herein, all definitions in RCW 70.105D.020 and WAC 173-340-200 shall control the meanings of the terms in this Decree.

A. Site: The Site is referred to as the Lora Lake Apartments Site and is generally located at 15001 Des Moines Memorial Drive, Burien, Washington. The Site is more particularly described in the Site Diagram (Exhibit A). The Site constitutes a Facility under RCW 70.105D.020(5).

B. Parties: Refers to the State of Washington, Department of Ecology and **the Port of Seattle**.

C. Defendant: Refers to **the Port of Seattle**.

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

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V. FINDINGS OF FACTS

Ecology makes the following findings of fact without any express or implied admissions of such facts by Defendant.

A. Defendant owns the Site.

B. Prior to 1940 the Lora Lake Apartments Parcel had both an orchard and a private residence. During the 1940s and 1950s, Novak Barrel Cleaning Company operated at the Lora Lake Apartments Parcel. From the mid-1950s to 1981, Burien Auto Wrecking operated at the Lora Lake Apartments Parcel. In the 1986 to 1987 timeframe, the Mueller Group, a building developer, purchased the Lora Lake Apartments Parcel, investigated and removed contaminated soil, and constructed an apartment complex. After constructing the apartment complex, the Mueller Group sold the property to Santa Anita Realty Enterprises, which transferred the property to a wholly-owned subsidiary, Pacific Gulf Properties, Inc., in 1993. In 1998, Defendant acquired the Lora Apartments Parcel from Pacific Gulf Properties, Inc. for conversion to airport support (industrial) use, and vacated the apartments. Ownership of the Lora Lake Apartments Parcel was temporarily transferred from Defendant to the King County Housing Authority (KCHA) in May 2000. On July 20, 2007, the Defendant reacquired ownership of the Lora Lake Apartments Parcel. Following reacquisition of the Lora Lake Apartments Parcel by Defendant, six of the apartment buildings were demolished to comply with Federal Aviation Administration (FAA) flight path requirements because of expansion at SeaTac International Airport.

C. Defendant notified Ecology of soil and ground water contamination at the Site on February 27, 2008.

D. Defendant and KCHA submitted a Voluntary Cleanup Program (VCP) application to Ecology on April 4, 2008. The Defendant subsequently entered the VCP. The

1 Defendant filed a Modified VCP application on September 23, 2008, removing KCHA from
2 the VCP application.

3 E. The modified VCP application listed polycyclic aromatic hydrocarbons,
4 hydrocarbons (gasoline, diesel, and oil), and dioxins as confirmed soil contaminants and these
5 same contaminants plus tetrachloroethene, trichloroethene, 1,2-dichloroethane, and arsenic as
6 confirmed groundwater contaminants. This contaminant list was refined during the subsequent
7 RI/FS.

8 F. Ecology notified Defendant of their potential liability for the Site under the
9 Model Toxics Control Act on February 3, 2009. Defendant accepted status as a Potentially
10 Liable Person on March 5, 2009.

11 G. Defendant entered into Agreed Order DE 6703 with Ecology on July 10, 2009,
12 requiring Defendant to complete interim remedial actions, prepare a Public Participation Plan,
13 complete a Supplemental Data Gaps Report, and complete a Remedial Investigation/Feasibility
14 Study (RI/FS) for all releases at the site. Agreed Order DE 6703 required Defendant to
15 demolish all buildings and ancillary above-ground facilities of the Lora Lake Apartments
16 (excluding foundations) as an interim remedial action. This interim remedial action was
17 completed in the summer of 2009.

18 H. The RI/FS identified arsenic, lead, total petroleum hydrocarbons,
19 pentachlorophenol, carcinogenic polycyclic aromatic hydrocarbons, ethylbenzene, toluene, and
20 dioxins/furans as soil contaminants; arsenic, total petroleum hydrocarbons, pentachlorophenol,
21 carcinogenic polycyclic aromatic hydrocarbons and dioxins/furans as groundwater
22 contaminants; and lead, arsenic, pentachlorophenol, carcinogenic polycyclic aromatic
23 hydrocarbons and dioxins/furans as sediment contaminants for all releases at the Site. During
24 the RI/FS, the site was extended to include portions of airport property east of Des Moines
25 Memorial Drive including Lora Lake and a former Dredged Material Containment Area.
26

1 I. The First Amendment to Agreed Order DE 6703 with Ecology was effective
2 April 18, 2013 requiring Defendant to prepare a Draft Cleanup Action Plan. The Cleanup
3 Action Plan is attached to this Decree as Exhibit B.

4 **VI. WORK TO BE PERFORMED**

5 This Decree contains a program designed to protect human health and the environment
6 from the known release, or threatened release, of hazardous substances or contaminants at, on,
7 or from the Site.

8 A. Defendant shall conduct a final cleanup action at the Site by implementing the
9 Cleanup Action Plan (CAP) (Exhibit B) according to the Scope of Work and Schedule (Exhibit
10 C) and all other requirements of this Decree. The cleanup action includes, but is not limited to,
11 the following actions:

12 *1. Remedial action design and confirmational data collection.*

13 *2. Excavation of soil from the Lora Lake Apartments Parcel containing greater*
14 *than 100 parts per trillion (pptr) Toxic equivalency quotient (TEQ) dioxins/furans, with*
15 *off-site disposal at a licensed disposal facility.*

16 *3. Excavation of soil from the Lora Lake Apartments Parcel containing greater*
17 *than 11 pptr, but less than 100 pptr TEQ dioxins/furans, and consolidation of this excavated*
18 *material beneath a constructed engineered surface at the Dredged Material Containment Area.*

19 *4. Filling of Lora Lake and conversion of the open-water lake to a rehabilitated*
20 *wetland.*

21 *5. Modification of the stormwater conveyance system that crosses the Lora Lake*
22 *Apartments Parcel to eliminate the potential for contamination associated with the Site to*
23 *enter the stormwater system.*

1 The Parties intend that the above list include any and all outstanding obligations under Agreed
2 Order DE 6703. The Parties agree that Agreed Order DE 6703 no longer has any force or
3 effect.

4 B. The Defendant will submit for Ecology's review and approval the following
5 documents in accordance with the Schedule: engineering design report, the plans and
6 specifications, compliance monitoring plan, as-built documentation, and operations and
7 maintenance manual for any equipment or systems that are part of the remedy. The Scope of
8 Work and Schedule (Exhibit C) details those deliverables that have been identified at the time
9 of entry of this Decree.

10 C. Defendant agrees not to perform any remedial actions outside the scope of this
11 Decree unless the Parties agree to modify the CAP (Exhibit B), the Scope of Work and
12 Schedule (Exhibit C) to cover these actions. All work conducted by Defendant under this
13 Decree shall be done in accordance with Chapter 173-340 WAC unless otherwise provided
14 herein.

15 VII. DESIGNATED PROJECT COORDINATORS

16 The project coordinator for Ecology is:

17 David L. South
18 Toxics Cleanup Program
19 Department of Ecology, Northwest Regional Office
20 3190 160th Avenue
21 Bellevue, WA 98008-5452
22 (425) 649-7200
23 david.south@ecy.wa.gov

24 The project coordinator for Defendant is:

25 Don Robbins
26 Port of Seattle
Aviation/Environmental
P.O.Box 68727
Seattle, WA 98168
206-787-4918
Robbins.D@portseattle.org

1 Each project coordinator shall be responsible for overseeing the implementation of this
2 Decree. Ecology's project coordinator will be Ecology's designated representative for the Site.
3 To the maximum extent possible, communications between Ecology and Defendant and all
4 documents, including reports, approvals, and other correspondence concerning the activities
5 performed pursuant to the terms and conditions of this Decree shall be directed through the
6 project coordinators. The project coordinators may designate, in writing, working level staff
7 contacts for all or portions of the implementation of the work to be performed required by this
8 Decree.

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

11 **VIII. PERFORMANCE**

12 All geologic and hydrogeologic work performed pursuant to this Decree shall be under
13 the supervision and direction of a geologist or hydrogeologist licensed in the State of
14 Washington or under the direct supervision of an engineer registered in the State of
15 Washington, except as otherwise provided for by Chapters 18.220 and 18.43 RCW.

16 All engineering work performed pursuant to this Decree shall be under the direct
17 supervision of a professional engineer registered in the State of Washington, except as
18 otherwise provided for by RCW 18.43.130.

19 All construction work performed pursuant to this Decree shall be under the direct
20 supervision of a professional engineer or a qualified technician under the direct supervision of
21 a professional engineer. The professional engineer must be registered in the State of
22 Washington, except as otherwise provided for by RCW 18.43.130.

23 Any documents submitted containing geologic, hydrologic or engineering work shall be
24 under the seal of an appropriately licensed professional as required by Chapters 18.220 RCW
25 and 18.43 RCW.
26

1 Defendant shall notify Ecology in writing of the identity of any engineer(s) and
2 geologist(s), contractor(s) and subcontractor(s), and others to be used in carrying out the terms
3 of this Decree, in advance of their involvement at the Site.

4 IX. ACCESS

5 Ecology or any Ecology authorized representative shall have access to enter and freely
6 move about all property at the Site that Defendant either owns, controls, or has access rights to
7 at all reasonable times for the purposes of, *inter alia*: inspecting records, operation logs, and
8 contracts related to the work being performed pursuant to this Decree; reviewing Defendant's
9 progress in carrying out the terms of this Decree; conducting such tests or collecting such
10 samples as Ecology may deem necessary; using a camera, sound recording, or other
11 documentary type equipment to record work done pursuant to this Decree; and verifying the
12 data submitted to Ecology by Defendant. Defendant shall make all reasonable efforts to secure
13 access rights for those properties within the Site not owned or controlled by Defendant where
14 remedial activities or investigations will be performed pursuant to this Decree. Ecology or any
15 Ecology authorized representative shall give reasonable notice before entering any Site
16 property owned or controlled by Defendant unless an emergency prevents such notice. All
17 Parties who access the Site pursuant to this Section shall comply with any applicable Health
18 and Safety Plan(s). Ecology employees and their representatives shall follow any appropriate
19 safety and security precautions required by the Port as part of their established safety and
20 security procedures that Ecology has consented to in advance of accessing the Site. Ecology
21 employees and their representatives shall not be required to sign any liability release or waiver
22 as a condition of Site property access.

23 X. SAMPLING, DATA SUBMITTAL, AND AVAILABILITY

24 With respect to the implementation of this Decree, Defendant shall make the results of
25 all sampling, laboratory reports, and/or test results generated by it or on its behalf available to
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1 Ecology. Pursuant to WAC 173-340-840(5), all sampling data, including ground water
2 elevation data, shall be submitted to Ecology in both printed and electronic formats in
3 accordance with Section XI (Progress Reports), Ecology's Toxics Cleanup Program Policy 840
4 (Data Submittal Requirements), and/or any subsequent procedures specified by Ecology for
5 data submittal.

6 If requested by Ecology, Defendant shall allow Ecology and/or its authorized
7 representative to take split or duplicate samples of any samples collected by Defendant
8 pursuant to the implementation of this Decree. Defendant shall notify Ecology seven (7) days
9 in advance of any sample collection or work activity at the Site. Ecology shall, upon request,
10 allow Defendant and/or its authorized representative to take split or duplicate samples of any
11 samples collected by Ecology pursuant to the implementation of this Decree, provided that
12 doing so does not interfere with Ecology's sampling. Without limitation on Ecology's rights
13 under Section IX (Access), Ecology shall notify Defendant prior to any sample collection
14 activity unless an emergency prevents such notice.

15 In accordance with WAC 173-340-830(2)(a), all hazardous substance analyses shall be
16 conducted by a laboratory accredited under Chapter 173-50 WAC for the specific analyses to
17 be conducted, unless otherwise approved by Ecology.

18 **XI. PROGRESS REPORTS**

19 Defendant shall submit to Ecology written monthly Progress Reports that describe the
20 actions taken during the previous month to implement the requirements of this Decree. The
21 Progress Reports shall include the following:

- 22 A. A list of on-site activities that have taken place during the month;
- 23 B. Detailed description of any deviations from required tasks not otherwise
24 documented in project plans or amendment requests;
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1 C. Description of all deviations from the Scope of Work and Schedule (Exhibit C)
2 during the current month and any planned deviations in the upcoming month;

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

5 E. All raw data (including laboratory analyses and ground water elevation data)
6 received by Defendant during the past month and an identification of the source of the sample
7 in both printed and electronic formats; and

8 F. A list of deliverables for the upcoming month if different from the schedule.

9 All Progress Reports shall be submitted in electronic format by the fifteenth (15th) day
10 of the month in which they are due after the effective date of this Decree. Unless otherwise
11 specified, documents submitted pursuant to this Decree shall be sent by certified mail, return
12 receipt requested, to Ecology's project coordinator.

13 **XII. RETENTION OF RECORDS**

14 During the pendency of this Decree, and for ten (10) years from the date this Decree is
15 no longer in effect as provided in Section XXVIII (Duration of Decree), Defendant shall
16 preserve all records, reports, documents, and underlying data in its possession relevant to the
17 implementation of this Decree and shall insert a similar record retention requirement into all
18 contracts with project contractors and subcontractors. Upon request of Ecology, Defendant
19 shall make all records available to Ecology and allow access for review within a reasonable
20 time.

21 Nothing in this Decree is intended by Defendant to waive any right it may have under
22 applicable law to limit disclosure of documents protected by the attorney work-product
23 privilege and/or the attorney-client privilege. If Defendant withholds any requested records
24 based on an assertion of privilege, Defendant shall provide Ecology with a privilege log
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1 specifying the records withheld and the applicable privilege. No Site-related data collected
2 pursuant to this Decree shall be considered privileged.

3 **XIII. TRANSFER OF INTEREST IN PROPERTY**

4 No voluntary conveyance or relinquishment of title, easement, leasehold, or other
5 interest in any portion of the Site shall be consummated by Defendant without provision for
6 continued operation and maintenance of any containment system, treatment system, and/or
7 monitoring system installed or implemented pursuant to this Decree.

8 Prior to Defendant's transfer of any interest in all or any portion of the Site, and during
9 the effective period of this Decree, Defendant shall provide a copy of this Decree to any
10 prospective purchaser, lessee, transferee, assignee, or other successor in said interest; and, at
11 least thirty (30) days prior to any transfer, Defendant shall notify Ecology of said transfer.
12 Upon transfer of any interest, Defendant shall notify all transferees of the restrictions on the
13 activities and uses of the property under this Decree and incorporate any such use restrictions
14 into the transfer documents.

15 **XIV. RESOLUTION OF DISPUTES**

16 A. In the event a dispute arises as to an approval, disapproval, proposed change, or
17 other decision or action by Ecology's project coordinator, or an itemized billing statement
18 under Section XXIV (Remedial Action Costs), the Parties shall utilize the dispute resolution
19 procedure set forth below.

20 1. Upon receipt of Ecology's project coordinator's written decision, or the
21 itemized billing statement, Defendant has fourteen (14) days within which to notify
22 Ecology's project coordinator in writing of its objection to the decision or itemized
23 statement.
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1 2. The Parties' project coordinators shall then confer in an effort to resolve
2 the dispute. If the project coordinators cannot resolve the dispute within fourteen (14)
3 days, Ecology's project coordinator shall issue a written decision.

4 3. Defendant may then request regional management review of the
5 decision. This request shall be submitted in writing to the Northwest Region Toxics
6 Cleanup Section Manager within seven (7) days of receipt of Ecology's project
7 coordinator's written decision.

8 4. Ecology's Regional Section Manager shall conduct a review of the
9 dispute and shall endeavor to issue a written decision regarding the dispute within thirty
10 (30) days of Defendant's request for review.

11 5. If Defendant finds Ecology's Regional Section Manager's decision
12 unacceptable, Defendant may then request final management review of the decision.
13 This request shall be submitted in writing to the Toxics Cleanup Program Manager
14 within seven (7) days of receipt of the Regional Section Manager's decision.

15 6. Ecology's Toxics Cleanup Program Manager shall conduct a review of
16 the dispute and shall endeavor to issue a written decision regarding the dispute within
17 thirty (30) days of Defendant's request for review of the Regional Section Manager's
18 decision. The Toxics Cleanup Program Manager's decision shall be Ecology's final
19 decision on the disputed matter.

20 B. If Ecology's final written decision is unacceptable to Defendant, Defendant has
21 the right to submit the dispute to the Court for resolution. The Parties agree that one judge
22 should retain jurisdiction over this case and shall, as necessary, resolve any dispute arising
23 under this Decree. In the event Defendant presents an issue to the Court for review, the Court
24 shall review the action or decision of Ecology on the basis of whether such action or decision
25 was arbitrary and capricious and render a decision based on such standard of review.
26

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

5 D. Implementation of these dispute resolution procedures shall not provide a basis
6 for delay of any activities required in this Decree, unless Ecology agrees in writing to a
7 schedule extension or the Court so orders.

8 **XV. AMENDMENT OF DECREE**

9 The project coordinators may agree to minor changes to the work to be performed
10 without formally amending this Decree. Minor changes will be documented in writing by
11 Ecology.

12 Substantial changes to the work to be performed shall require formal amendment of this
13 Decree. This Decree may only be formally amended by a written stipulation among the Parties
14 that is entered by the Court, or by order of the Court. Such amendment shall become effective
15 upon entry by the Court. Agreement to amend the Decree shall not be unreasonably withheld
16 by any party.

17 Defendant shall submit a written request for amendment to Ecology for approval.
18 Ecology shall indicate its approval or disapproval in writing and in a timely manner after the
19 written request for amendment is received. If the amendment to the Decree is a substantial
20 change, Ecology will provide public notice and opportunity for comment. Reasons for the
21 disapproval of a proposed amendment to the Decree shall be stated in writing. If Ecology does
22 not agree to a proposed amendment, the disagreement may be addressed through the dispute
23 resolution procedures described in Section XIV (Resolution of Disputes).
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XVI. 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 thirty (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:

1. The deadline that is sought to be extended;
2. The length of the extension sought;
3. The reason(s) for the extension; and
4. Any related deadline or schedule that would be affected if the extension were granted.

B. The burden shall be on Defendant 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 may include, but may not be limited to:

1. Circumstances beyond the reasonable control and despite the due diligence of Defendant 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 Defendant;
2. Acts of God, including fire, flood, blizzard, extreme temperatures, storm, or other unavoidable casualty; or
3. Endangerment as described in Section XVII (Endangerment).

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

C. Ecology shall act upon any written request for extension in a timely fashion. Ecology shall give Defendant written notification of any extensions granted pursuant to this

1 Decree. A requested extension shall not be effective until approved by Ecology or, if required,
2 by the Court. Unless the extension is a substantial change, it shall not be necessary to amend
3 this Decree pursuant to Section XV (Amendment of Decree) when a schedule extension is
4 granted.

5 D. An extension shall only be granted for such period of time as Ecology
6 determines is reasonable under the circumstances. Ecology may grant schedule extensions
7 exceeding ninety (90) days only as a result of:

8 1. Delays in the issuance of a necessary permit which was applied for in a
9 timely manner;

10 2. Other circumstances deemed exceptional or extraordinary by
11 Ecology; or

12 3. Endangerment as described in Section XVII (Endangerment).

13 **XVII. ENDANGERMENT**

14 In the event Ecology determines that any activity being performed at the Site under this
15 Decree is creating or has the potential to create a danger to human health or the environment,
16 Ecology may direct Defendant to cease such activities for such period of time as it deems
17 necessary to abate the danger. Defendant shall immediately comply with such direction.

18 In the event Defendant determines that any activity being performed at the Site under
19 this Decree is creating or has the potential to create a danger to human health or the
20 environment, Defendant may cease such activities. Defendant shall notify Ecology's project
21 coordinator as soon as possible, but no later than twenty-four (24) hours after making such
22 determination or ceasing such activities. Upon Ecology's direction, Defendant shall provide
23 Ecology with documentation of the basis for the determination or cessation of such activities.
24 If Ecology disagrees with Defendant's cessation of activities, it may direct Defendant to
25 resume such activities.
26

1 If Ecology concurs with or orders a work stoppage pursuant to this Section,
2 Defendant's obligations with respect to the ceased activities shall be suspended until Ecology
3 determines the danger is abated, and the time for performance of such activities, as well as the
4 time for any other work dependent upon such activities, shall be extended, in accordance with
5 Section XVI (Extension of Schedule), for such period of time as Ecology determines is
6 reasonable under the circumstances.

7 Nothing in this Decree shall limit the authority of Ecology, its employees, agents, or
8 contractors to take or require appropriate action in the event of an emergency.

9 **XVIII. COVENANT NOT TO SUE**

10 A. Covenant Not to Sue: In consideration of Defendant's compliance with the
11 terms and conditions of this Decree, Ecology covenants not to institute legal or administrative
12 actions against Defendant regarding the release or threatened release of hazardous substances
13 covered by this Decree.

14 This Decree covers only the Site specifically identified in the Site Diagram (Exhibit A)
15 and those hazardous substances that Ecology knows are located at the Site as of the date of
16 entry of this Decree. This Decree does not cover any other hazardous substance or area.
17 Ecology retains all of its authority relative to any substance or area not covered by this Decree.

18 This Covenant Not to Sue shall have no applicability whatsoever to:

- 19 1. Criminal liability;
- 20 2. Liability for damages to natural resources; and
- 21 3. Any Ecology action, including cost recovery, against PLPs not a party to
22 this Decree.

23 If factors not known at the time of entry of the settlement agreement are discovered and
24 present a previously unknown threat to human health or the environment, the Court shall
25 amend this Covenant Not to Sue.
26

1 B. Reopeners: Ecology specifically reserves the right to institute legal or
2 administrative action against Defendant to require it to perform additional remedial actions at
3 the Site and to pursue appropriate cost recovery, pursuant to RCW 70.105D.050 under the
4 following circumstances:

5 1. Upon Defendant's failure to meet the requirements of this Decree,
6 including, but not limited to, failure of the remedial action to meet the cleanup
7 standards identified in the Cleanup Action Plan (CAP) (Exhibit B);

8 2. Upon Ecology's determination that remedial action beyond the terms of
9 this Decree is necessary to abate an imminent and substantial endangerment to human
10 health or the environment;

11 3. Upon the availability of new information regarding factors previously
12 unknown to Ecology, including the nature or quantity of hazardous substances at the
13 Site, and Ecology's determination, in light of this information, that further remedial
14 action is necessary at the Site to protect human health or the environment; or

15 4. Upon Ecology's determination that additional remedial actions are
16 necessary to achieve cleanup standards within the reasonable restoration time frame set
17 forth in the CAP (Exhibit B).

18 C. Except in the case of an emergency, prior to instituting legal or administrative
19 action against Defendant pursuant to this Section, Ecology shall provide Defendant with fifteen
20 (15) calendar days notice of such action.

21 **XIX. CONTRIBUTION PROTECTION**

22 With regard to claims for contribution against Defendant, the Parties agree that
23 Defendant is entitled to protection against claims for contribution for matters addressed in this
24 Decree as provided by RCW 70.105D.040(4)(d).
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XX. LAND USE RESTRICTIONS

In consultation with Ecology, Defendant will prepare the Environmental (Restrictive) Covenant consistent with WAC 173-340-440 and Chapter 64.70 RCW. After approval by Ecology, Defendant shall record the Environmental (Restrictive) Covenant with the office of the King County Auditor within ten (10) days of the completion of the As-Built Report for each Parcel within the Site. The Environmental (Restrictive) Covenant shall restrict future activities and uses of the Site as agreed to by Ecology and Defendant. Defendant shall provide Ecology with the original recorded Environmental (Restrictive) Covenant within thirty (30) days of the recording date.

XXI. FINANCIAL ASSURANCES

Pursuant to WAC 173-340-440(11), Defendant shall maintain sufficient and adequate financial assurance mechanisms to cover all costs associated with the operation and maintenance of the remedial action at the Site, including institutional controls, compliance monitoring, and corrective measures.

Within sixty (60) days of the effective date of this Decree, Defendant shall submit to Ecology for review and approval an estimate of the costs that it will incur in carrying out the terms of this Decree, including operation and maintenance, and compliance monitoring. Within sixty (60) days after Ecology approves the aforementioned cost estimate, Defendant shall provide proof of financial assurances sufficient to cover all such costs in a form acceptable to Ecology.

Defendant shall adjust the financial assurance coverage and provide Ecology's project coordinator with documentation of the updated financial assurance for:

A. Inflation, annually, within thirty (30) days of the anniversary date of the entry of this Decree; or if applicable, the modified anniversary date established in accordance with this

1 Section, or if applicable, ninety (90) days after the close of Defendant's fiscal year if the
2 financial test or corporate guarantee is used; and

3 B. Changes in cost estimates, within thirty (30) days of issuance of Ecology's
4 approval of a modification or revision to the CAP that result in increases to the cost or
5 expected duration of remedial actions. Any adjustments for inflation since the most recent
6 preceding anniversary date shall be made concurrent with adjustments for changes in cost
7 estimates. The issuance of Ecology's approval of a revised or modified CAP will revise the
8 anniversary date established under this Section to become the date of issuance of such revised
9 or modified CAP.

10 **XXII. INDEMNIFICATION**

11 Defendant agrees to indemnify and save and hold the State of Washington, its
12 employees, and agents harmless from any and all claims or causes of action (1) for death or
13 injuries to persons or (2) for loss or damage to property to the extent arising from or on account
14 of acts or omissions of Defendant, its officers, employees, agents, or contractors in entering
15 into and implementing this Decree. However, Defendant shall not indemnify the State of
16 Washington nor save nor hold its employees and agents harmless from any claims or causes of
17 action to the extent arising out of the negligent acts or omissions of the State of Washington, or
18 the employees or agents of the State, in entering into or implementing this Decree.

19 **XXIII. COMPLIANCE WITH APPLICABLE LAWS**

20 A. All actions carried out by Defendant pursuant to this Decree shall be done in
21 accordance with all applicable federal, state, and local requirements, including requirements to
22 obtain necessary permits, except as provided in RCW 70.105D.090. The permits or other
23 federal, state or local requirements that the agency has determined are applicable and that are
24 known at the time of entry of this Decree have been identified in the Applicable or Relevant
25 and Appropriate Requirements (Exhibit D).
26

1 B. Pursuant to RCW 70.105D.090(1), Defendant is exempt from the procedural
2 requirements of Chapters 70.94, 70.95, 70.105, 77.55, 90.48, and 90.58 RCW and of any laws
3 requiring or authorizing local government permits or approvals. However, Defendant shall
4 comply with the substantive requirements of such permits or approvals. The exempt permits or
5 approvals and the applicable substantive requirements of those permits or approvals, as they
6 are known at the time of entry of this Decree, Procedurally Exempt Requirements (Exhibit E).

7 Defendant has a continuing obligation to determine whether additional permits or
8 approvals addressed in RCW 70.105D.090(1) would otherwise be required for the remedial
9 action under this Decree. In the event either Ecology or Defendant determines that additional
10 permits or approvals addressed in RCW 70.105D.090(1) would otherwise be required for the
11 remedial action under this Decree, it shall promptly notify the other party of this determination.
12 Ecology shall determine whether Ecology or Defendant shall be responsible to contact the
13 appropriate state and/or local agencies. If Ecology so requires, Defendant shall promptly
14 consult with the appropriate state and/or local agencies and provide Ecology with written
15 documentation from those agencies of the substantive requirements those agencies believe are
16 applicable to the remedial action. Ecology shall make the final determination on the additional
17 substantive requirements that must be met by Defendant and on how Defendant must meet
18 those requirements. Ecology shall inform Defendant in writing of these requirements. Once
19 established by Ecology, the additional requirements shall be enforceable requirements of this
20 Decree. Defendant shall not begin or continue the remedial action potentially subject to the
21 additional requirements until Ecology makes its final determination.

22 C. Pursuant to RCW 70.105D.090(2), in the event Ecology determines that the
23 exemption from complying with the procedural requirements of the laws referenced in RCW
24 70.105D.090(1) would result in the loss of approval from a federal agency that is necessary for
25 the State to administer any federal law, the exemption shall not apply and Defendant shall
26

1 comply with both the procedural and substantive requirements of the laws referenced in RCW
2 70.105D.090(1), including any requirements to obtain permits.

3 **XXIV. REMEDIAL ACTION COSTS**

4 Defendant shall pay to Ecology costs incurred by Ecology pursuant to this Decree and
5 consistent with WAC 173-340-550(2). These costs shall include work performed by Ecology
6 or its contractors for, or on, the Site under Chapter 70.105D RCW, including remedial actions
7 and Decree preparation, negotiation, oversight and administration. These costs shall include
8 work performed both prior to and subsequent to the entry of this Decree. Ecology's costs shall
9 include costs of direct activities and support costs of direct activities as defined in WAC
10 173-340-550(2). Ecology has accumulated \$13,914.05 in unpaid remedial action costs related
11 to this facility incurred under Agreed Order No. DE 6703 as of June 30, 2013. Payment for
12 this amount shall be submitted within thirty (30) days of the effective date of this Decree or by
13 the due date of the invoice for those costs. For all costs incurred subsequent to June 30, 2013,
14 Defendant shall pay the required amount within thirty (30) days of receiving from Ecology an
15 itemized statement of costs that includes a summary of costs incurred, an identification of
16 involved staff, and the amount of time spent by involved staff members on the project. A
17 general statement of work performed will be provided upon request. Itemized statements shall
18 be prepared quarterly. Pursuant to WAC 173-340-550(4), failure to pay Ecology's costs within
19 ninety (90) days of receipt of the itemized statement of costs will result in interest charges at
20 the rate of twelve percent (12%) per annum, compounded monthly.

21 In addition to other available relief, pursuant to RCW 70.105D.055, Ecology has
22 authority to recover unreimbursed remedial action costs by filing a lien against real property
23 subject to the remedial actions.
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1 **XXVII. PUBLIC PARTICIPATION**

2 A Public Participation Plan is required for this Site. Ecology shall review any existing
3 Public Participation Plan to determine its continued appropriateness and whether it requires
4 amendment.

5 Ecology shall maintain the responsibility for public participation at the Site. However,
6 Defendant shall cooperate with Ecology, and shall:

7 A. If agreed to by Ecology, develop appropriate mailing lists, prepare drafts of
8 public notices and fact sheets at important stages of the remedial action, such as the submission
9 of work plans, remedial investigation/feasibility study reports, cleanup action plans, and
10 engineering design reports. As appropriate, Ecology will edit, finalize, and distribute such fact
11 sheets and prepare and distribute public notices of Ecology's presentations and meetings.

12 B. Notify Ecology's project coordinator prior to the preparation of all press releases
13 and fact sheets, and before major meetings with the interested public and local governments.
14 Likewise, Ecology shall notify Defendant prior to the issuance of all press releases and fact
15 sheets, and before major meetings with the interested public and local governments. For all
16 press releases, fact sheets, meetings, and other outreach efforts by Defendant that do not
17 receive prior Ecology approval, Defendant shall clearly indicate to its audience that the press
18 release, fact sheet, meeting, or other outreach effort was not sponsored or endorsed by
19 Ecology.

20 C. When requested by Ecology, participate in public presentations on the progress
21 of the remedial action at the Site. Participation may be through attendance at public meetings
22 to assist in answering questions, or as a presenter.

23 D. When requested by Ecology, arrange and/or continue information repositories at
24 the following locations:
25
26

1 **XXXI. WITHDRAWAL OF CONSENT**

2 If the Court withholds or withdraws its consent to this Decree, it shall be null and void
3 at the option of any party and the accompanying Complaint shall be dismissed without costs
4 and without prejudice. In such an event, no party shall be bound by the requirements of this
5 Decree.

6 STATE OF WASHINGTON
7 DEPARTMENT OF ECOLOGY

Robert W. Ferguson
Attorney General

8
9 _____
James J. Pendowski
10 Program Manager
Toxics Cleanup Program
(360) 407-7177

Allyson C. Bazan, WSBA #44221
Assistant Attorney General
(360) 586-3589

11 Date: _____

Date: _____

12
13 PORT OF SEATTLE

14
15 _____
Tay Yoshitani
16 Chief Executive Officer
(206) 728-3000

17 Date: _____

18 ENTERED this _____ day of _____ 20____.

19
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21 _____
JUDGE
22 King County Superior Court
23
24
25
26

Exhibit A

1,271,500



1,272,000

1,272,500

1,273,000

1,273,500

Legend

-  Lora Lake Apartments Site Extent
-  City Boundary

Notes:

- City boundary data provided by King County.
- Aerial image provided by Port of Seattle and dated March 20, 2011.
- Coordinate grid presented in NAD 1983 HARN State Plane Coordinate System, Washington North Zone, in units of Survey Feet.

175,000

175,000

174,500

174,500

174,000

174,000

SOUTH 150TH STREET

8TH AVE SOUTH

SR 518

CITY OF BURIE
CITY OF SEATAC

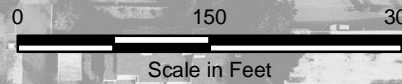
DES MOINES MEMORIAL DRIVE

CITY OF BURIE
CITY OF SEATAC

PORT OF SEATTLE PROPERTY

Lora Lake

STIA 3RD RUNWAY APPROACH LIGHTING SYSTEM



FLOYD | SNIDER
strategy ■ science ■ engineering

Consent Decree Exhibit A
Lora Lake Apartments Site
Burien, Washington

Figure 1
Site Diagram

Exhibit B

Lora Lake Apartments Site

Draft Cleanup Action Plan

Prepared by



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Appendix A SEPA Checklist

List of Acronyms and Abbreviations

Acronym/ Abbreviation	Definition
AO	Agreed Order
ARAR	Applicable or Relevant and Appropriate Requirement
bgs	Below ground surface
CAA	Controlled Activity Area
CFR	Code of Federal Regulations
COC	Contaminant of concern
cPAH	Carcinogenic polycyclic aromatic hydrocarbon
DCAP	Draft Cleanup Action Plan

Acronym/ Abbreviation	Definition
DMCA	1982 Dredged Material Containment Area
EIC	Indicator soil concentration
Ecology	Washington State Department of Ecology
FAA	Federal Aviation Administration
ft/ft	Feet per foot
LL Apartments Parcel	Lora Lake Apartments Parcel
LL Parcel	Lora Lake Parcel
µg/kg	Micrograms per kilogram
µg/L	Micrograms per liter
mg/kg	Milligrams per kilogram
MTCA	Model Toxics Control Act
NRMP	Natural Resource Management Plan
PCP	Pentachlorophenol
pg/g	Picograms per gram
POC	Point of compliance
Port	Port of Seattle
ppm	parts per million
RCW	Revised Code of Washington
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
RPZ	Runway Protection Zone
SEPA	State Environmental Policy Act
Site	Lora Lake Apartments Site
SMS	Sediment Management Standards
SR 518	State Route 518
STIA	Seattle-Tacoma International Airport
TEE	Terrestrial Ecological Evaluation
TEQ	Toxic equivalency quotient
TPH	Total petroleum hydrocarbons
WAC	Washington Administrative Code
WHMP	Wildlife Hazard Management Plan
XOFA	Extended Object Free Area

1.0 Introduction

This Draft Cleanup Action Plan (DCAP) describes the cleanup action selected by the Washington State Department of Ecology (Ecology) for the Lora Lake Apartments Site (LL Apartments Site, or Site). The Site is located at 15001 Des Moines Memorial Drive in Burien, Washington (Figure 1.1), near the northwest corner of Seattle-Tacoma International Airport (STIA).

This DCAP was developed using information presented in the Remedial Investigation/Feasibility Study (RI/FS) for the Site, which was prepared by Floyd|Snider in 2013 on behalf of the Port of Seattle (Port) in accordance with the Agreed Order (AO) for the Site (Floyd|Snider 2013a). The Port and Ecology entered into AO No. DE 6703 for the LL Apartments Site on July 10, 2009 (Ecology 2009).

The Site consists of three parcels: (1) Lora Lake Apartments Parcel (LL Apartments Parcel), (2) Lora Lake Parcel (LL Parcel), and (3) 1982 Dredged Material Containment Area (DMCA). The site cleanup is expected to occur in phases, with remedial actions conducted at the LL Apartments Parcel and DMCA in 2016 and remedial actions conducted at the LL Parcel in 2016 or 2017.

The Lora Lake Apartments Site is being cleaned up under the authority of the Model Toxics Control Act, Chapter 70.105D of the Revised Code of Washington (RCW), and the Model Toxics Control Act (MTCA) Cleanup Regulation, Chapter 173-340 of the Washington Administrative Code (WAC).

2.0 Site Description, Background, and Characterization

The Site straddles the boundary between the Cities of Burien and SeaTac, Washington (refer to Figure 2.1). The LL Apartments Parcel is located within the City of Burien, at 15001 Des Moines Memorial Drive. The LL Parcel is located immediately across Des Moines Memorial Drive to the east, and the DMCA is located to the northeast of the LL Parcel, both within the City of SeaTac.

The Site, as defined by WAC 173-340-200, consists of the LL Apartments property, and areas beyond the property boundary where contamination originating at the LL Apartments property has come to be located. Prior to the Remedial Investigation (RI) conducted in 2010, environmental investigations at the Site focused on the property referred to throughout this document as the LL Apartments Parcel. Investigations and historical research conducted as part of the RI determined that concentrations of contaminants identified at the LL Apartments Parcel were also present in soil and sediment on the LL Parcel and the DMCA.

A portion of the LL Apartments Parcel and all of the LL Parcel and the DMCA are within designated safety zones established for operation of the STIA 3rd Runway (Figure 2.1). Collectively these zones are called Runway Protection Zones (RPZs). Two subzones cover the Site, the Extended Object Free Area (XOFA) and the Controlled Activity Area (CAA). The XOFA must be kept clear of objects (including structures, equipment, and terrain), with the exception of objects necessary for air navigation or aircraft ground-maneuvering purposes. The CAA is farther from the runway; however, construction of residences and public gathering places, such as shopping centers, offices, or hospitals may not be constructed in the CAA. The Port will own the land within the RPZs in perpetuity. Residential land use is not a potential future use within the RPZs.

2.1 SITE DESCRIPTION

2.1.1 Lora Lake Apartments Parcel

The LL Apartments Parcel occupies approximately 8.3 acres of currently vacant land that is bounded to the north by State Route 518 (SR 518), to the east and southeast by Des Moines Memorial Drive, to the west by 8th Avenue South, and to the south by an open area that was formerly the site of a grocery store, bowling alley, small office complex, and the former Seattle City Light Sunnysdale Substation (shown on Figure 2.1 as the Former Seattle City Light Property), purchased by the Port in 2011. Land use to the west of the LL Apartments Parcel is primarily residential. The area of the STIA located just southeast of Des Moines Memorial Drive is reserved for habitat mitigation associated with development of the STIA 3rd Runway and for the eastbound onramp to SR 518. The LL Apartments Parcel vacant land is currently covered by asphalt parking areas, concrete building foundations, and landscaping areas remaining from the previous LL Apartments complex. The apartment buildings were demolished by the Port in 2009. The existing LL Apartments Parcel topography was created during construction

of the apartment buildings in 1987. The LL Apartments Parcel topography slopes gradually to the southeast, with steeper slopes located adjacent to Des Moines Memorial Drive to the east and from the SR 518 embankment to the north, as shown on Figure 2.2. To the southeast of the existing property boundary, the topography continues to slope gradually to the east towards Lora Lake.

An active City of Burien stormwater system runs through the LL Apartments Parcel, including a main stormwater line that conveys stormwater drainage from the upstream City of Burien drainage network. This main stormwater line enters on the west side of the parcel and exits on the east side of the parcel. A second, smaller sub-system drains the northeast portion of the LL Apartments Parcel and conveys water through smaller pipes. This system connects to the adjacent Des Moines Memorial Drive drainage system downstream of the property and discharges, with the additional stormwater from Des Moines Memorial Drive, to Lora Lake through an outfall located at the northwestern edge of the lake.

Stormwater chemical quality was assessed during the RI. The assessment found that the Site was not currently contributing to degradation of the stormwater conveyed from upstream across the property (refer to Appendix E of the RI/FS).

The existing storm drain system will be removed as part of the cleanup actions taken at the LL Apartments Parcel. A new storm drain system will be installed in a different location.

2.1.2 Lora Lake Parcel

The LL Parcel is located to the southeast of the LL Apartments Parcel, on the east side of Des Moines Memorial Drive. The LL Parcel consists of approximately 7.1 acres of land, including the approximately 3-acre Lora Lake and a STIA-constructed wetland aquatic habitat mitigation area. The LL Parcel is bounded to the north by the SR 518 highway interchange, to the east and south by Port-owned habitat mitigation area and the northern boundary of the STIA air operations area, and to the west and northwest by Des Moines Memorial Drive (Figure 2.1). The LL Parcel and surrounding areas are located within the Miller Creek Watershed. Headwaters of Miller Creek flow south (from north of STIA) along the west side of the airport, through a series of Port-owned habitat mitigation properties (including the LL Parcel), before turning west, crossing below Highway 509, and eventually draining to Puget Sound. Figure 2.3 shows the location of Lora Lake in relation to Miller Creek and the Miller Creek Watershed.

The LL Parcel is entirely secured by fencing. Public entry is prohibited.

The LL Parcel lies within a series of habitat mitigation areas developed and enhanced by the Port in compliance with requirements of the Clean Water Act Section 404 Permit #1996-4-02325 issued by the U.S. Army Corps of Engineers to support aquatic, amphibian, and wetland habitat as part of the mitigation requirements associated with development of the STIA 3rd Runway in 1997 (Port of Seattle 2011). The mitigation area

is designated in the Natural Resource Management Plan (NRMP) as the Miller Creek/Lora Lake/Vacca Farm Wetland and Floodplain Mitigation Area (Parametrix 2001).

The LL Parcel is densely vegetated and contains a mixture of grasses, forbs, emergent wetland plants, and a canopy of mixed deciduous trees. Surface water bodies associated with the LL Parcel consist of Lora Lake and Miller Creek, which runs past the southeast margin of Lora Lake.

The operation and maintenance requirements for the Miller Creek/Lora Lake/Vacca Farm Wetland and Floodplain Mitigation Area are described in the NRMP (Parametrix 2001). The mitigation plan requirements support specific ecological functions, but these are managed within the context of the Port's Wildlife Hazard Management Plan (WHMP; Port of Seattle 2005), the controlling authority for this special-use area. The WHMP provisions require, and result in, careful control of birds, mammals, and plants within the area to minimize aircraft navigation dangers associated with bird strikes and wildlife in the runway area.

Lora Lake receives stormwater runoff from the LL Apartments Parcel, the City of Burien residential and commercial drainage areas upstream of the LL Apartments Parcel, and the surrounding roadways downstream of the LL Apartments Parcel (e.g., Des Moines Memorial Drive, SR 518 interchange, City of SeaTac) through a single outfall located near the northwestern edge of the lake and via non-point source overland flow from the LL Parcel.

2.1.3 1982 Dredged Material Containment Area

The DMCA, presented on Figure 2.1, is located adjacent to the LL Parcel, to the northeast, on Port property. The DMCA is located within the secured airport area, the RPZ-XOFA, within security fencing and is monitored and access-controlled by Port security. Entry by the public is prohibited.

The City of Burien stormwater system crossing the LL Apartments Parcel discharges from an outfall in the northwest corner of Lora Lake, as described above. In 1982, in response to complaints from residents around the lake regarding excessive siltation caused by this stormwater discharge, the then-current owner of the system, King County, agreed to dredge approximately 4 feet of sediment from the lake bottom. King County arranged with the Port to place the dredge material in a specifically constructed facility on Port-owned property to the northeast of Lora Lake. The historical project plans for the dredging work indicate that a total of 16,000 cubic yards of material would be dredged, then placed and dewatered inside an approximately 120,000-square-foot area surrounded by a constructed soil berm. The dredging project was implemented in 1982. The dredge spoil containment area is now referred to as the DMCA.

The DMCA has an area of approximately 2.75 acres, based on review of aerial photographs. The eastern half of the DMCA is an approximately 1.5-acre vegetated area covered by a mixture of grasses and invasive and pioneering plant species. The remaining approximately 1.25 acres of land is the location of the Approach Lighting System for the STIA 3rd Runway, which was constructed in 2006. This area has been regraded and covered with gravel and is maintained by the Port to be free of vegetation. The DMCA is located outside of the Miller Creek/Lora Lake/Vacca Farm Wetland and Floodplain Mitigation Area. It is subject to the WHMP.

2.2 HISTORICAL PROPERTY OWNERSHIP AND LAND USE

Through the 1930s, the area was primarily agricultural, containing family farms, suburban development, and supporting commercial businesses. Des Moines Memorial Drive has been a primary thoroughfare since this time. To the east of Des Moines Memorial Drive, a peat bog was excavated in the 1940s and 1950s to mine the peat, resulting in the creation of Lora Lake. Houses were built around the lake, which were present through the late 1990s.

The LL Apartments Parcel property was farmland until the mid-1940s, when the Novak Barrel Cleaning Company was established. Metal drums and other containers were brought to the company for washing in order to prepare the containers for reuse. It is suspected that barrel drainage and washing activities took place in an operations area located near the center of the LL Apartments Parcel, where barrel contents appear to have been released, given the current presence of a clearly defined zone of substantial contamination. Barrel-washing operations were conducted on the property until the early 1950s, when the property was sold for use as an auto-wrecking yard. The property was used for auto-wrecking and auto storage until the mid-1980s.

In 1987, apartment buildings were constructed on the property. During development, a small excavation to remove metals and petroleum-contaminated material was completed in the area of assumed barrel-washing operations. This excavation and associated cleanup were reported to and approved by Ecology at the time. Figure 2.4 presents locations of these known historical site uses and operations at, and directly adjacent to, the LL Apartments Parcel.

The Port purchased the LL Apartments Parcel property in 1998, as part of the STIA 3rd Runway Project. Concurrently, the Port purchased properties east of Des Moines Memorial Drive, which also were within the expansion area for the new runway and the Federal Aviation Administration (FAA) RPZs. These properties included Lora Lake and its abutting residences. The residences and apartments were demolished by the Port between approximately 2005 and 2009.

2.3 REGIONAL AND SITE GEOLOGY

Substantial investigations of the regional geology in the area of the Site have been conducted, including a Port-commissioned STIA Groundwater Study (Aspect Consulting

and S.S. Papadopoulos 2008), and were used in the development of the following geology summary.

In general, the Puget Lowland is underlain at depth by volcanic and sedimentary bedrock and is filled to the present-day land surface with both glacial and interglacial sediments (interglacial sediments are those derived between periods of glaciation) deposited during the Quaternary Period (within the last 2 million years; Aspect Consulting 2010).

At the LL Apartments Parcel, glacial recessional outwash deposits are present at the surface in areas where no fill is present. These recessional outwash deposits are part of a relatively large southwest-northeast trending channel feature. With the exception of the northern portion of the LL Apartments Parcel, the surface topography across the remainder of the LL Apartments Parcel reflects substantial regrading that was performed during construction of the apartment complex.

Data collected from soil borings and monitoring well installations indicate that the subsurface geology at the LL Apartments Parcel consists of a discontinuous fill layer that overlays glacial recessional outwash deposits. At the bottom of the recessional outwash deposits a silt unit about 10 feet thick was encountered in the eastern portion of the LL Apartments Parcel. Based on the STIA Groundwater Study, this silt unit is likely indicative of a transition from recessional outwash deposits into glacial till deposits (Aspect Consulting and S.S. Papadopoulos 2008). The fill unit in the vicinity of the LL Apartments Parcel is observed to have a variable thickness of up to 15 feet but is absent in the northern portion of the property. The fill is composed of medium dense-to-dense, fine-to-coarse grained sand with rounded gravel.

To the southeast of the LL Apartments Parcel, the LL Parcel is also underlain by recessional outwash deposits, which are exposed at the surface. Beneath the recessional outwash deposits, it is inferred that the till deposits are also present and create a perching layer on which Lora Lake and the surrounding wetlands are formed. Three subsurface sediment cores were collected in Lora Lake to depths of 5.5 feet in two locations, and a depth of approximately 2 feet in the third location. Sediment types were observed to be variable between the three sampling locations. Sediment types included sandy silts with gravels, silts, and a thick reddish-brown peat layer in one of the cores beneath a layer of silt.

Data collected from test pits advanced to 6 feet below ground surface (bgs) at the DMCA indicate a similar fill layer to that of the LL Apartments Parcel (i.e., fine-to-coarse grained sand with some silty sands and gravels). The assumed dredge material horizon was dark brown silty sand with peaty material.

2.4 REGIONAL AND SITE GROUNDWATER

The uppermost groundwater aquifer in the vicinity of the Site is the recessional outwash aquifer. Groundwater flow in the recessional outwash aquifer in the vicinity of the

LL Apartments Parcel is to the southeast, towards Lora Lake. Because of the absence of any confining units within the recessional outwash deposits that prevent groundwater flow between the recessional outwash aquifer and Lora Lake, and based on the calculated vertical groundwater gradients, the recessional outwash aquifer is likely in hydraulic continuity with Lora Lake. Lora Lake and the predecessor peat-dominated wetland formation likely formed on top of glacial till deposits that act as a confining unit (aquitar) beneath the recessional outwash aquifer in the eastern portion of the LL Apartments Parcel. This aquitar acts as a low-permeability barrier to groundwater flow and limits downward flow into the deeper glacial advance outwash deposits and regional aquifers.

Groundwater at the LL Apartments Parcel was observed at depths ranging from approximately 5 to 22 feet bgs in wells within the native recessional outwash deposits and some fill materials. Groundwater in downgradient wells located just east of Des Moines Memorial Drive was observed at depths ranging from approximately 10 to 15 feet bgs. Groundwater levels generally responded to an increase in precipitation, with lower groundwater levels observed in August and higher groundwater levels observed in January (with the difference ranging between 1 foot and 6 feet). Groundwater levels in all of the monitoring wells were substantially higher than surface water levels in Lora Lake and Miller Creek. These data suggest that the surface water bodies may be “gaining” water from groundwater discharge. Based on both groundwater elevation contour maps, groundwater flow in the vicinity of the LL Apartments Parcel is primarily to the southeast, towards Lora Lake, with slightly lower horizontal groundwater gradients (between 0.008 and 0.017 feet per foot [ft/ft]) across the western portion of the LL Apartments Parcel, compared to the eastern portion of the LL Apartments Parcel (between 0.044 and 0.051 ft/ft).

The drinking water supply for residences and businesses surrounding the Site is provided primarily by the Highline Water District’s municipal drinking water system. The closest groundwater supply/extraction wells are located approximately 1 to 2 miles downgradient and cross-gradient to the Site. These wells are screened in the deeper regional aquifer units (more than 100 feet bgs) and are unlikely to have hydrologic connection to the near-surface shallow aquifer (recessional outwash aquifer) because of the presence of underlying aquitards, including till deposits and, potentially, the fine-grained units of the transition beds.

3.0 Contaminants of Concern, Cleanup Standards, and Contaminant Distribution

Contaminants of concern (COCs), their distribution, and applicable cleanup standards for the LL Apartments Parcel and the LL Parcel are presented below.

3.1 CONTAMINANTS OF CONCERN

The following COCs were identified in the RI/FS for the Site:

Contaminant	Soil	Groundwater	Sediment
Arsenic	✓	✓	✓
Carcinogenic polyaromatic hydrocarbons	✓	✓	✓
Pentachlorophenol	✓	✓	✓
Dioxins/furans	✓	✓	✓
Total Petroleum Hydrocarbons (Gasoline, Diesel, and Heavy Oil Ranges)	✓	✓	
Lead	✓		✓
Toluene	✓		
Ethylbenzene	✓		

These contaminants are consistent with the past site uses, assuming that barrel-washing residue would contain a variety of chemicals comprising wood-treating compounds, solvents, and petroleum products.

Dioxins/furans are the most widespread COC at the Site, exceeding the applicable cleanup level in shallow soil throughout the LL Apartments Parcel, deeper soil within the LL Apartments Parcel Central and Eastern Source Areas, and shallow soil at the LL Parcel.

The historical releases and operations within the LL Apartments Parcel Central and Eastern Source Areas have impacted the shallow groundwater with arsenic, pentachlorophenol (PCP), and dioxins/furans. Deeper groundwater beneath the LL Apartments Parcel has not been impacted by contamination.

Shallow groundwater contamination is limited to the LL Apartments Parcel. Groundwater downgradient of the LL Apartments Parcel, beneath the LL Parcel, and beneath and downgradient of the DMCA has not been impacted.

Lora Lake sediment has been impacted by elevated levels of dioxins/furans. Detected concentrations of arsenic and lead in Lora Lake sediments were greater than Sediment Quality Standards levels, but less than Cleanup Screening Levels. Biological toxicity

testing demonstrated that the surface sediments will not cause adverse impacts to ecological receptors.

At the DMCA, reported concentrations of site COCs were less than the applicable Industrial Cleanup Standards. The Port plans to use the DMCA for equipment storage and temporary construction laydown. The DMCA surface will be improved by placing a compacted gravel or engineered surface. This will eliminate potential wildlife exposure pathways and allow for an exclusion from the Terrestrial Ecological Evaluation (TEE). The barrier to wildlife will be in place no later than December 31, 2017. Institutional controls will be placed on the DMCA to ensure barriers to wildlife are maintained in the future.¹

3.2 CLEANUP STANDARDS

Cleanup standards have been established for this Site. Two factors control designation of appropriate cleanup standards for specific sites: specification of cleanup levels (the chemical concentrations that are protective of human health and the environment) for each COC in each impacted media; and identification of the point of compliance (POC; the location on the Site where the cleanup levels must be attained). Current and future uses and associated exposure pathways are different for each of the three parcels at the LL Apartments Site, resulting in different soil cleanup standards for each parcel. Groundwater cleanup standards apply site-wide, and sediment cleanup standards apply to the sediment within Lora Lake. Applicable cleanup standards for each parcel in each media have been identified in the RI/FS and are described below.

In overview, the primary cleanup regulations and guidance that apply to this Site are the MTCA Cleanup Regulation (Chapter 173-340 WAC), revised Sediment Management Standards (SMS) rule (Chapter 173-204 WAC²), and the Sediment Evaluation Framework (RSET 2009). Surface water quality criteria (National Toxics Rule, 40 Code of Federal Regulations [CFR] 131.36 and Clean Water Act Section 304) were also considered in evaluating the leaching potential of Lora Lake and Miller Creek sediments.

In developing cleanup levels, the following site-specific land use information is relevant:

- The Port's current objective for the Site is to redevelop the city block that the LL Apartments Parcel is a part of for airport-compatible commercial or light industrial use.

¹ The TEE COCs are dioxins/furans. Dioxins/furans do not have cleanup levels applicable to plants or soil biota. There are cleanup standards for wildlife. Hence, the barrier needs to prevent exposure of wildlife to soil.

² The SMS rule was revised and adopted February 22, 2013, after completion of the Public Review Draft RI/FS report; and will be effective September 1, 2013, prior to finalization of the CAP. Because the revised SMS rule was not promulgated at the time of the Public Review Draft RI/FS document development, the Draft Freshwater Benthic Sediment Quality Value technical report prepared for Ecology (Avocet Consulting 2010) was used as an applicable cleanup regulation in the Public Review Draft RI/FS. All sediment cleanup levels for site sediment COCs are consistent between the Draft Freshwater Benthic Sediment Quality Value technical report and the revised SMS rule.

- The LL Apartments Parcel, the majority of the LL Parcel, and the DMCA are all Port-owned properties currently located within security fencing and monitored and access-controlled by Port security procedures and personnel. Public access is not allowed. A small portion of the LL Parcel, such as parcel soils adjacent to Des Moines Memorial Drive, which is outside of the secured fencing, is potentially accessible by the public.
- The FAA defines restrictions on allowable development and structures for runway and runway approach safety areas (AC/150 5300-13; USDOT FAA 1989). Figure 2.1 shows where the FAA's Runway Protection and Approach Transition Zones overlay the Site. The restrictions are given in the legend.
- The LL Parcel is part of the Miller Creek/Lora Lake Upland Buffer and Flood Plain Zone Mitigation Area required by the NRMP for STIA 3rd Runway construction (Parametrix 2001). Lora Lake and Miller Creek are both freshwater environments with public access prohibited in the area surrounding Lora Lake and the adjacent portions of Miller Creek. Restrictive covenants prohibit any future development on the LL Parcel, which will be maintained as a protected wetland aquatic habitat area in perpetuity.
- WAC 173-201A-600(1), a section of the Water Quality Standards for Surface Waters of the State of Washington, requires that water quality in Lora Lake and Miller Creek be protected for the following: salmonid spawning, rearing, and migration; primary contact recreation; domestic, industrial, and agricultural water supply; stock watering; wildlife habitat; harvesting; commerce and navigation; boating; and aesthetic values. In addition, Miller Creek, to which Lora Lake discharges, has been closed to consumptive use since 1946 in order to protect flows for aquatic habitat (Water Resource Inventory Area 9, WAC 173-509-040).
- The DMCA meets the MTCA criteria for establishing soil cleanup levels for industrial land use. COC soil concentrations measured at the DMCA were less than the soil cleanup standards for industrial properties. WAC 173-340-745. Groundwater downgradient from the DMCA was not impacted by COCs. The DMCA qualifies for an exclusion from the TEE due to the Port's planned future land use. An institutional control will be placed on the DMCA to require that surface improvements provide a barrier to wildlife and to keep the area in industrial use.

Table 3.1 summarizes the cleanup levels applicable to the LL Apartments Parcel, the LL Parcel, and the DMCA following evaluation of the pathways for each media. Table 3.1 also identifies the specific numerical cleanup levels, based on the applicable cleanup levels by media for each specific COC.

3.3 SOIL CLEANUP LEVELS

As stated above, each of the three parcels at the LL Apartments Site have different current and future uses and associated exposure pathways, resulting in differing applicability of soil cleanup standards, as described below.

3.3.1 Lora Lake Apartments Parcel

The following soil exposure pathways and associated cleanup level regulations are applicable to the LL Apartments Parcel:

- Protection of human health via direct contact with soil: MTCA Method B (or Method A where Method B is not available) soil cleanup levels. MTCA Method B soil cleanup levels are protective for airport workers and possible public direct contact exposure.
- Soil leaching to groundwater: MTCA Equation 747-1 calculation of soil cleanup levels for the protection of groundwater resources from contaminants leaching from soil, unless empirical site data demonstrate that this is not a pathway of concern.
- Protection of ecological receptors: The LL Apartments Parcel meets the criteria for an exclusion from the TEE because future land use is planned to be airport-compatible commercial or light industrial use within 4 years of completion of cleanup construction, thus creating a barrier to wildlife. An institutional control will be placed on the LL Apartments Parcel to require that surface improvements provide a barrier to wildlife and to keep the area in commercial use.

3.3.2 Lora Lake Parcel

The following soil exposure pathways and associated cleanup level regulations are applicable to the LL Parcel:

- Protection of human health via direct contact with soil: MTCA Method B (or Method A where Method B is not available) soil cleanup levels. MTCA Method B soil cleanup levels are protective for airport workers and possible public direct contact exposure.
- Soil leaching to groundwater: MTCA Equation 747-1 calculation of soil cleanup levels for the protection of groundwater resources from contaminants leaching from soil, unless empirical site data demonstrate that this is not a pathway of concern.
- Protection of ecological receptors: The LL Parcel does not qualify for an exclusion from the TEE process, and site-specific ecological indicator soil concentrations (EICs) for avian and mammalian wildlife (WAC 173-340-900, Table 749-3) are applicable as soil cleanup levels for the ecological COCs.

TEE EICs for wildlife exposure for dioxins and furans (2 picograms per gram [pg/g] toxic equivalency quotient [TEQ] and 2 pg/g TEQ, separately) are less than the Ecology-determined State of Washington natural background soil concentration of 5.2 pg/g TEQ for dioxins/furans (Ecology 2010). Because MTCA WAC 173-340-900 Table 749-3 states that “Natural background concentrations may be substituted for ecological indicator concentrations provided in this table,” natural background is applicable as a soil cleanup level at the LL Parcel for dioxins/furans.

3.3.3 1982 Dredged Material Containment Area

The following soil exposure pathways and associated cleanup level regulations are applicable to the DMCA:

- Protection of human health via direct contact with soil: MTCA Method C soil cleanup levels. MTCA Method C soil cleanup levels are protective for industrial use and airport worker direct contact exposure.
- Soil leaching to groundwater: MTCA Equation 747-1 calculation of soil cleanup levels for the protection of groundwater resources from contaminants leaching from soil, unless empirical site data demonstrate that this is not a pathway of concern.
- Protection of ecological receptors: Future land uses at the DMCA will be airport-compatible uses in compliance with the FAA RPZs, such as temporary construction laydown or equipment storage. Land use improvements to allow for this future use will consist of surface improvements (e.g., placement of a compacted gravel or engineered surface), which eliminate potential wildlife exposure pathways and allow for an exclusion from the TEE and application of cleanup standards for terrestrial and ecological protection at the DMCA. Institutional controls will be placed on the DMCA to ensure barriers to wildlife are maintained in the future and to keep the area in industrial use.

3.4 GROUNDWATER CLEANUP LEVELS

Groundwater cleanup levels apply across the entire site. The following groundwater exposure pathways and associated cleanup level regulations are applicable to the Site:

- Protection of human health via drinking water consumption: MTCA Method B (or Method A where Method B is not available) groundwater cleanup levels.
- Protection of human health via drinking water consumption: state and federal drinking water Maximum Contaminant Levels.
- Protection of surface water beneficial uses.

Applicable surface water quality criteria are based on protection of human health via consumption of aquatic organisms. For all site COCs, except dioxins/furans, groundwater cleanup levels based on drinking water consumption are more stringent

than these surface water criteria. Therefore, the groundwater cleanup levels based on drinking water consumption apply.

Assessment of dioxins/furans concentrations in groundwater, as discussed in Section 5.2.2.2 of the RI/FS, indicates dioxins/furans are not likely to reach surface water. WAC 173-340-720(4)(b)(ii) states that,

“Where the groundwater cleanup level is based on a drinking water beneficial use, standard MTCA Method B cleanup levels shall be at least as stringent as concentrations established in accordance with the methods specified in WAC 173-340-730 for protecting surface water beneficial uses unless it can be demonstrated that the hazardous substances are not likely to reach surface water. This demonstration must be based on factors other than the implementation of a cleanup action at the site.”

Hence, the applicable groundwater cleanup level for dioxins/furans also is based on drinking water consumption.

3.5 SEDIMENT CLEANUP LEVELS

The following sediment exposure pathways and associated cleanup level regulations were considered to identify applicable sediment cleanup level regulations at the LL Parcel and in Miller Creek:

- Protection of ecological receptors in Lora Lake and Miller Creek: revised SMS rule (WAC 173-204), effective September 1, 2013; and the Draft Ecology Freshwater Benthic Sediment Quality Values (Avocet Consulting 2010).³
- Protection of ecological receptors in Lora Lake and Miller Creek: Sediment Evaluation Framework, revised SMS and draft Ecology freshwater biological toxicity interpretive criteria² (WAC 173-204, RSET 2009, Avocet Consulting 2010).
- Protection of human health, including sediment leaching to surface water: surface water for consumption of water and organisms Applicable or Relevant and Appropriate Requirements (ARARs; National Toxics Rule, 40 CFR 131.36 and Clean Water Act Section 304).

Sediment COC concentrations and cleanup levels protective of surface water ARARs for the protection of human health were calculated for Lora Lake using equilibrium partitioning. Following the comparison of Lora Lake sediment results to the calculated

³ The SMS rule was revised and adopted February 22, 2013, after completion of the Public Review Draft RI/FS report; and will be effective September 1, 2013, prior to finalization of the CAP. Because the revised SMS rule was not promulgated at the time of the Public Review Draft RI/FS document development, the Draft Freshwater Benthic Sediment Quality Value technical report prepared for Ecology (Avocet Consulting 2010) was used as an applicable cleanup regulation in the Public Review Draft RI/FS. All sediment cleanup levels for site sediment COCs are consistent between the Draft Freshwater Benthic Sediment Quality Value technical report and the revised SMS rule.

cleanup levels, a numerical cap modeling evaluation was conducted as part of the RI/FS to further assess the potential for sediment COCs in Lora Lake to leach from sediments to surface water at concentrations greater than those permitted by surface water ARARs. The numerical cap modeling evaluation resulted in the development and evaluation of remedial alternatives that immobilize COCs in-situ and isolates them from the environment (refer to RI/FS, Sections 5.2.3.2 and 6.3, and Appendix P).

Equilibrium partitioning-based sediment cleanup levels are applicable to Lora Lake sediments. Surface sediment samples were collected from three locations in Miller Creek: upstream and downstream of, and at, the Lora Lake discharge culvert to Miller Creek. Results of the sediment sample analysis showed that there is no difference in the chemical quality of surface sediments upgradient and downgradient of the Lora Lake discharge culvert; therefore, Miller Creek is not impacted by the Lora Lake sediment COCs. Miller Creek sediment quality was further evaluated by bioassay testing and a sediment leaching evaluation (refer to RI/FS Section 4.3.1 and Appendix P for additional information).

3.6 CONTAMINANT DISTRIBUTION

Figure 3.1 summarizes the distribution of the COCs in soil at the three areas of the Site compared to their cleanup levels. The values presented show the degree of cleanup level exceedance by the maximum detected COC concentration in units of “times greater than the cleanup level.”

This section also discusses establishment of a dioxins/furans remediation level for soil.

3.6.1 Soil

3.6.1.1 Lora Lake Apartments Parcel Contaminant Distribution

Soil contamination on the LL Apartments Parcel reflects the history of use of the Site. Contamination is highest and deepest in the area of the concrete sump where barrel-washing operations occurred (refer to Figure 2.4). During development of the land for apartment construction, soil was pushed downslope to the east for grading; high concentrations of COCs occur here. Exceedances of cleanup levels for COCs other than dioxins/furans are associated with higher concentrations of dioxins/furans. Over much of the rest of the LL Apartments Parcel, dioxins/furans contamination is shallow and dioxins/furans concentrations are less than 10 times the cleanup level.

The distribution of dioxins/furans contaminant concentrations is such that most of the mass of dioxins/furans is in the areas that exceed 10 times the dioxins/furans cleanup level. Figure 3.2 shows the relationship between soil volume and dioxins/furans TEQ concentrations. The figure shows that the soil volume with dioxins/furans TEQ concentrations less than 10 times the cleanup level (56,000 cubic yards) is larger than the soil volume with dioxins/furans TEQ concentrations greater than 10 times the cleanup level (19,000 cubic yards) by almost a factor of 3 .

Approximately 88 percent of the mass of dioxins/furans in the soil is in the areas where dioxins/furans exceed 100 times the cleanup level. Approximately 96 percent of the mass of dioxins/furans is in the areas where dioxins/furans exceed 10 times the cleanup level.

3.6.1.2 Dioxins/Furans Remediation Level

A remediation level is a contaminant concentration greater than which a more aggressive cleanup action will be taken. Remediation levels are greater than cleanup levels.

A remediation level of 100 pg/g TEQ (about 10 times the cleanup level) for dioxins/furans has been selected at the LL Apartments Parcel. This level was determined by considering the relationship between soil volume excavation and reduction in site-wide dioxins/furans TEQ mass concentration shown on Figure 3.2. If the remediation level was set at less than 100 pg/g TEQ, a disproportionate increase in excavation volume, and hence in cost, is required to achieve a lower dioxins/furans TEQ concentration of soil left on-site (refer to WAC 173-340-360(e) and discussion in Section 5.0).

In the context of the Site, soil present on the LL Apartments Parcel with dioxins/furans TEQ concentrations exceeding the remediation level will be excavated and sent to an off-site disposal facility. Soil with dioxins/furans TEQ concentrations less than the remediation level will be contained on-site.

3.6.2.2 Lora Lake Parcel

Only dioxins/furans and lead concentrations in soil on the LL Parcel exceed their cleanup levels. The other COC concentrations are less than their cleanup levels. A technical memorandum describing dioxins/furans TEQ concentrations in LL Parcel Soil was submitted to Ecology in August 2013 (Floyd|Snider 2013b). Refer to RI/FS Figure 4.2 for maximum lead concentrations measured in soil at the LL Parcel.

Lead exceeded its cleanup level of 50 milligrams per kilogram (mg/kg) in 2 of the 19 soil samples collected in which lead was measured, at concentrations of 58 and 64 mg/kg. These concentrations were in the surface soil.

Dioxins/furans exceeded the cleanup level of 5.2 pg/g in 10 of the 29 soil samples collected. It exceeded twice the cleanup level in 5 of 10 soil samples collected.

Whether the dioxins/furans concentrations detected in the soil sampled from the LL Parcel are related to historical industrial operations or to general urban background concentrations is unclear.

3.6.3.3 1982 Dredged Material Containment Area

Soil COC concentrations were all less than their cleanup levels, which are based on industrial land use. Soil within the DMCA was dredged from Lora Lake in 1982.

3.6.2 Groundwater

The only well on-site that had a substantial exceedance of the dioxins/furans cleanup level is located in the concrete sump area (Well MW-1) where barrel-washing activities occurred and dioxins/furans TEQ soil concentrations are highest. The highest dioxins/furans TEQ groundwater concentration was about 6.5 times its cleanup level. Arsenic was almost 3 times its cleanup level at this location (refer to Figure 3.1).

Dioxins/furans also exceeded the cleanup level in the northwest corner of the property. At the northeast corner (Well MW-13), dioxins/furans were not detected. Because of the laboratory detection limits for the sample and the method for calculating the dioxins/furans TEQ concentration (the dioxins/furans TEQ concentration is a sum of 17 congeners, and when 1 of the congeners is not detected, its concentration is assigned a value of one-half the detection limit.), the non-detected value of the sample from MW-13 was 1.09 times the groundwater cleanup level, as indicated on Figure 3.1.

At the northwest corner (Well MW-2, which is an upgradient well), 1 of the 17 dioxins/furans congeners was detected in 2 of the RI/FS groundwater monitoring rounds, and 2 of the congeners were detected in 1 of the 3 RI/FS groundwater monitoring rounds. Assigning one-half the detection limit to all of the remaining non-detected dioxins/furans congeners, the summed dioxins/furans TEQ concentration is 1.01 times the cleanup level.

Hence, the only exceedance of the dioxins/furans groundwater cleanup level that is substantial and that can be reliably associated with the historical industrial operations area on the LL Apartments Parcel was at Well MW-1. Dioxins/furans TEQ concentrations in groundwater attenuate rapidly due to their strong tendency to sorb to soil, and the wells downgradient of historic industrial operations area do not have dioxins/furans TEQ concentrations exceeding their cleanup level.

Arsenic and PCP exceeded their cleanup levels in one well on the eastern boundary of the LL Apartments Parcel. This is downgradient of the concrete sump area where barrel-washing activities occurred.

3.6.3 Sediment

Bioassay results found that surface sediment quality was protective of the ecological receptors of concern, benthic organisms.

Of the contaminants tested, only dioxins/furans had concentrations sufficiently high for the sediment to surface water pathway to be of concern. Dioxins/furans TEQ

concentrations ranged from 0.3 pg/g to 217 pg/g. While dioxins/furans strongly sorb to soil and have very low solubility in water, the National Recommended Water Quality Standard for surface water to protect human health is very low (0.005 picograms per liter). The standard is low because dioxins/furans are highly bioaccumulative in fish.

Sediment COC concentrations/cleanup levels protective of surface water ARARs for the protection of human health were calculated for Lora Lake sediments using equilibrium partitioning. The calculated dioxins/furans sediment cleanup level is 5 pg/g, less than the dioxins/furans TEQ concentrations detected at all five of the lake sediment sampling locations. The calculated arsenic sediment cleanup level was less than the practical quantitation limit. Therefore, per MTCA, when a cleanup level is less than the practical quantitation limit, the cleanup level defaults to the practical quantitation limit or the natural background concentration, whichever is greater (refer to WAC 173-340-700(6)(d)). The natural background-based arsenic cleanup level is 11 mg/kg (Table 3.1). The arsenic concentrations detected at four of the five lake sediment sampling locations were greater than the cleanup level. Therefore, following the comparison of Lora Lake sediment results to the calculated cleanup levels, a numerical cap modeling evaluation was conducted as part of the RI/FS to (1) further assess the potential for sediment COCs in Lora Lake to leach from sediments to surface water at concentrations greater than those permitted by surface water ARARs and (2) to assess remedial alternatives.

3.7 POINTS OF COMPLIANCE

The POCs are the point or points where cleanup levels are attained. POCs for soil, groundwater, and sediment are shown on Figure 3.3.

3.7.1 Soil Points of Compliance

3.7.1.1 Lora Lake Apartments Parcel

- **Soil direct contact.** The POC for the soil cleanup level is based on the direct contact exposure pathway. The MTCA standard POC for soil direct contact is throughout the LL Apartments Parcel, from the ground surface to a depth of 15 feet bgs (WAC 173-340-740(6)(d); Ecology 2007). However, Ecology recognizes that soil cleanup levels for direct contact to a depth of 15 feet bgs will not typically be met in portions of sites that use containment. In these cases, the cleanup action may be determined to comply with cleanup standards provided the selected remedy is permanent to the maximum extent practicable and is protective of human health. All soil with dioxins/furans TEQ concentrations exceeding 11 pg/g within the POC must be contained or excavated. The POC is the LL Apartments property boundary, and a zone of the former Seattle City Light Property, as shown in Figure 3.3. This POC also establishes the area that must be covered by a barrier to wildlife.
- **Protection of groundwater.** The POC for soil to protect groundwater is throughout the Site. Groundwater sampling has empirically demonstrated that groundwater

contamination is limited to areas where soil dioxins/furans TEQ exceedances are greater than 100 times the cleanup level (1,000 pg/g). The soil POC for protecting groundwater will be the limits of soil with dioxins/furans TEQ concentrations exceeding about 10 times the cleanup level. This is the area where soil exceeds 100 pg/g, the remediation level set above. All soil exceeding the 100 pg/g dioxins/furans remediation level must be excavated and disposed of off-site at a properly permitted facility.

- **Protection of TEE.** The LL Apartments Parcel qualifies for an exclusion from TEE assessment because its future use is commercial and have a barrier to wildlife exposure. This exclusion requires an institutional control to ensure the excluded area is covered by barriers that will prevent wildlife from being exposed to the soil contamination. We anticipate that the institutional control will apply to the LL Apartments Parcel property boundary.

3.7.1.2 Lora Lake Parcel

The soil POC bounds the areas of soil in the LL Parcel where some soil dioxins/furans TEQ concentrations exceed the TEE cleanup level of 5.2 pg/g. This POC is shown on Figure 3.3.

3.7.1.3 1982 Dredged Material Containment Area

The DMCA is an industrial area. Hence, industrial soil cleanup levels were used for comparison to COC detected concentrations. The POC is the extent of the DMCA. An institutional control is required when industrial cleanup levels are used (WAC 173-340-440(4)(c)) to maintain the area covered by the institutional control in industrial use. An environmental covenant will be placed on the area within the DMCA POC, requiring it be kept in industrial use.

3.7.2 Groundwater Point of Compliance

The standard POC for groundwater under MTCA is “throughout the site from the uppermost level of the saturated zone extending vertically to the lowest depth which could potentially be affected by the site” (WAC 173-340-720(8); Ecology 2007). At the LL Apartments Site, the standard POC for groundwater applies and cleanup levels will be met by the proposed cleanup action. The groundwater POC is shown on Figure 3.3.

3.7.3 Lora Lake Sediment Point of Compliance

The POC for sediment within Lora Lake is based upon protection of surface water quality via sediment leaching. Modeling has indicated sediment dioxins/furans TEQ concentrations may cause exceedances of surface water quality standards for dioxins/furans. The POC for sediment, the area exceeding sediment cleanup standards within Lora Lake is shown on Figure 3.3. This area must be remediated in a manner to prevent leaching of dioxins/furans to surface water.

4.0 Cleanup Areas

The LL Apartments Parcel and LL Parcel have been divided into Cleanup Areas for application of remedial technologies. Remedial alternatives were developed and evaluated for each cleanup area in the RI/FS (refer to Section 5.0). Descriptions of the Cleanup Areas for the LL Apartments Parcel and LL Parcel are presented below.

The DMCA did not require division into Cleanup Areas.

4.1 LORA LAKE APARTMENTS PARCEL CLEANUP AREAS

Because the application of remedial technologies to a given area of the LL Apartments Parcel is based primarily on the nature and extent of the contamination, Cleanup Areas have been determined so that a single remedial component may be conducted in areas with similar nature and extent of contamination conditions.

Based on nature and extent of contamination, the LL Apartments Parcel has been divided into three Cleanup Areas (illustrated on Figure 4.1): Cleanup Areas A, B, and C. The extent of each Cleanup Area is defined by soil cleanup levels based on protection of human health by direct contact (assuming unrestricted land use) and groundwater cleanup levels based on the protection of groundwater for drinking water use (refer to Section 3.0). Cleanup Areas A, B, and C are described below.

4.1.1 Cleanup Area A

Cleanup Area A designates two separate locations at the LL Apartments Parcel where the maximum detected dioxins/furans TEQ concentration in soil at any depth is greater than 1,000 pg/g TEQ. Concentrations of dioxins/furans identified during the RI in Cleanup Area A range from 1,000 pg/g TEQ to 21,165 pg/g dioxins/furans TEQ. Additional COCs present, and their associated maximum concentrations, include: carcinogenic polycyclic aromatic hydrocarbons (cPAHs; 880 micrograms per kilogram [$\mu\text{g}/\text{kg}$]), PCP (15,000 $\mu\text{g}/\text{kg}$), total petroleum hydrocarbons (TPH; 1,900 mg/kg, 8,900 mg/kg, and 17,000 mg/kg for gasoline range, diesel range, and heavy oil range, respectively) and lead (2,880 parts per million [ppm]). Cleanup Area A is presented on Figure 4.1. The total acreage of Cleanup Area A is approximately 0.7 acre, comprising two different locations:

- The Central Source Area, which is the location of the historical barrel-washing drum cleanout pond.
- The Eastern Source Area along the eastern property line in the vicinity of Monitoring Wells MW-4 and MW-5.

The soil in Cleanup Area A is contaminated from the ground surface to a maximum depth of approximately 15 to 20 feet bgs from past releases associated with historical barrel-washing operations, auto-wrecking operations, and soil relocation during apartment construction and site grading. Cleanup Area A also encompasses the area

with currently contaminated groundwater. Groundwater in Area A is expected to be in compliance with cleanup levels within 5 years of removing the source of contaminants to groundwater. Maximum concentrations of COCs in groundwater samples collected between 2010 and 2011 include: arsenic (14.2 micrograms per liter [$\mu\text{g/L}$]), cPAHs (0.028 $\mu\text{g/L}$), PCP (1.4 $\mu\text{g/L}$), and dioxins/furans (38.3 $\mu\text{g/L}$).

4.1.2 Cleanup Area B

Cleanup Area B includes all locations within the LL Apartments Parcel where the maximum detected dioxins/furans TEQ concentration in soil at any depth is between 100 pg/g and 1,000 pg/g. Cleanup Area B is adjacent to the source areas within Cleanup Area A. Substantial site regrading activities during construction of the apartment complex in the mid-1980s are likely responsible for the widespread presence of dioxins/furans across the shallow surface soil at the LL Apartments Parcel. Based on existing data, Cleanup Areas A and B (in combination) are believed to contain all soil on the LL Apartments Parcel where dioxins/furans TEQ concentrations are greater than 100 pg/g. Cleanup Area B is presented on Figure 4.1. The total acreage of Cleanup Area B is approximately 2.2 acres and consists of the following locations:

- The west-central portion of the LL Apartments Parcel. This location encompasses dioxins/furans contamination observed in surface soils (0 to 0.5 feet bgs) from Boring PSB-04 at a concentration of 194 pg/g TEQ.
- The Western Source Area near the LL Apartments Parcel property boundary with the former Seattle City Light Property. This area encompasses dioxins/furans contamination observed in soil from 0 to 2 feet bgs at concentrations ranging from 56 pg/g to 702 pg/g TEQ. This area also contains cPAH contamination observed from 2 to 4 feet bgs at a maximum concentration of 160 $\mu\text{g/kg}$.
- A zone between and north of the Central Source Area and the Eastern Source Area. This area encompasses dioxins/furans contamination observed in soil from 0 to 2 feet bgs at concentrations ranging from 132 pg/g to 187 pg/g TEQ.
- A zone along the southeastern property line, primarily east of the Eastern Source Area. Much of this area is outside the property fence, along Des Moines Memorial Drive at the foot of the topographic slope. This area encompasses dioxins/furans contamination observed in surface soils (0 to 0.5 feet bgs) with concentrations ranging from 107 pg/g to 209 pg/g TEQ.

4.1.3 Cleanup Area C

Cleanup Area C includes all locations within the LL Apartments Parcel property boundary where the maximum detected dioxins/furans TEQ concentration at any depth is between 11 pg/g and 100 pg/g. In the limited areas where data indicate dioxins/furans TEQ concentrations are present outside the property boundary, the dioxins/furans concentrations are within the range of typical urban background (refer to Appendix M

and Figure 4.9 of the RI/FS for more information) and cannot be attributed to the industrial operations on the LL Apartments Parcel. Cleanup Area C is presented on Figure 4.1. The total acreage of Cleanup Area C is approximately 3.3 acres and consists of the following locations:

- In the western portion of the property dioxins/furans contamination was detected in soil between 0 and 2 feet bgs, at concentrations ranging from 11.5 pg/g to 33.8 pg/g TEQ.
- In the northeast corner of the property exceedances of the cleanup level are present in shallow soil (0 to 2 feet bgs) at concentrations ranging from 16.6 pg/g to 26.2 pg/g TEQ.
- The central portion of the property between Cleanup Areas A and B, directly south of the Central and Eastern Source Areas, at concentrations ranging from 11.6 pg/g to 57 pg/g TEQ detected in surface soil between 0 and 0.5 feet bgs.

4.2 LORA LAKE PARCEL CLEANUP AREAS

This section identifies Cleanup Areas for the LL Parcel. The application of technologies to the LL Parcel is based primarily on the nature and extent of the contamination, its physical location, and institutional considerations. The LL Parcel includes both soil- and sediment-contaminated zones, and zone-specific remedies. The LL Parcel has been divided into two Cleanup Areas, illustrated on Figure 4.2: the LL Parcel Shallow Soil Cleanup Area and the LL Parcel Sediment Cleanup Area. The extents of the Cleanup Areas are defined by soil cleanup levels based on protection of terrestrial ecological receptors for the LL Parcel Shallow Soil Cleanup Area, and sediment cleanup actions based on protection of surface water via sediment leaching for the LL Parcel Sediment Cleanup Area (refer to Section 3.0). The LL Parcel Shallow Soil Cleanup Area and the LL Parcel Sediment Cleanup Area are described below.

4.2.1 Shallow Soil Cleanup Area

Shallow soil at the LL Parcel is contaminated with dioxins/furans at concentrations greater than the natural background-based cleanup level of 5.2 pg/g TEQ for protection of ecological receptors. Soil contamination exists along the western property boundary at depths ranging from 0 to 5 feet bgs. The Cleanup Area extent identified in the RI/FS has been refined based on additional data collected in February 2013 (Floyd|Snider 2013b). Figure 4.2 presents the revised Shallow Soil Cleanup Area. The additional data confirmed dioxins/furans concentrations in shallow soils do not extend past the STIA security fencing to the north and do not extend as far to the east as was conservatively estimated in the RI/FS. Soil concentrations from the additional 2013 sample locations ranged from 0.177 pg/g dioxins/furans TEQ to 6.12 pg/g dioxins/furans TEQ. The updated Cleanup Area is approximately 55 feet wide, including the paved sidewalk that runs between Des Moines Memorial Drive and the LL Parcel security fencing, and is approximately 0.4 acre.

The LL Parcel Shallow Soil Cleanup Area is within area covered by the NRMP. Its current and future use will be as a habitat mitigation area.

4.2.2 Sediment Cleanup Area

The LL Parcel Sediment Cleanup Area encompasses sediments within the lake and extending to the lake shoreline. Dioxins/furans are present at concentrations ranging from 7.55 pg/g to 217 pg/g TEQ in sediments. All Lora Lake sediments are encompassed by the LL Parcel Sediment Cleanup Area.

The lake surface is approximately 3 acres. The sediment cleanup area is shown on Figure 4.2.

5.0 Selected Remedy

The RI/FS evaluated five cleanup alternatives for the LL Apartments Parcel and four cleanup alternatives for the LL Parcel.

The DMCA is within the City of SeaTac's Aviation Operations zone. The area of the DMCA qualifies as an industrial area pursuant to WAC 173-340-745(1). Soil COCs do not exceed industrial direct contact cleanup levels within the DMCA and are not impacting groundwater. The DMCA qualifies for an exclusion from a TEE because future use will include an engineered surface that is a barrier to wildlife. An institutional control will be placed on the DMCA to keep it in industrial use and maintain a barrier to wildlife.

The cleanup remedies for the Site were selected in accordance with and comply with the requirements of WAC 173-340-360, *Selection of Cleanup Actions*.

5.1 LORA LAKE APARTMENTS PARCEL

The cleanup alternatives considered in the RI/FS for the LL Apartments Parcel are summarized in Table 5.1. The alternatives use varying degrees of excavation and off-site disposal of contaminated soil and containment of remaining contaminated soil. Groundwater cleanup alternatives range from monitoring and management to source removal. All but Alternative 5 require environmental covenants. All alternatives include drain system improvements to prevent entry of contaminated groundwater or soil. Costs for LL Apartments Parcel alternatives range from \$4.7 million to \$9.2 million.

Ecology's selected remedy for the LL Apartments Parcel is Alternative 3. Alternative 3 provides for excavation and off-site disposal of soil containing dioxins/furans TEQ concentrations greater than 100 pg/g. Soil with concentrations less than 100 pg/g will be capped with a barrier to wildlife. A barrier to wildlife will be a sufficient barrier to unintentional human intrusion, as required if the Port opts to contain soil with dioxins/furans TEQ concentrations on the LL Apartments Parcel.

The Port has indicated they may prefer to consolidate soil with dioxins/furans TEQ concentrations equal to or less than 100 pg/g within the DMCA to facilitate development of the LL Apartments Parcel. This is Alternative 4. The Port may opt to implement LL Apartments Parcel Alternative 4 if it so chooses. Consolidating soil with dioxins/furans TEQ concentrations equal to or less than 100 pg/g at the DMCA better meets Ecology's expectation to consolidate contaminated soil to the maximum extent practicable (WAC 173-340-370(5)); however, the increased cost offsets the environmental benefit. Where benefits are equal, Ecology is required to select the less costly alternative (WAC 173-340-360(3)(e)(ii)(C)).

The RI/FS provides a detailed discussion of the remedy selection process (refer to Sections 12.0 and 13.0). The primary reasons for selecting Alternative 3 are as follows:

- **Alternatives 1 and 2** leave substantial amounts of contamination on-site to be managed with institutional controls. Institutional controls do not have the same long-term effectiveness as other cleanup actions, such as excavation and removal. Moreover, the cost of excavation and removal of additional soil with dioxins/furans TEQ concentrations greater than the 100 pg/g concentration is proportionate to the incremental environmental benefit gained from removing this high-concentration material from the Site. Because Alternatives 1 and 2 leave soil with higher contaminant concentrations on-site more than the other alternatives, there is greater uncertainty as to whether the source removal will be protective of groundwater throughout the Site. Alternatives 1 and 2 also would result in a higher risk to human health if a cap over the higher concentration soil were to be penetrated.
- **Alternative 4** requires excavation and on-site consolidation at the DMCA of an additional 30,000 cubic yards of soil compared to Alternative 3, with an accompanying import of clean backfill and transport of the excavated soil to the nearby DMCA. The Port has indicated to Ecology that they may prefer this more expensive cleanup alternative for business reasons. The Port may implement Alternative 4 instead of Alternative 3 at its option.
- **Alternative 5** requires excavation and off-site disposal of an additional 30,000 cubic yards of soil compared to Alternative 3, also with accompanying import of clean backfill and transport of the excavated soil to a distant properly permitted facility. The additional soil has dioxins/furans concentrations between 11 and 100 pg/g. This concentration range is within the range that may be encountered in the urban Seattle area (Ecology 2011). Capping and institutional controls are more suitable for addressing this high volume of soil with relatively low dioxins/furans TEQ concentrations.
- **Alternative 3** has been chosen as the action that best balances the protection of human health and the environment with the cost of cleanup. Removing soil with dioxins/furans concentrations exceeding 100 pg/g is expected to remove the source of groundwater contamination. This will be verified by groundwater monitoring. The primary considerations in choosing Alternative 3 include the following:
 - Figure 5.1 shows the alternative cost versus the percent of dioxins/furans mass in the soil removed. The figure shows that soil excavation is cost effective in removing dioxins/furans mass at concentrations greater than 100 pg/g. When the soil dioxins/furans concentrations become less than 100 pg/g the amount of soil to be removed, and hence the cost, to further reduce soil dioxins/furans TEQ concentrations by excavation and off-site disposal increases rapidly as the mass of dioxins/furans in a cubic yard of soil is much less at concentrations less than 100 pg/g than concentrations greater than 100 pg/g. The regulation requires that cleanups be permanent to the maximum extent practicable and that where incremental costs substantially exceed incremental benefits, a lower cost alternative

will be chosen (WAC 173-340-360(2)(b)(i) and (3)(e)(i)) Figure 5.1 shows the increased cost of excavation and off-site disposal rises disproportionately to the increased environmental benefit of excavation of large volumes of soil with lower concentrations of dioxins/furans. Capping of soil with dioxins/furans TEQ concentrations less than 100 pg/g will achieve protection human health and the environment more cost effectively than excavation.

- The soil to be capped on the LL Apartments Parcel (or consolidated within the DMCA and capped, if the Port chooses that option) has dioxins/furans TEQ concentrations within the range found within urban areas of Seattle (refer to Figure 5.2). Alternative 3 recognizes Ecology's expectation of the need to use engineering controls, such as containment, for sites or portions of sites that contain large volumes of materials with relatively low levels of hazardous substances where treatment is impracticable (WAC 173-340-370(3)).

5.2 LORA LAKE PARCEL

The cleanup alternatives considered in the RI/FS for the LL Parcel are summarized in Table 5.2. Alternatives for Lora Lake include controlling sediment and fish movement from the lake to Miller Creek, thin capping, filling the lake to restore the wetland that existed prior to peat mining, and dredging and off-site disposal of contaminated sediment. Alternatives for the Lora Lake Shallow Soil Cleanup Area include controlling risk with institutional controls, capping, and excavation and off-site disposal. Alternatives 1, 2, and 3 include environmental covenants to maintain restoration and keep the land in its current use. Costs for LL Parcel alternatives range from \$0.4 million to \$7.3 million.

Ecology's selected remedy for the LL Parcel is Alternative 3 for the lake and Alternative 1 for the shallow soil.

Alternative 3 for the lake portion of the parcel provides for restoring the lake to a flow-through depression wetland system, similar to the one that existed before peat mining. Contaminated sediment will be contained in place using a thick sand cap that will be designed to immobilize dioxins/furans in the sediment. This will prevent leaching of dioxins/furans to surface water. The restoration design will preserve or improve the flow-through characteristics and flood desynchronization functions of the current Lora Lake system.

Alternative 1 for the soil portion of the parcel provides for institutional controls for maintaining the impacted soil area as a habitat mitigation area under the management requirements of the NRMP.

The RI/FS provides a detailed discussion of the remedy selection process (refer to Sections 12.0 and 13.0). The primary reasons for selecting Alternative 3 for the lake and Alternative 1 for the soil are as follows:

With regard to the lake:

- Alternative 1 will not prevent interchange of water between Lora Lake and Miller Creek; hence, it is not sufficiently protective if dioxins/furans leach from sediment to the lake water.
- Alternative 2 proposes a thin (1.5 foot) sand cap. A thin cap with sufficient carbon content would be effective at immobilizing the dioxins/furans in the sediment. However, a thin cap is more easily disturbed; therefore, its long-term effectiveness is less certain than a thick cap. In addition, a thin cap would further shallow this already shallow lake. Lora Lake is currently a source of low-oxygen, high-temperature water to Miller Creek in the summer. A shallow cap would exacerbate this condition. Ecology expects that cleanup actions conducted under this chapter will not result in a substantially greater overall threat to human health and the environment than other alternatives (WAC 173-340-370(8)). Alternative 2 could result in a greater environmental damage to Miller Creek than the environmental benefit achieved.
- Alternative 4 presents short-term risks of spreading contamination on the land or having it enter the water during dredging of the lake. In addition, it is substantially more expensive than Alternative 3 and would not achieve substantially greater environmental protection than immobilizing the dioxins/furans by placing a thick cap over the contaminated sediments and restoring the lake to approximate conditions that existed prior to the creation of the lake by peat mining in the 1940s.
- Alternative 3 will provide a thick soil cap that will be designed to immobilize dioxins/furans in the sediment in place. This will prevent leaching of dioxins/furans to surface water. Ecology recognizes immobilization as having long-term effectiveness (WAC 173-340-360(3)(f)(iv)). This has the added benefit of eliminating a source of low-oxygen, high-temperature water to Miller Creek in the summer.⁴

With regard to the soil:

- The soil is located within a special purpose wetland landscape and habitat mitigation area. The plant communities were planted in 2005 and 2006. Necessary infill planting to keep density numbers high has been completed intermittently since then, with the last planting effort completed in 2010.

⁴ As part of the Port's mitigation for Master Plan Update improvement impacts, a portion of Miller Creek was relocated. The relocated section of Miller Creek was designed to provide a salmonid spawning habitat; however, the relocation resulted in areas of standing water and limited flow velocity. The Port implemented corrective actions to limit areas of standing water and improve stream flow. In addition to standing water and limited flow, assessments of the original relocation reach identified stream temperatures greater than, and dissolved oxygen levels less than, the water quality standards. These deficiencies during the summer months were partially attributed to upstream influences, including discharges from Lora Lake. To further improve water quality in Miller Creek, the resource agencies have recommended that surface flows from Lora Lake entering Miller Creek be prevented during late spring, summer, and early fall.

Currently, the area of concern is mature enough to meet its desired goals. The buffer has grown to provide a dense break between the nearby road and the adjacent wetland and lake. Grading and floodplain connection have been completed. The wetland vegetation has undergone minor corrective actions that have allowed the area to reach cover and density performance levels that either meet, or are rapidly approaching, the final performance standards for the area. The Port continues the management of the plant coverage and diversity that exists within the potential extent of soil excavation to support the targeted ecological functions.

- Excavation of the shallow soil would destroy established high-value mitigation plantings.
- Soil dioxins/furans TEQ concentrations within the affected area are within the range of urban background soils found within urban areas of Seattle (Ecology 2011; refer to Figure 5.2).
- Ecology expects that cleanup actions conducted under this chapter will not result in a substantially greater overall threat to human health and the environment than other alternatives (WAC 173-340-370(8)).
- Capping or soil removal is not proposed in the affected area because those actions will cause more ecological harm (i.e., would destroy plant communities established as part of the NRMP area) than the threat posed by existing site contamination. Remaining contamination concentrations are low, within the range of urban background dioxins/furans TEQ concentrations. Under MTCA, the environmental risk of the cleanup action may be considered as part of a disproportionate cost analysis to determine whether a cleanup action is permanent, to the maximum extent practicable. Washington's State Environmental Policy Act (SEPA) provides Ecology with substantive authority, subject to certain provisions, to modify a cleanup action to mitigate adverse environmental impacts. Ecology has determined that either capping or excavating would result in a significantly greater overall threat to human health and the environment than placing institutional controls. Institutional controls will be developed and implemented, including access warning signs, monitoring, and an environmental covenant to maintain the area as a habitat mitigation area to ensure that the remedy remains protective. The environmental covenant will be placed to ensure the area of soil with dioxins/furans TEQ concentrations exceeding the TEE cleanup level of 5.2 pg/g is known. If monitoring shows a risk to human health or the environment, additional actions may be required.

5.3 1982 DREDGED MATERIAL CONTAINMENT AREA

As noted above, Ecology's selected remedy for the DMCA is placing institutional controls on the area. Institutional controls are required when soil cleanup levels are based on industrial land use. As the future land use will have a barrier to wildlife, the

DMCA also qualifies from an exclusion from a TEE. This exclusion also requires an institutional control.

The Port plans to make land use improvements at the DMCA to allow for its future use as a temporary construction laydown or as equipment storage. The improvements will consist of surface improvements (e.g., placement of a compacted gravel or engineered surface) that will prevent plant and wildlife exposure pathways.

Institutional controls will be placed on the DMCA to require that it remains an industrial use area and to ensure a barrier to wildlife is maintained in the future.

6.0 Selected Remedy Implementation

6.1 LORA LAKE APARTMENTS PARCEL

6.1.1 Soil

The Port will excavate all contaminated soil with dioxins/furans TEQ concentrations greater than 100 pg/g (about 19,000 cubic yards) for off-site disposal at a properly permitted facility. The remaining contaminated soil, containing dioxins/furans TEQ concentrations between 11 pg/g and 100 pg/g (about 30,000 cubic yards) will either be contained beneath a barrier wildlife within the LL Apartments Parcel or, at the Port's option, transported to the DMCA and contained beneath an engineered surface that is a barrier to wildlife.

Excavations will be backfilled to final grade with clean imported soil or with soil with dioxins/furans TEQ concentrations less than 100 pg/g from within the LL Apartments Parcel boundary.

A barrier to wildlife will be established within 4 years of the completion of excavation and backfilling. This allows the Port 4 years to identify the commercial use of the property and integrate the barrier to wildlife with property development. The barrier design requires Ecology approval. Excavation will be considered complete when excavation has extended to the pre-determined and approved survey coordinates based on the results of compliance monitoring conducted prior to excavation. Backfilling will be considered complete when excavations have been backfilled and compacted to within 4 feet of the existing ground surface and side slopes have been graded to stable slopes no steeper than 2H:1V.

After excavation and backfilling have been completed stormwater and erosion control measures will be implemented and maintained. The measures will control dust generation as well.

Any existing groundwater monitoring wells within the limits of excavations and deeper than anticipated excavation depths must be abandoned in accordance with regulations prior to the start of excavation.

6.1.2 Groundwater

The excavation of Cleanup Area A is expected to remove the contaminant mass above, and in contact with, groundwater in Cleanup Area A, which may contribute to the elevated dioxins/furans concentrations in groundwater at Monitoring Well MW-1. Following removal of this saturated soil source, confirmation groundwater sampling will be conducted until groundwater concentrations are in compliance with cleanup levels. It is anticipated that groundwater will be in compliance with cleanup levels within 5 years from completion of excavation and backfilling. Until groundwater concentrations are less than cleanup levels, institutional controls will be required to prevent groundwater

withdrawal. Groundwater encountered during excavation and removed from the subsurface for excavation dewatering will be collected for off-site disposal at a properly permitted facility. Dewatering methods will be determined by the Contractor and approved by the Port prior to implementation.

The final monitoring well network will be determined in the Compliance Monitoring Plan (refer to Section 6.5). New wells may be required at locations where wells were abandoned as part of cleanup construction.

6.1.3 Stormwater Conveyance System Improvements

The existing stormwater conveyance system will be relocated to the northern part of the LL Apartments Parcel. The storm drain will be above the water table and will be constructed to minimize the potential for leakage. The storm drain trench will be lined with a geofabric and backfilled with clean backfill.

The stormwater conveyance system design will be included in the Engineering Design Report (refer to Section 6.5). The design will preserve, or improve, the flow-through characteristics and flood desynchronization functions of the current Lora Lake system.

6.1.4 Environmental Covenants

Environmental covenants will be placed on the LL Apartments Parcel to implement institutional controls. The covenants will require institutional controls to maintain the barrier to wildlife, to prevent groundwater withdrawal during the restoration time frame it will take for the groundwater to achieve compliance after cleanup construction is complete (estimated to be 5 years), and to require that the area remains in commercial use.

The environmental covenant shall describe the nature and extent of contamination remaining on-site after completion of cleanup construction.

Two draft environmental covenants will be submitted to Ecology for review and approval with the draft As-built Reports for the work (Refer to Section 6.5.3). One covenant will be for maintenance of long-term institutional controls for the barrier to wildlife and to keep the area in commercial use. The other will prevent groundwater withdrawal. It is anticipated that this covenant will be removed once compliance monitoring indicates groundwater meets cleanup standards.

A separate environmental covenant may be needed for the former Seattle City Light Property (now owned by the Port).

6.2 LORA LAKE PARCEL

6.2.1 Soil

The remedial action for the LL Parcel-impacted soil is the recording of an environmental covenant with appropriate institutional controls. The institutional controls are described in Section 6.2.3.

6.2.2 Sediment

Lora Lake sediments will be isolated through open-water filling of Lora Lake to rehabilitate the area to wetland conditions similar to those before peat mining created the lake. Clean fill that contains sufficient organic carbon to immobilize the dioxins/furans within the Lora Lake sediments will be placed in Lora Lake. This will eliminate the potential for aquatic exposure or transport of dioxins/furans-contaminated sediments. The fill material will provide a physical and chemical barrier between the contaminated sediments and water flowing into Miller Creek, addressing the human exposure pathways.

The filling of Lora Lake will consist of placing sand in the lake to an elevation that converts all of the open-water area to a depressional wetland system. The lake will be filled over its entire footprint to depths between approximately 2 and 13 feet, based on existing bathymetry.

The rehabilitated wetland will be capable of supporting emergent and woody vegetation and will create aquatic habitat that is consistent with the goals of the NRMP. This wetland rehabilitation is considered a preferred form of compensatory mitigation for ecological impacts (Ecology et al. 2006) and, of all the remedial alternatives evaluated, will provide the maximum ecological benefit to the Miller Creek Basin (as described in detail in RI/FS Section 20.0).

The rehabilitated wetland will be designed to preserve or improve the flow-through characteristics and flood desynchronization functions of the current Lora Lake system.

6.2.3 Environmental Covenants

Environmental covenants will be placed on the the LL Parcel Shallow Soil and Sediment Cleanup Areas to implement necessary institutional controls.

The environmental covenants will require the Port to continue to manage the area, as required by recorded restrictive covenants already in place as part of the NRMP. This will ensure that Ecology must agree to removing or changing these restrictive covenants with regard to this area. A metes and bounds survey will be completed by the Port defining the areas of the Site where environmental covenants will be placed. The metes and bounds survey will be included in the environmental covenants.

An environmental covenant will be placed on the LL Parcel sediment area. It will require the rehabilitated wetland to continue to be managed, as required by recorded restrictive covenants already in place as part of the NRMP. This will ensure that Ecology must agree to removing or changing these restrictive covenants with regard to this area.

The environmental covenant will describe the nature and extent of contamination remaining on-site after completion of cleanup construction.

A draft environmental covenant for the impacted soil area and a draft environmental covenant for the sediment area will be submitted to Ecology for review and approval with the As-built Reports for the LL Parcel work (refer to Section 6.5.3).

6.3 1982 DREDGED MATERIAL CONTAINMENT AREA

An environmental covenant will be placed on the DMCA to implement institutional controls. The institutional controls will require that surface improvements provide a barrier to wildlife and that the area remain in industrial use. The design of the surface improvements will be included in the Engineering Design Report (refer to Section 6.5). If soil from the LL Apartments Parcel with dioxins/furans TEQ concentrations less than 100 pg/g is consolidated within the DMCA, the environmental covenant shall describe the nature, volume, and location of that soil.

A draft environmental covenant will be submitted to Ecology for review and approval with the As-built Reports for the work (refer to Section 6.5.3).

6.4 ENVIRONMENTAL ANALYSIS OF REMEDY IMPLEMENTATION

SEPA, Chapter 43.21C RCW is a State of Washington law that is intended to ensure that project proponents consider the effects of the project on the natural and human environment prior to taking action. SEPA compliance is required for any state or local agency action. Per the SEPA process, a SEPA checklist to evaluate possible effects of the project on the environment has been completed for submittal to Ecology and is presented in Appendix A.

The SEPA checklist provides a summary of the project description or remedial actions; describes the site, environmental, and ecological conditions; site and adjacent land uses; and describes the proposed measures to reduce or control erosion, to reduce or control air emissions of construction equipment, and measures used during construction to ensure that remedial actions do not adversely impact downgradient water quality.

Ecology review of the SEPA checklist and information presented in the RI/FS and in this Cleanup Action Plan indicates a Mitigated Determination of Nonsignificance is warranted for this site. The mitigation required is to minimize disturbance of plants on the Lora Lake Parcel to the degree possible. This will be done by placing an environmental covenant on the Lora Lake Shallow Soil Cleanup Area as described in Section 6.2.3 rather than excavating the soil. This will prevent destruction of the plants

in that area. The average dioxins/furans concentration in the soil is 8.2 pg/g. This is slightly elevated over the TEE dioxins/furans natural background concentration of 5.2 pg/g. However, destruction of the plants by excavating soil with these low dioxins/furans concentrations would cause a greater damage to the environment than results from the slight excess risk posed to wildlife by leaving the soil in place.

6.5 REQUIRED FOLLOW-ON DOCUMENTATION

6.5.1 Financial Assurances

The Port will provide Ecology with a cost estimate for implementation of the Consent Decree and will provide proof of financial assurances that the Port has sufficient financial resources available and in place of the sufficient amount to cover all costs associated with the operation and maintenance of the cleanup action, including institutional controls, compliance monitoring, and corrective measures (refer to WAC 173-340-440(11)).

6.5.2 Plans Describing the Cleanup Action

Plans describing Ecology's selected remedy will be prepared as required by WAC 173-340-400(4). The plans to be prepared are an Engineering Design Report, Construction Plans and Specifications, and an Operation and Maintenance Plan. These plans may be prepared in phases as appropriate and as approved by Ecology.

Once approved by Ecology, these plans become integral and enforceable parts of this Consent Decree.

The Operations and Maintenance Plan is to include an inspection schedule for the barriers to wildlife, pre-approved means of repair, and pre-approved procedures for removing the barrier for needed subsurface work and replacing it when the work is done. It is also to include pre-approved designs for future work such as landscaping units and subsurface infrastructure, such as storm drains and underground utilities that may be installed subsequent to the completion of cleanup construction. Use of pre-approved procedures requires Ecology be notified 30 days in advance of work, and submittal of As-built Reports at the completion of work. Work that does not follow pre-approved procedures requires prior approval from Ecology.

If future work is proposed that does not follow a pre-approved plan, Ecology should be contacted as early as possible to discuss the work and the time frame for review and approval.

The Operations and Maintenance Plan is to include a description of the minimum scope of Periodic Reviews required for the Site, a template for the Periodic Review report, and a description of the Port submittal of a 5-year report of post-cleanup site conditions and monitoring data. All work performed during the 5-year review period must be summarized in the Periodic Review for that period.

6.5.3 Permits, Approvals, and Substantive Requirements

Permits and approvals and any substantive requirements for exempted permits, if required for construction or to otherwise implement the cleanup action, shall be identified and, where possible, be resolved before or during the design phase to avoid delays during construction and implementation of the cleanup action (WAC 173-340-400(5)).

The permits, approvals, and substantive requirements that are known at this time to apply to the selected cleanup action are listed in Exhibit D of this Consent Decree. Ecology and the Port 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 the Consent Decree. In the event that either Ecology or the Port determines that additional permits or approvals are required for the remedial action, they shall promptly notify the other party of the determination. The substantive requirements and necessary permits will be identified and included in the Engineering Design Report or obtained by the cleanup construction contractor prior to the beginning of any work that requires them.

Once approved by Ecology, these requirements become integral and enforceable parts of this Consent Decree.

6.5.4 Construction Documentation

Construction documentation will be prepared as required by WAC 173-340-400(6). Project As-built Reports will be prepared, meeting the requirements of WAC 173-340-400(6)(ii). As-built Reports may be prepared in phases, as approved by Ecology.

A draft environmental covenant for the area in which work was conducted will be submitted for Ecology review and approval with the As-built Reports.

6.5.5 Compliance Monitoring Plan

A Compliance Monitoring Plan will be prepared as required by WAC 173-340-410. The Compliance Monitoring Plan shall include contingency actions to be taken if monitoring indicates cleanup standards have not been attained.

Once approved by Ecology, the Compliance Monitoring Plan becomes an integral and enforceable part of this Consent Decree.

7.0 Schedule

7.1 IMPLEMENTATION SCHEDULE

The schedule for major deliverables and work tasks associated with remedial actions at the Site is included as Exhibit C to this Consent Decree. The schedule provides anticipated submittal dates or task durations for deliverables and actions associated with site cleanup, including monthly progress reports, financial assurances, remedial design and engineering documents, and As-built Reports. Refer to Exhibit C for details on project deliverables and schedule.

In addition to the tasks detailed in the project schedule in Exhibit C, the following schedule requirements apply to work at the Site:

- All analytical data collected at the Site must be submitted to Ecology's Environmental Information Management (EIM) System within 30 days of receipt of validated data.
- Health and Safety Plans for all on-site activities must be developed prior to mobilization to the field. Ecology may request review of health and safety documents.

7.2 CONSTRUCTION PHASING AND SEQUENCING

Remedy implementation at the Site may be conducted as a single project or as phased construction, dependant on Port development decisions and schedule. Any phasing will be conducted within the schedule presented in Exhibit C of this Consent Decree. Any projects planned for completion within the LL Apartments Site will require coordination and approval from Ecology prior to implementation.

8.0 References

- AECOM, Inc. (AECOM). 2009. *Summary Report – 2008 Investigations and Data Gap Evaluation Lora Lake Apartments*. Document No.: 054820256000. Prepared for Port of Seattle, Seattle, Washington. September.
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- Washington State Department of Ecology (Ecology). 2007. *Model Toxics Control Act Chapter 70.105D RCW*. Publication No. 94-06. Revised November.
- . 2009. Agreed Order No. DE-6703 issued to the Port of Seattle.
- . 2010. Department of Ecology Technical Memorandum #8 re: "Natural Background for dioxins/furans in WA soils." 28 April.
- . 2011. *Urban Seattle Area Soil Dioxin and PAH Concentrations Initial Summary Report*. Publication No. 11-09-049. September.
- Washington State Department of Ecology, U.S. Army Corps of Engineers Seattle District, and U.S. Environmental Protection Agency Region 10 (Ecology et al.). 2006. *Wetland Mitigation in Washington State – Part 1: Agency Policies and Guidance (Version 1)*. Washington State Department of Ecology Publication #06-06-011a. Olympia, Washington.

Lora Lake Apartments Site

Draft Cleanup Action Plan

Tables

Table 3.1
Soil, Groundwater, and Sediment Cleanup Levels

Contaminant of Concern	Pathway	Cleanup Level Source/Reference ¹	Cleanup Level Value	Remediation Level	Unit	Cleanup/Remediation Level Applies
Metals						
Arsenic	Human health—direct contact and protection of groundwater, adjusted for natural background for soil	MTCA Method A—Unrestricted Land Use	20	NA	mg/kg	Lora Lake Apartments Parcel and Lora Lake
	Human health—direct contact (ingestion only)	MTCA Method C—Standard, Carcinogen—Industrial Land Use	88	NA	mg/kg	DMCA
Lead	Terrestrial Plants and Animals	MTCA Ecological Indicator Soil Concentrations	50	NA	mg/kg	Lora Lake Parcel
	Human health—direct contact, prevention of unacceptable blood lead levels	MTCA Method A—Unrestricted Land Use	250	NA	mg/kg	Lora Lake Apartments Parcel
	Human health—direct contact (ingestion only)	MTCA Method A— Industrial Land Use	1,000	NA	mg/kg	DMCA
Total Petroleum Hydrocarbons						
Gasoline Range Hydrocarbons	Human health—protection of groundwater for non-carcinogenic effects during drinking water use and Protection of Terrestrial Plants and Animals	MTCA Method A—Unrestricted Land Use	100 ²	NA	mg/kg	Site-wide
Sum of Diesel and Heavy Oil Range Hydrocarbons	Prevention of accumulation of free product in groundwater	MTCA Method A—Unrestricted Land Use	2,000	NA	mg/kg	Lora Lake Apartments Parcel and DMCA ³
	Terrestrial Plants and Animals	MTCA Ecological Indicator Soil Concentrations	200	NA	mg/kg	Lora Lake Parcel
Semivolatile Organic Compounds						
Pentachlorophenol	Human health—direct contact (ingestion only)	MTCA Method B—Standard, Carcinogen	2,500	NA	µg/kg	Lora Lake Apartments Parcel and Lora Lake Parcel
		MTCA Method C—Standard, Carcinogen—Industrial Land Use	330,000	NA	µg/kg	DMCA
cPAHs TEQ	Human health—direct contact (ingestion only)	MTCA Method B—Standard, Carcinogen	137	NA	µg/kg	Lora Lake Apartments Parcel and Lora Lake Parcel
		MTCA Method C—Standard, Carcinogen—Industrial Land Use	18,000	NA	µg/kg	DMCA
Volatile Organic Compounds						
Ethylbenzene	Human health—direct contact (ingestion only)	MTCA Method B—Standard, Non-carcinogen	8,000	NA	mg/kg	Lora Lake Apartments Parcel and Lora Lake Parcel
		MTCA Method C—Standard, Carcinogen—Industrial Land Use	350,000	NA	mg/kg	DMCA
Toluene	Human health—direct contact (ingestion only)	MTCA Method B—Standard, Non-carcinogen	6,400	NA	mg/kg	Lora Lake Apartments Parcel and Lora Lake Parcel
		MTCA Method C—Standard, Carcinogen—Industrial Land Use	280,000	NA	mg/kg	DMCA
Dioxins/Furans						
Dioxins/Furans TEQ	Human health—direct contact (ingestion only)	MTCA Method B—Standard, Carcinogen	11	100	pg/g	Lora Lake Apartments Parcel
	Human health—direct contact (ingestion only)	MTCA Method C—Standard, Carcinogen—Industrial Land Use	1,500	NA	pg/g	DMCA
	Terrestrial Plants and Animals	Natural Background for Dioxins/Furans in Washington Soils Technical Memorandum (Ecology 2010) ⁴	5.2	NA	pg/g	Lora Lake Parcel

Soil

Table 3.1
Soil, Groundwater, and Sediment Cleanup Levels

	Contaminant of Concern	Pathway	Cleanup Level Source/Reference ¹	Cleanup Level Value		Remediation Level	Unit	Cleanup/Remediation Level Applies
				SCO	CSL			
Groundwater	Metals							
	Arsenic	Washington state background	MTCA Method A	5		NA	µg/L	Site-wide
	Total Petroleum Hydrocarbons							
	Gasoline Range Hydrocarbons	Human health—protection of groundwater for non-carcinogenic effects during drinking water use	MTCA Method A—Unrestricted Land Use	1,000 ²		NA	µg/L	Site-wide
	Sum of Diesel and Heavy Oil		MTCA Method A—Unrestricted Land Use	500		NA	µg/L	Site-wide
	Semivolatile Organic Compounds							
	Pentachlorophenol	Human health—drinking water beneficial use	State and Federal MCL	1		NA	µg/L	Site-wide
	cPAHs TEQ	Human health—drinking water beneficial use	MTCA Method B—Adjusted, Carcinogen ⁵	0.12		NA	µg/L	Site-wide
Dioxins/Furans								
Dioxins/Furans TEQ	Human health—drinking water beneficial use	MTCA Method B—Adjusted, Carcinogen ⁵	5.83		NA	pg/L	Site-wide	
Sediment	Metals							
	Arsenic	Benthic aquatic organisms	SMS—Freshwater Criteria ⁶	14	120	NA	mg/kg	Lora Lake ⁸
		Human health—consumption of surface water and organisms	Sediment Natural Background. <i>USEPA Ocean Survey Vessel Bold Survey for Puget Sound (Bold Survey; USEPA 2008)</i> ⁷	11		NA	mg/kg	
	Lead	Benthic aquatic organisms	SMS—Freshwater Criteria ⁶	360	>1,300	NA	mg/kg	Lora Lake ⁸
		Human health—consumption of surface water and organisms	Equilibrium partitioning based calculation of sediment concentration protective of surface water ⁹	1,890		NA	mg/kg	
	Semivolatile Organic Compounds							
	Pentachlorophenol	Benthic aquatic organisms	SMS—Freshwater Criteria ⁶	1,200	>1,200	NA	µg/kg	Lora Lake ⁸
		Human health—consumption of surface water and organisms	Equilibrium partitioning based calculation of sediment concentration protective of surface water ⁹	151		NA	µg/kg	
	cPAHs TEQ	Benthic aquatic organisms	SMS—Freshwater Criteria ^{6,10}	17,000	30,000	NA	µg/kg	Lora Lake ⁸
		Human health—consumption of surface water and organisms	Equilibrium partitioning based calculation of sediment concentration protective of surface water ⁹	302		NA	µg/kg	
	Dioxins/Furans							
	Dioxins/Furans TEQ	Benthic aquatic organisms	SMS—Bioassay ¹¹	PASS		NA	NA	Lora Lake ⁸
Human health—consumption of surface water and organisms		Equilibrium partitioning based calculation of sediment concentration protective of surface water ⁹	5.0		NA	pg/g	Lora Lake ⁸	

Abbreviations:

ARAR Applicable or Relevant and Appropriate Requirement
 COC Contaminant of concern
 cPAH Carcinogenic polycyclic aromatic hydrocarbon
 CSL Cleanup Screening Level
 DMCA 1982 Dredged Material Containment Area
 Ecology Washington State Department of Ecology
 µg/kg Micrograms per kilogram
 µg/L Micrograms per liter
 mg/kg Milligrams per kilogram
 MTCA Model Toxics Control Act

NA Not available
 PAH Polycyclic aromatic hydrocarbon
 pg/g Picograms per gram
 pg/L Picograms per liter
 RI/FS Remedial Investigation/Feasibility Study
 SCO Sediment Cleanup Objective
 SMS Sediment Management Standards
 TEQ Toxic equivalency quotient
 USEPA U.S. Environmental Protection Agency
 WAC Washington Administrative Code

Table 3.1
Soil, Groundwater, and Sediment Cleanup Levels

Notes:

- 1 The most stringent applicable cleanup levels for the complete human health pathways are identified for the Lora Lake Apartments Site.
- 2 Gasoline range hydrocarbons cleanup levels for soil and groundwater are based on the higher cleanup level as testing indicated that benzene was not present.
- 3 The MTCA Method A Unrestricted Land Use cleanup level is applied to the DMCA because no MTCA Method C industrial cleanup level is available for use.
- 4 As presented in the Ecology 2010 technical memorandum, the Washington state natural background concentration of 5.2 pg/g TEQ is calculated as the lower of the 90th percentile and 4 × 50 percentile (per WAC 173-340-709). Refer to Appendix M of the Lora Lake Apartments Site RI/FS for more details.
- 5 Adjusted dioxins/furans and cPAH groundwater cleanup levels were calculated using adjusted MTCA Method B per MTCA Equation 720-2 (with a risk level of 10^{-5}). Refer to RI/FS Section 6.2.2 for additional information.
- 6 The SMS rule was revised and adopted February 22, 2013, after completion of the Public Review Draft RI/FS report; and will be effective September 1, 2013, prior to finalization of the Cleanup Action Plan. Because the revised SMS rule was not promulgated at the time of the Public Review Draft RI/FS document development, the Draft Freshwater Benthic Sediment Quality Value technical report prepared for Ecology (Avocet Consulting 2010) was used as an applicable cleanup regulation in the Public Review Draft RI/FS. All sediment cleanup levels for site sediment COCs are consistent between the Draft Freshwater Benthic Sediment Quality Value technical report and the revised SMS rule. The SMS rule is now the applicable ARAR for sediment cleanup standards.
- 7 The equilibrium partitioning based sediment cleanup level was substantially less than the practical quantitation limit for arsenic of 5 mg/kg. Therefore, per MTCA, when a cleanup level is less than the practical quantitation limit, the cleanup level defaults to the practical quantitation limit or the natural background concentration, whichever is greater. The Ocean Survey Vessel Bold Survey for Puget Sound (Bold Survey; DMMP 2009) provides the most extensive dataset available for sediment background contaminant concentrations within Western Washington. MTCA defines soil background as the true upper 90th percentile or 4 times the true 50th percentile, whichever is lower. This approach was applied in the derivation of a sediment natural background concentration for arsenic based on the Bold Survey data, consistent with Ecology's recently released natural background concentrations calculated for Port Angeles Harbor sediments (NewFields 2012).
- 8 Sediment Cleanup Levels are applicable to Lora Lake sediments. Surface sediment samples were collected from three locations in Miller Creek, upgradient and downgradient of the Lora Lake discharge culvert to Miller Creek. Results of the sediment sample analysis showed that there is no difference in the chemical quality of surface sediments upgradient and downgradient of the Lora Lake discharge culvert; therefore, Miller Creek is not impacted by the Lora Lake sediment COCs. Miller Creek sediment quality was further evaluated by bioassay testing and a sediment leaching evaluation. Refer to RI/FS Section 4.3.1, RI/FS Appendix P and Section 5.2.3.2 for additional information.
- 9 Sediment COC concentrations/cleanup levels protective of surface water ARARs for the protection of human health were calculated using equilibrium partitioning. Following the comparison of Lora Lake sediment results to the calculated cleanup levels, a numerical cap modeling evaluation was conducted as part of the RI/FS to further assess the potential for sediment contaminants of concern in Lora Lake to leach from sediments to surface water at concentrations greater than those permitted by surface water ARARs, in support of the evaluation and design of remedial alternatives. The numerical cap modeling evaluation resulted in the development and evaluation of remedial alternatives that immobilize COCs in-situ and isolates them from the environment (refer to RI/FS Appendix P and RI/FS Section 5.2.3.2).
- 10 A total PAHs SCO and CSL is available but not for cPAH TEQ. The total PAHs SCO and CSL are applied in lieu of a cPAH SCO and CSL.
- 11 Bioassay testing found Lora Lake sediment quality is currently protective of benthic aquatic organisms (refer to RI/FS Section 4.3.1).

Table 5.1
Cleanup Alternatives Considered for the Lora Lake Apartments Parcel

Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
\$4.7 million	\$6.1 million	\$7.1 million	\$7.7 million	\$9.2 million
No excavation	Excavation and off-site disposal of soil > 1,000 pg/g dioxins/furans	Excavation and off-site disposal of soil > 100 pg/g dioxins/furans	Excavation and off-site disposal of soil > 100 pg/g dioxins/furans. Consolidation of soil 11–100 pg/g dioxins/furans at DMCA	Excavation and off-site disposal of soil > 11 pg/g dioxins/furans
Capping all	Capping < 1,000 pg/g dioxins/furans	Capping < 100 pg/g dioxins/furans	Capping of consolidation area with soil < 100 pg/g dioxins/furans	Barrier to wildlife
Groundwater monitoring and management	Groundwater treatment by source removal; Groundwater monitoring			Groundwater treatment by source removal
Environmental Covenants to restrict to commercial land use and require cap maintenance				Environmental Covenants for barrier to wildlife
All alternatives include drain system improvements to prevent entry of contaminated groundwater or soil				

Abbreviations:

pg/g picograms per gram
RPZ Runway Protection Zone

Table 5.2
Cleanup Alternatives Considered for the Lora Lake Parcel

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
	\$0.4 million	\$3.3 million	\$4.3 million	\$7.3 million
LAKE	Engineering controls to control sediment and fish movement from Lora Lake to Miller Creek.	1.5-foot sand cap with 0.06% organic carbon content to contain contaminated sediment in place and provide a clean surface for benthic biota.	Fill the lake and restore to a flow-through depressional wetland system similar to the one that existed before peat mining. Contain contaminated sediment in place.	Dredging and off-site disposal of contaminated sediment.
SOIL	Control risk to workers with institutional controls.	Capping.	Excavation and off-site disposal. Excavation extent will consider resource mitigation area harm.	Excavation and off-site disposal.
	Environmental Covenants to maintain engineering controls and keep in current land use.	Environmental Covenants to maintain cap and keep in current land use.	Environmental covenants to maintain restoration and keep in current land use.	

Lora Lake Apartments Site

Draft Cleanup Action Plan

Figures



Puget Sound

Lora Lake Apartments Parcel

1982 Dredged Material Containment Area

Lora Lake Parcel



Area Enlarged

Notes:

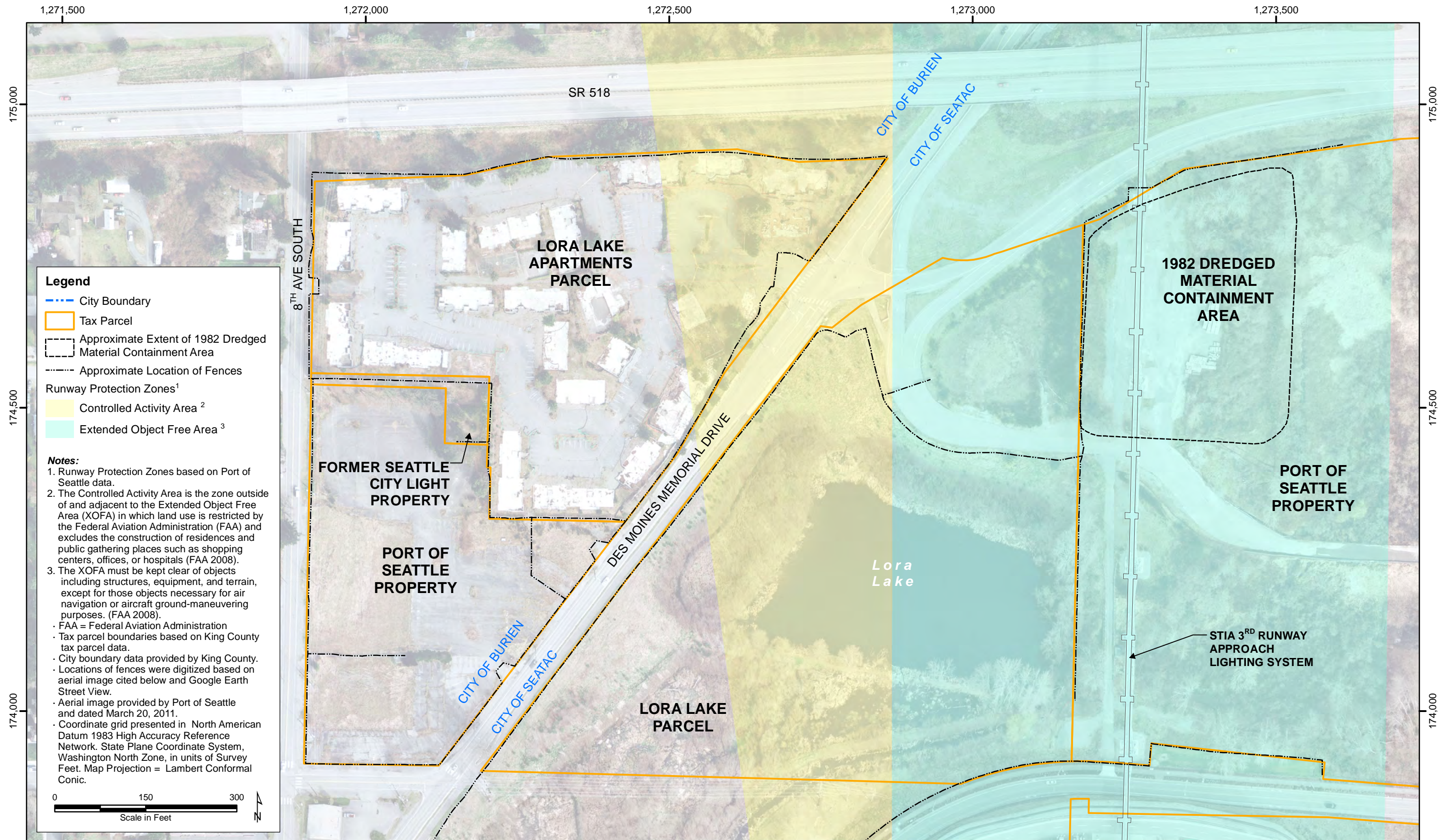
- Basemap provided by ESRI.
- Coordinate grid presented in North American Datum 1983 High Accuracy Reference Network. State Plane Coordinate System, Washington North Zone, in units of Survey Feet. Map Projection = Lambert Conformal Conic.

Scale in Miles



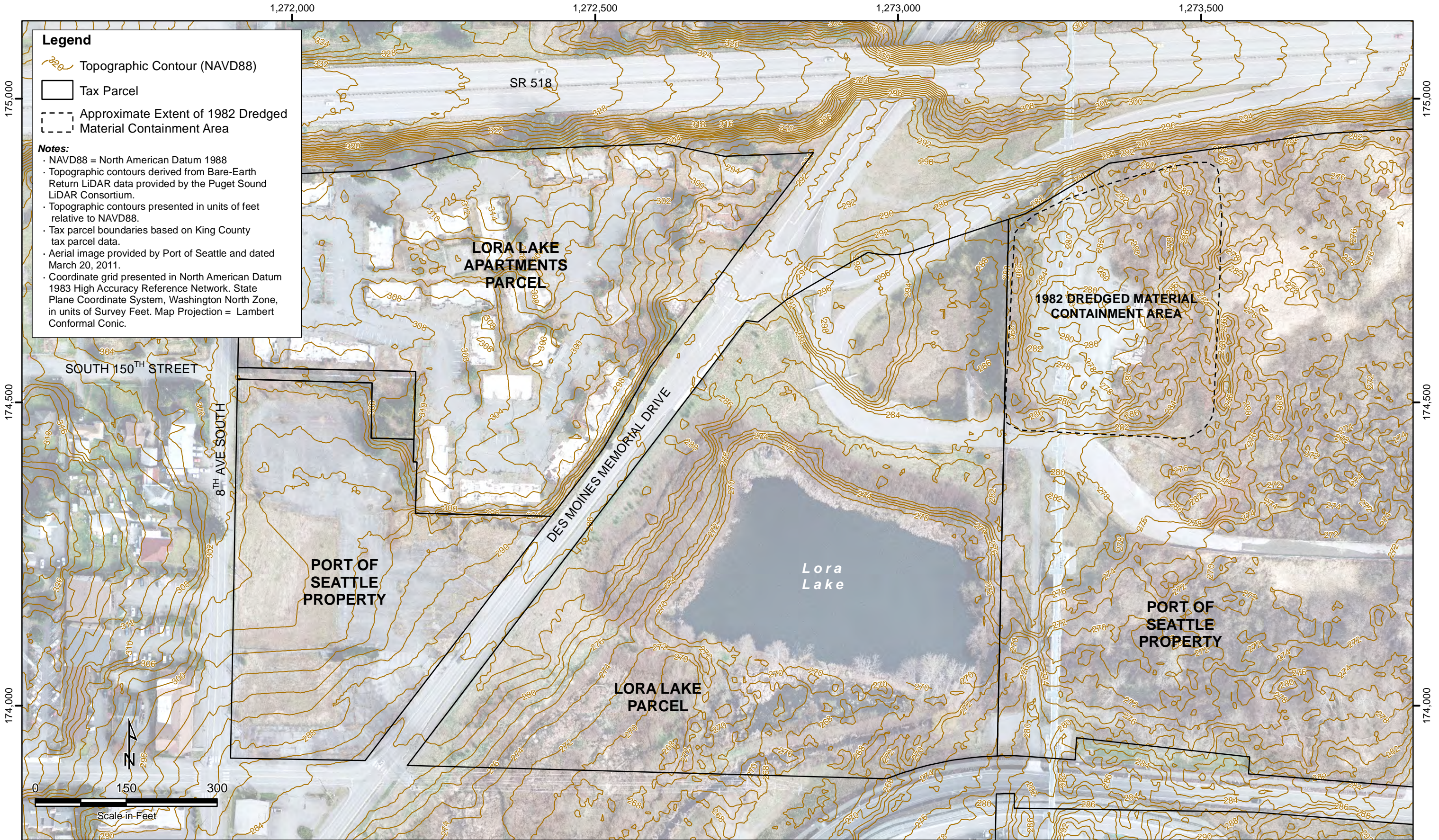
**Cleanup Action Plan
Lora Lake Apartments Site
Burien, Washington**

**Figure 1.1
Site Vicinity Map**



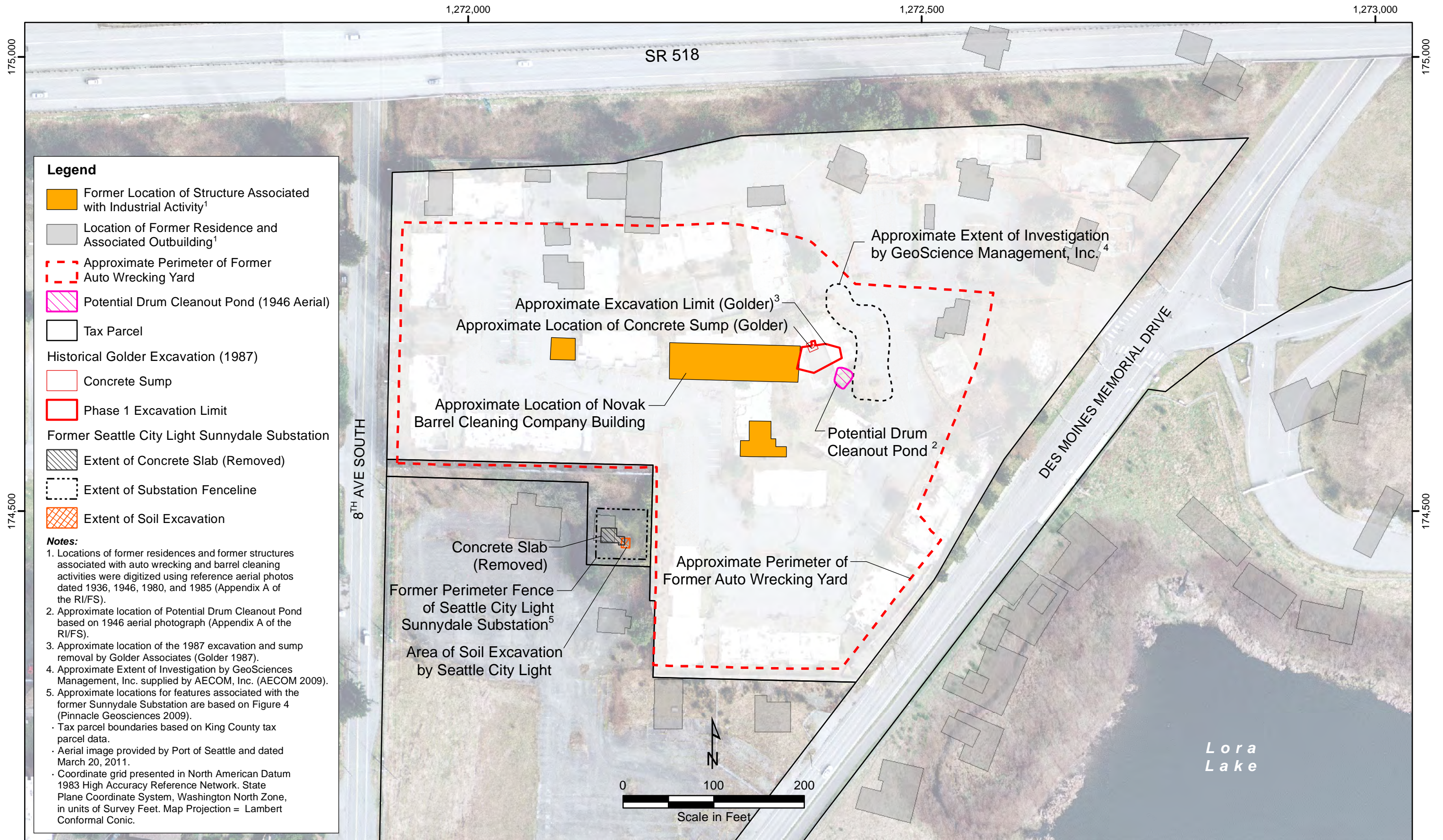
**Cleanup Action Plan
Lora Lake Apartments Site
Burien, Washington**

Figure 2.1
Site Area Map



**Cleanup Action Plan
Lora Lake Apartments Site
Burien, Washington**

**Figure 2.2
Site Topography**



Legend

- Former Location of Structure Associated with Industrial Activity¹
- Location of Former Residence and Associated Outbuilding¹
- Approximate Perimeter of Former Auto Wrecking Yard
- Potential Drum Cleanout Pond (1946 Aerial)
- Tax Parcel

Historical Golder Excavation (1987)

- Concrete Sump
- Phase 1 Excavation Limit

Former Seattle City Light Sunnydale Substation

- Extent of Concrete Slab (Removed)
- Extent of Substation Fenceline
- Extent of Soil Excavation

Notes:

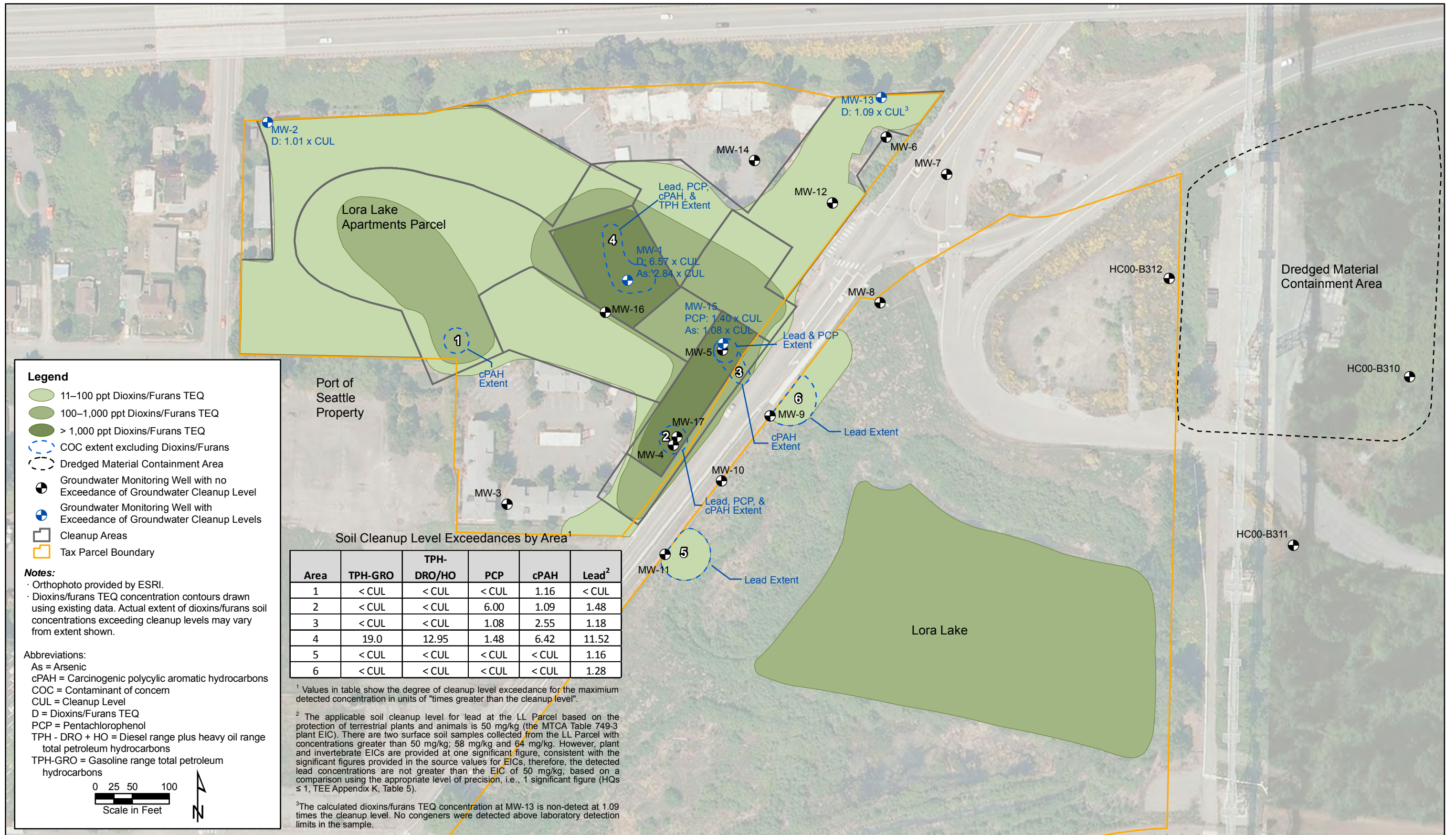
1. Locations of former residences and former structures associated with auto wrecking and barrel cleaning activities were digitized using reference aerial photos dated 1936, 1946, 1980, and 1985 (Appendix A of the RI/FS).
2. Approximate location of Potential Drum Cleanout Pond based on 1946 aerial photograph (Appendix A of the RI/FS).
3. Approximate location of the 1987 excavation and sump removal by Golder Associates (Golder 1987).
4. Approximate Extent of Investigation by GeoSciences Management, Inc. supplied by AECOM, Inc. (AECOM 2009).
5. Approximate locations for features associated with the former Sunnydale Substation are based on Figure 4 (Pinnacle Geosciences 2009).

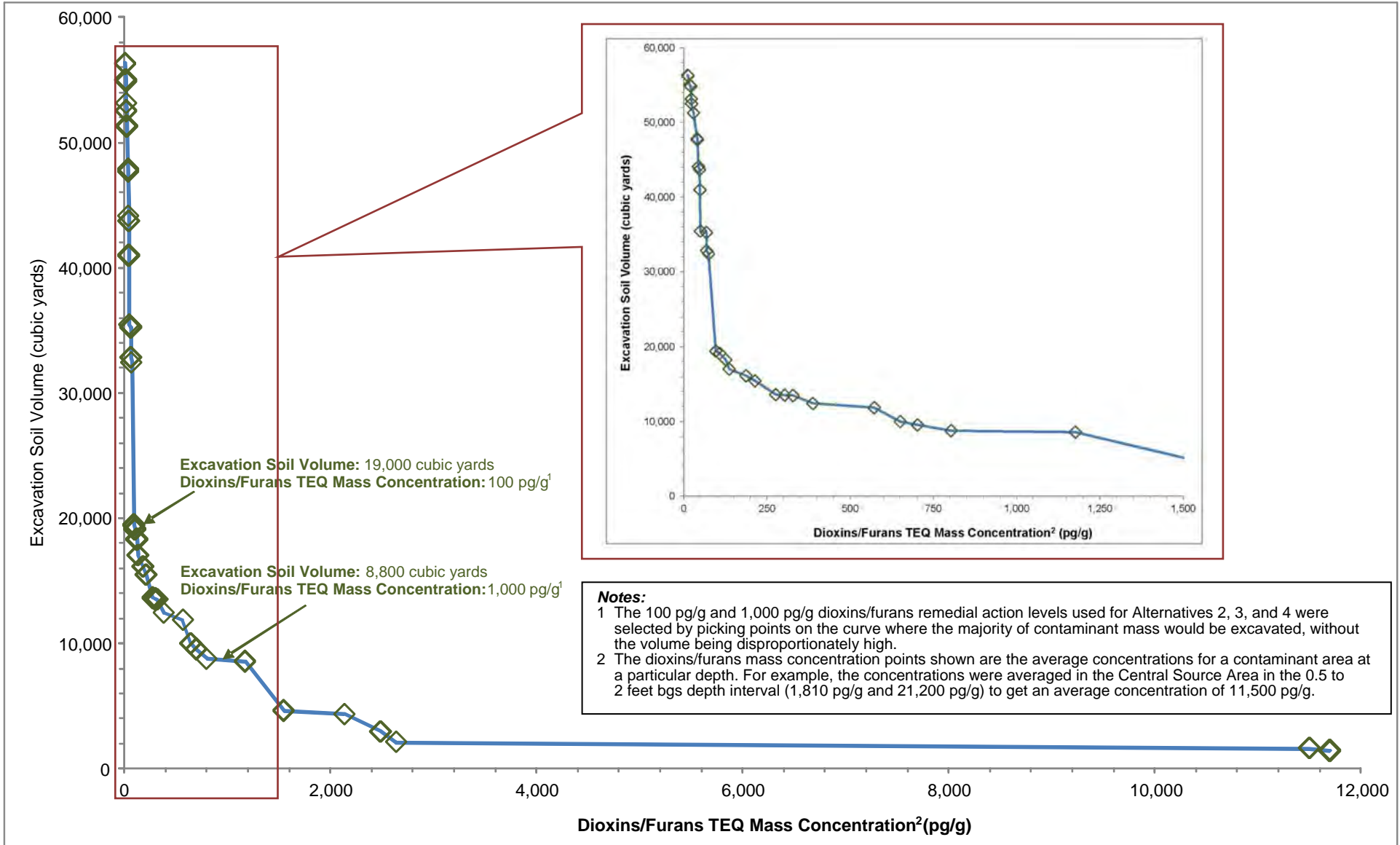
- Tax parcel boundaries based on King County tax parcel data.
- Aerial image provided by Port of Seattle and dated March 20, 2011.
- Coordinate grid presented in North American Datum 1983 High Accuracy Reference Network. State Plane Coordinate System, Washington North Zone, in units of Survey Feet. Map Projection = Lambert Conformal Conic.



**Cleanup Action Plan
Lora Lake Apartments Site
Burien, Washington**

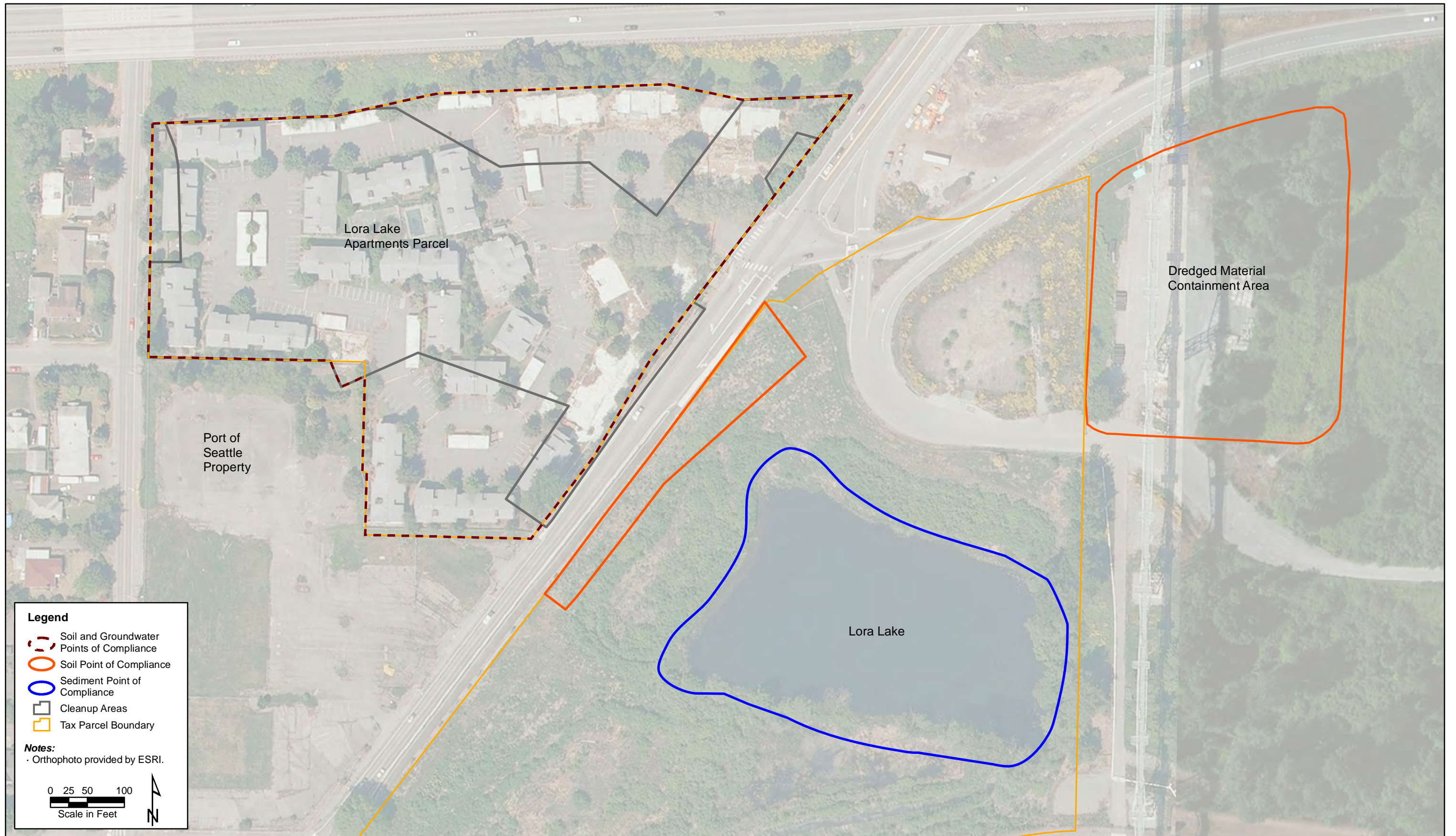
Figure 2.4
Historical Site Uses and Operations





**Cleanup Action Plan
Lora Lake Apartment Site
Burien, Washington**

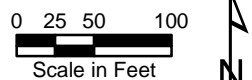
Figure 3.2
Excavation Volume by
Soil Concentration



Legend

- - - Soil and Groundwater Points of Compliance
- Soil Point of Compliance
- Sediment Point of Compliance
- Cleanup Areas
- Tax Parcel Boundary

Notes:
 · Orthophoto provided by ESRI.



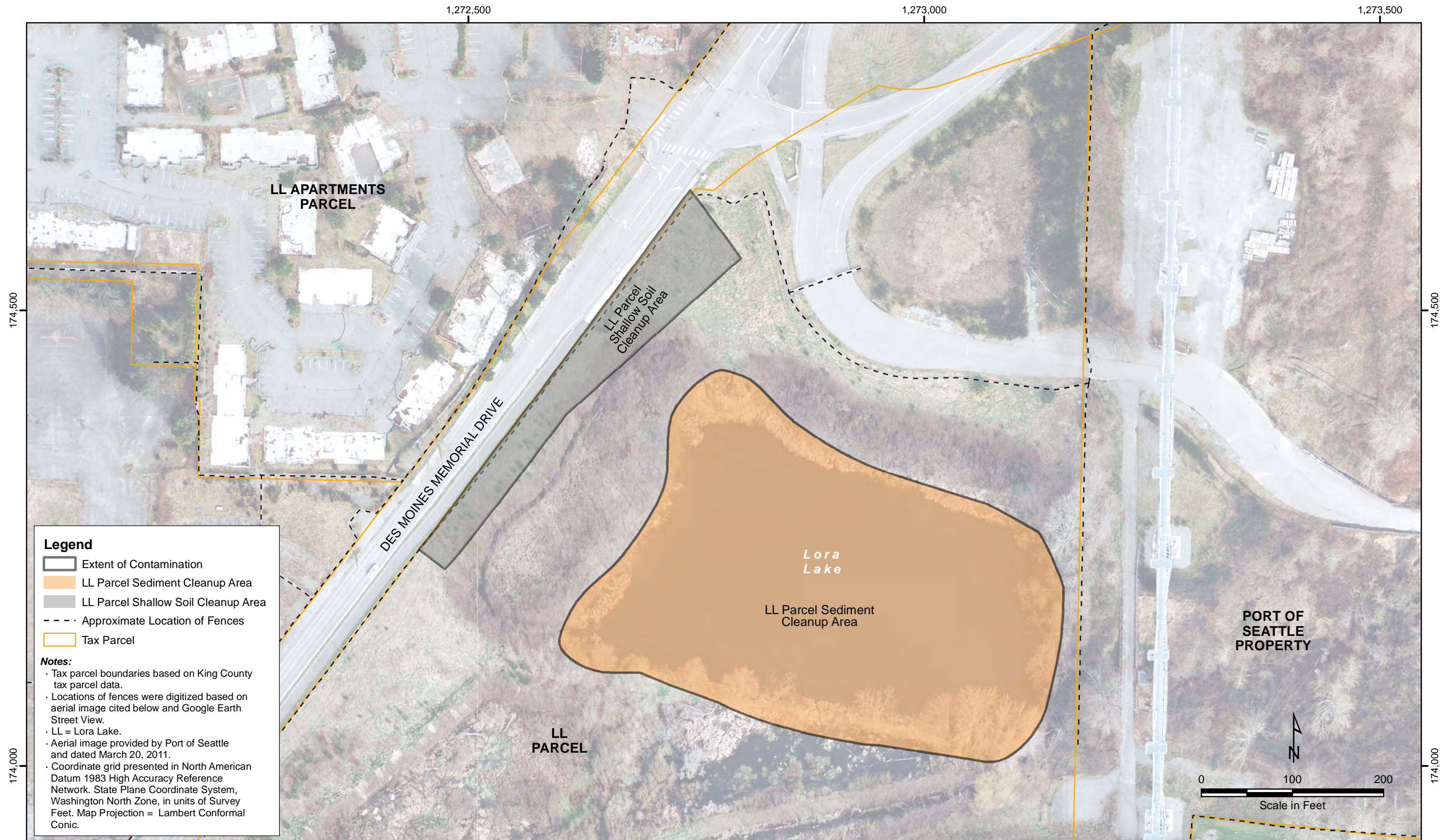
**Cleanup Action Plan
 Lora Lake Apartments Site
 Burien, Washington**

Figure 3.3
 Points of Compliance



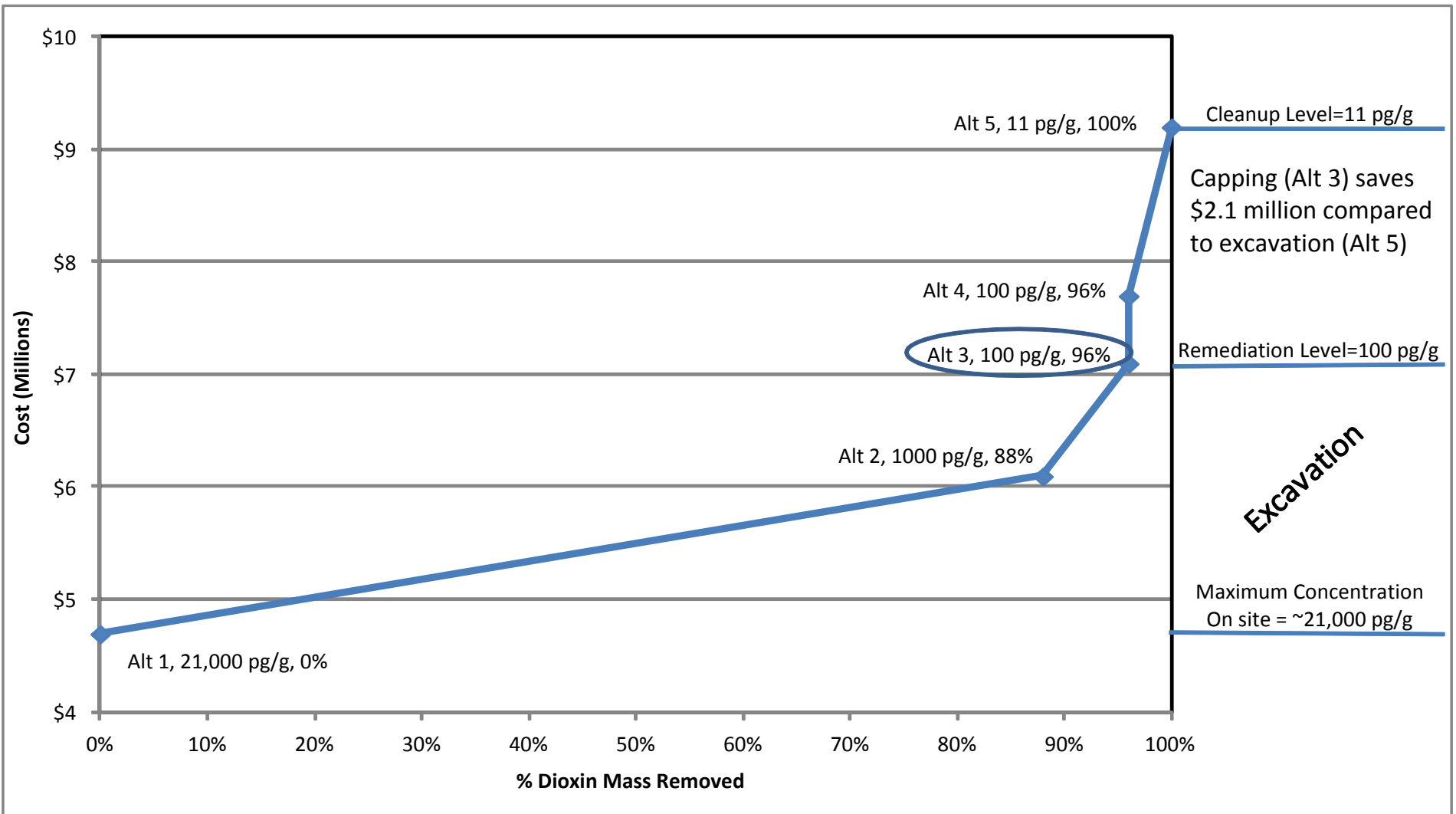
**Cleanup Action Plan
 Lora Lake Apartments Site
 Burien, Washington**

**Figure 4.1
 Lora Lake Apartments Parcel
 Cleanup Areas**



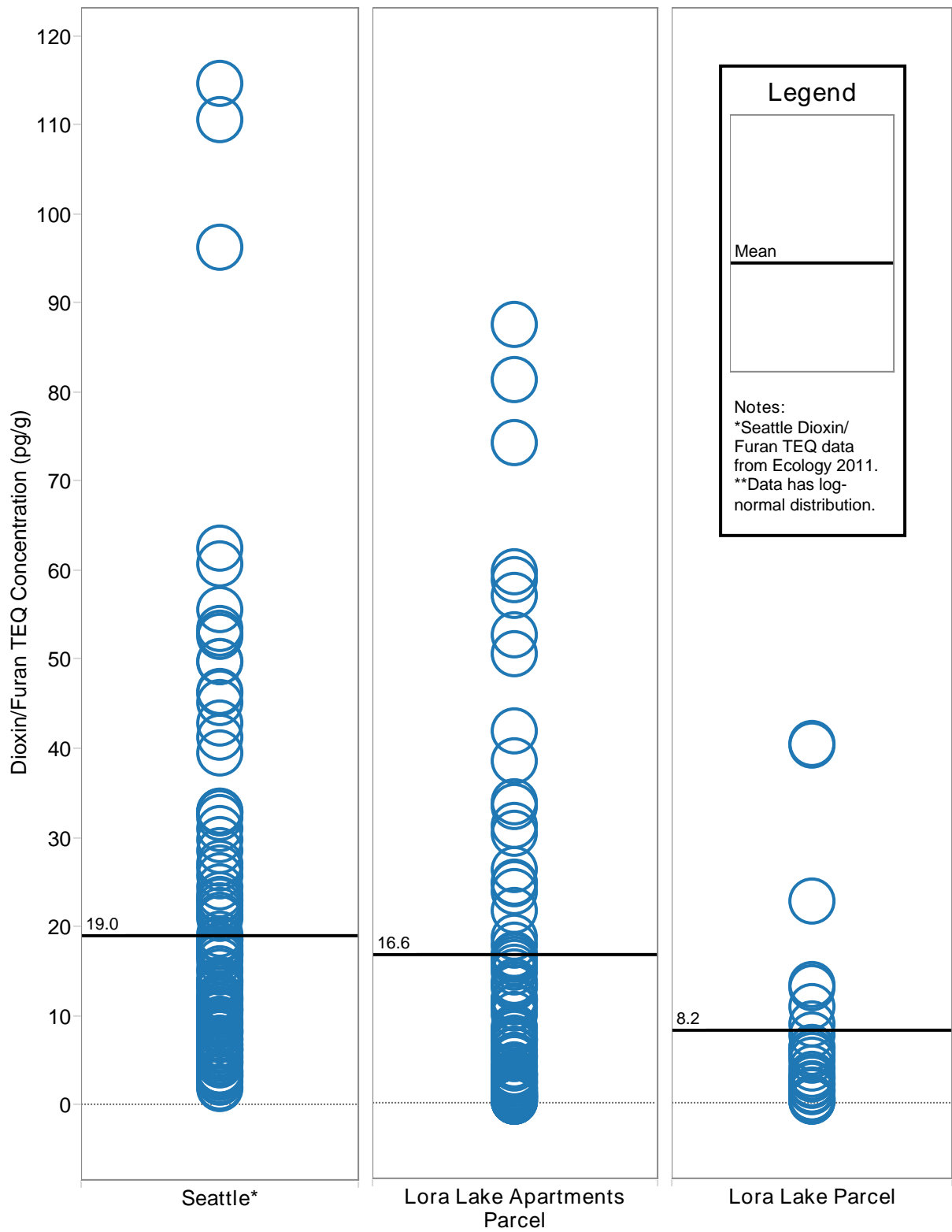
**Cleanup Action Plan
Lora Lake Apartments Site
Burien, Washington**

**Figure 4.2
Lora Lake Parcel
Cleanup Areas**



**Cleanup Action Plan
Lora Lake Apartments Site
Burien, Washington**

Figure 5.1
Lora Lake Apartments Parcel Alternative
Cost vs. Percent Dioxins/Furans Mass
Removed



Cleanup Action Plan
 Lora Lake Apartments Site
 Burien, Washington

Figure 5.2
 Lora Lake Apartments Parcel and
 Lora Lake Parcel Soil Dioxins/Furans
 TEQ Concentrations to Remain On-
 site Compared to Dioxins/Furans TEQ
 Concentrations in Seattle Urban Soil

Lora Lake Apartments Site

Draft Cleanup Action Plan

**Appendix A
SEPA Checklist**

**STATE ENVIRONMENTAL POLICY ACT (SEPA)
MITIGATED DETERMINATION OF NONSIGNIFICANCE (MDNS)
FOR THE LORA LAKES APARTMENTS SITE CLEANUP PLAN**

Description of proposal: Lora Lake Apartments Site Cleanup Plan

The preferred cleanup action of the Loral Lake Apartments Site (Proposal) is described in the SEPA Environmental Checklist. The proposed cleanup was prepared by the Department of Ecology (Ecology) acting in accordance with the Model Toxics Control Act, RCW 70.405D.010-.921 and the regulations promulgated thereunder at Chapter 173-340 WAC; and SEPA, Chapter 43.21C RCW.

The proposed cleanup action will involve excavation of more highly contaminated soil, capping of less highly contaminated soil, and rehabilitation of Lora Lake by converting it to a the wetland habitat that existed prior to peat mining that resulted in the lake. The cleanup will be conducted under a Consent Decree between the Washington State Department of Ecology and the Port of Seattle (Port).

Proponent: Port of Seattle.

Location of proposal, including street address, if any: 15001 Des Moines Memorial Drive, Burien, Washington. The proposed cleanup action is located immediately northwest of the Third Runway at the Seattle-Tacoma International Airport.

The Proposal consists of three parcels: (1) Lora Lake Apartments Parcel (LL Apartments Parcel), (2) Lora Lake Parcel (LL Parcel), and (3) 1982 Dredged Material Containment Area (DMCA). The Proposal straddles the boundary between the Cities of Burien and SeaTac, Washington.

The LL Apartments Parcel occupies approximately 8.3 acres of currently vacant land in the City of Burien that is bounded to the north by State Route 518 (SR 518), to the east and southeast by Des Moines Memorial Drive, to the west by 8th Avenue South, and to the south by an open area. The LL Parcel is located to the southeast of the LL Apartments Parcel, on the east side of Des Moines Memorial Drive. The LL Parcel consists of approximately 7.1 acres of land, including the approximately 3-acre Lora Lake and a Port-constructed wetland aquatic habitat mitigation area. The LL Parcel is bounded to the north by the SR 518 highway interchange, to the east and south by Port-owned habitat mitigation area and the northern boundary of the airport operations area, and to the west and northwest by Des Moines Memorial Drive. The DMCA is located adjacent to the LL Parcel, to the northeast, on Port property. The DMCA is located within the secured airport area within security fencing. The DMCA has an area of approximately 2.75 acres, based on review of aerial photographs. The eastern half of the DMCA is an approximately 1.5-acre vegetated area covered by a mixture of grasses and invasive and pioneering plant species. The remaining approximately 1.25 acres of land is the location of the Approach Lighting System for SeaTac International Airport.

Description of mitigation: Mitigation for the proposal is described in the attached Environmental Checklist. In general, mitigation will consist of working with the Port of Seattle, contractors, and

sub-contractors to ensure environmental regulations are followed and best management practices and principles applied. Mitigation will also consist of avoiding disturbance of plants in the shallow soil areas of the LL Parcel as described in Section B.4.b. in the attached Environmental Checklist.

Lead agency: Washington State Department of Ecology.

The lead agency has determined that this proposal, with mitigation described in the attached Environmental Checklist, will not have a probable significant adverse impact on the environment. An environmental impact statement (EIS) is not required under RCW 43.21C.030 (2)(c). This decision was made after review of a completed environmental checklist and other information on file with the lead agency. This information is available to the public on request.

- There is no comment period for this DNS.
- This DNS is issued after using the optional DNS process in WAC 197-11-355. There is no further comment period on the DNS.
- This MDNS is issued under WAC 197-11-340 and WAC 197-11-350; the lead agency will not act on this proposal for 14 days from the date below. Comments must be submitted by

Responsible official: Robert W. Warren

Position/title: Section Manager, Toxics Cleanup Program, Northwest Regional Office

Address: Washington State Dept. of Ecology, 3190 160th Avenue SE, Bellevue, WA 98008

Phone: 425-649-7054

Date: 8-28-13

Signature:



(OPTIONAL)

You may appeal this determination to (name):

_____ at (location) _____ no later than

(date) _____

by (method) _____

You should be prepared to make specific factual objections.

Contact _____ to read or ask about the procedures for SEPA appeals.

There is no agency appeal.

WAC 197-11-960

Environmental Checklist

Purpose of checklist:

The State Environmental Policy Act (SEPA), chapter 43.21C RCW, requires all governmental agencies to consider the environmental impacts of a proposal before making decisions. An environmental impact statement (EIS) must be prepared for all proposals with probable significant adverse impacts on the quality of the environment. The purpose of this checklist is to provide information to help you and the agency identify impacts from your proposal (and to reduce or avoid impacts from the proposal, if it can be done) and to help the agency decide whether an EIS is required.

Instructions for applicants:

This environmental checklist asks you to describe some basic information about your proposal. Governmental agencies use this checklist to determine whether the environmental impacts of your proposal are significant, requiring preparation of an EIS. Answer the questions briefly, with the most precise information known, or give the best description you can.

You must answer each question accurately and carefully, to the best of your knowledge. In most cases, you should be able to answer the questions from your own observations or project plans without the need to hire experts. If you really do not know the answer, or if a question does not apply to your proposal, write "do not know" or "does not apply." Complete answers to the questions now may avoid unnecessary delays later.

Some questions ask about governmental regulations, such as zoning, shoreline, and landmark designations. Answer these questions if you can. If you have problems, the governmental agencies can assist you.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Use of checklist for nonproject proposals:

Complete this checklist for nonproject proposals, even though questions may be answered "does not apply." IN ADDITION, complete the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D).

For nonproject actions, the references in the checklist to the words "project," "applicant," and "property or site" should be read as "proposal," "proposer," and "affected geographic area," respectively.

Revised Text	Agency Evaluation
A. Background	
1. Name of proposed project, if applicable: Lora Lake Apartments Site Remedial Action	
2. Name of applicant: Port of Seattle	
3. Address and phone number of applicant and contact person: Port of Seattle Aviation/Environmental PO Box 68727 Seattle, WA 98168 Phone: (206) 787-4918 Contact: Don Robbins SEPA Checklist prepared by: Floyd Snider 601 Union Street, Suite 600 Seattle, WA Contact: Megan McCullough, Project Engineer Phone: (206) 292-2078	
4. Date checklist prepared: August 2013	
5. Agency requesting checklist: Washington State Department of Ecology	
6. Proposed timing or schedule (including phasing, if applicable): The site cleanup is expected to occur in a phased approach, with remedial actions conducted at the Lora Lake Apartments Site (LL Apartments Parcel) and Dredged Material Containment Area (DMCA) in 2016 and remedial actions conducted at the Lora Lake Parcel (LL Parcel) in 2016 or 2017.	
7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain. Following completion of remedial actions at the LL Apartments Parcel, the property is anticipated to be redeveloped into a commercial/light-industrial facility as part of the City of Burien's Northeast Redevelopment Area (NERA). Future site development at the LL Apartments Parcel is not associated with this cleanup action, and will be conducted under a separate process by the Port and the City of Burien. Restrictive covenants and local zoning designations prohibit any future development on the LL Parcel, which will be maintained in perpetuity as a protected wetland aquatic habitat area. FAA restrictions prohibit any future development on the DMCA, which will be maintained as a FAA-defined RPZ-Extended Object Free Area as long as Seattle-Tacoma International Airport (STIA) is an operating airport. The Ports planned future use of the DMCA is for airport-compatible uses such as equipment storage and temporary construction laydown that comply with the FAA RPZ restrictions.	

Revised Text	Agency Evaluation
<p>8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.</p> <p>The following documents have been prepared in support of this project, and are available on the Department of Ecology’s project document repository (https://fortress.wa.gov/ecy/gsp/CleanupSiteDocuments.aspx?csid=2008):</p> <ul style="list-style-type: none"> • Lora Lake Apartments Agreed Order No. DE6703 • Summary Report – 2008 Investigations and Data Gap Evaluation, Lora Lakes Apartments, AECOM, September 2009 • Stormwater Interim Action Work Plan, F S and Taylor Associates Inc., November 17, 2009 • Stormwater Interim Action Data Report, F S, August 2011 • Lora Lake Apartments Remedial Investigation /Feasibility Study Work Plan, F S, February 11, 2011 • Lora Lake Parcel Remedial Investigation / Feasibility Study Work Plan, F S, February 11, 2011 • Dredged Material Containment Area Characterization – Lora Lake Parcel Memorandum, F S, April 14, 2011 • Public Review Draft Remedial Investigation /Feasibility Study, F S, January 11, 2013. • Lora Lake Parcel Soil Sampling Results Memorandum, F S, May 16, 2013 • Draft Cleanup Action Plan, F S, June 2013. 	
<p>9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.</p> <p>No.</p>	

Revised Text	Agency Evaluation
<p>10. List any government approvals or permits that will be needed for your proposal, if known.</p> <p>Local Approvals/Permits:</p> <ul style="list-style-type: none"> • City of Burien Clearing and Grading Permit (Project is exempt from the procedural requirements, but must comply with the substantive requirements of this law. WAC 173-340-710) • City of SeaTac Clearing and Grading Permit (Project is exempt from the procedural requirements, but must comply with the substantive requirements of this law. WAC 173-340-710) • City of SeaTac Critical Area Review (Project is exempt from the procedural requirements, but must comply with the substantive requirements of this law. WAC 173-340-710) • King County Industrial Discharge Authorization <p>Federal Approvals/Permits:</p> <ul style="list-style-type: none"> • USACE Clean Water Act Section 404 Nationwide permit No. 38 (Required for the LL Parcel remedial action) <p>State Approvals/Permits:</p> <ul style="list-style-type: none"> • Department of Ecology Approval of EDR and Work Plans • Department of Ecology SEPA Checklist • Department of Ecology NPDES Construction General Permit • Washington State Department of Fish and Wildlife (WDFW) Hydraulic Project Approval (Required for the LL Parcel remedial action) 	
<p>11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)</p> <p>The cleanup action selected by the Washington State Department of Ecology (Ecology) for the LL Apartments Site will occur on three parcels: LL Apartments Parcel, the DMCA, and the LL Parcel.</p> <p>The LL Apartments Parcel occupies approximately 8.3 acres of currently vacant land. The LL Apartments Parcel is covered by asphalt parking areas, concrete building foundations, and landscaping areas remaining from the previous LL Apartments complex that was demolished in 2009. The remedy includes excavation and off-site landfill disposal of 19,000 cubic yards of soil with dioxin/furan TEQ concentrations greater than 100 pg/g. Up to approximately 30,000 cubic yards of additional soil will either be capped or will be excavated and consolidated within the Site to minimize the need for capping and institutional controls on the LL Apartments Parcel. The portion of the LL Apartments Parcel not within the RPZ may be sold for commercial or light industrial redevelopment after construction. It is anticipated that the 30,000 cubic yards of material will be contained within the LL Parcel or consolidated at the DMCA. Groundwater encountered during excavation, and removed for dewatering purposes will be collected and treated as needed prior to disposal either at an off-site facility, or to the sanitary sewer.</p> <p>The existing stormwater conveyance system will be abandoned and relocated in coordination with remedial actions at the LL Apartments Parcel. The storm drain</p>	

Revised Text	Agency Evaluation
<p>main line will be relocated to the north side of the LL Apartments Parcel, and constructed in a manner that minimizes the potential for contaminated groundwater or soil to enter the stormwater conveyance system through cracks and joints.</p> <p>The LL Parcel is located to the southeast of the LL Apartments Parcel, across Des Moines Memorial Drive. The LL Parcel consists of approximately 7.1 acres of land, including the approximately 3-acre Lora Lake and a STIA constructed wetland aquatic habitat mitigation area. No shallow soil excavation will be conducted on the LL Parcel. Lora Lake sediments will be isolated through open water filling to rehabilitate the wetland. Filling of Lora Lake will consist of placing sand in the lake to an elevation that converts all of the open water area to a depression wetland system, rehabilitating the hydrogeomorphic conditions that existed prior to the historical excavation and peat mining operations. The restoration design will preserve or improve the flow-through characteristics and flood desynchronization functions of the current Lora Lake system. This action will require filling the lake over the entire lake footprint to depths between approximately 2 to 13 feet, based on existing bathymetry. Following filling, the former lake area will be graded and planted with wetland terrestrial species consistent with the Natural Resources Mitigation Plan for the area.</p> <p>The DMCA is located adjacent to the LL Parcel, to the northeast, on Port property. The DMCA is located within the secured airport security fencing and is monitored and access-controlled by Port security as STIA property. The DMCA is approximately 2.75 acres, based on review of aerial photographs, and the known site historical operations. The eastern half of the DMCA is an approximately 1.5-acre vegetated area covered by a mixture of grasses and invasive and pioneering plant species. The remaining approximately 1.25 acres of land is the location of the Approach Lighting System for the STIA 3rd Runway, which was constructed in 2006. This area has been regraded and covered with gravel and is maintained by the Port to be free of vegetation. Future land uses at the DMCA will be airport-compatible uses in compliance with the FAA RPZs, such as temporary construction laydown, or equipment storage. Land use improvements to allow for this future use will consist of surface improvements (placement of a compacted gravel or engineered surface).</p>	
<p>12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.</p> <p>The LL Apartments Site is located at 15001 Des Moines Memorial Drive in Burien, Washington, near the northwest corner of STIA. The Site straddles the boundary between the Cities of Burien and SeaTac, Washington. The LL Parcel is located immediately across Des Moines Memorial Drive to the east, and the DMCA is located to the northeast of the LL Parcel, both within the City of SeaTac. The Site Township/Range/Section is 23N/04E/20SW The three site parcels are shown in Figure 2.1 of the Cleanup Action Plan.</p>	

B. Environmental Elements	
1. Earth	
<p>a. General description of the site (circle one): Flat, rolling, hilly, steep slopes, mountainous, other...</p> <p>The LL Apartments Parcel ground surface gradually slopes to the southeast across the main portion of the property with steeper slopes located adjacent to Des Moines Memorial Drive and the Highway 518 embankment. To the southeast of the existing property boundary, the topography continues to gradually slope to the east towards Lora Lake.</p> <p>The DMCA is relatively flat, with steeper slopes along the western boundary. Elevation across the DMCA varies by approximately 6-feet across the area.</p> <p>Topography at the LL Parcel slopes from the western and northern property boundaries toward Lora Lake. Elevation drops approximately 18-feet between Des Moines Memorial Drive and the shore of Lora Lake on the west, and approximately 12-feet from the north side of the parcel to the north shore of the lake.</p>	
<p>b. What is the steepest slope on the site (approximate percent slope)?</p> <p>The steepest slopes on the Site are found along the eastern boundary of the LL Apartments Parcel, where there is an approximate 1.5:1 slope from the property down to Des Moines Memorial Drive, and on the north side of the Lora Lake Parcel adjacent to the Lake, where there is an approximate 1.5:1 slope.</p>	
<p>c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any prime farmland.</p> <p>Subsurface geology at the LL Apartments Parcel consists of a discontinuous fill layer that overlays glacial recessional outwash deposits. At the bottom of the recessional outwash deposits a silt unit about 10 feet thick was encountered in the eastern portion of the LL Apartments Parcel.</p> <p>The fill unit in the vicinity of the LL Apartments Parcel is observed to have a variable thickness of up to 15 feet, but is absent in the northern portion of the property. The fill is composed of medium dense to dense, fine to coarse grained sand with rounded gravel. The underlying native glacial recessional outwash deposits are variable in thickness, but can be as much as 45 feet thick in the vicinity of the LL Apartments Parcel. The recessional outwash deposits are characterized as dense to very dense, fine to coarse grained sand, with gravels up to 2 inches in diameter and occasional silt lenses. There is a stiff to very stiff clayey silt unit found near the bottom of the recessional outwash deposits (about 10 feet thick), which is likely indicative of a transition into the glacial till deposits. The till deposits typically consist of very dense silty, gravelly sand. The silt unit and the underlying till deposits together provide a confining unit (aquitar) beneath the eastern portion of the LL Apartments Parcel.</p> <p>To the southeast of the LL Apartments Parcel, the LL Parcel is also underlain by recessional outwash deposits, which are exposed at the surface. Beneath the recessional outwash deposits, it is inferred, based on Site cross sections, that the till deposits are also present and create a perched layer on which Lora Lake and the surrounding wetlands are</p>	

<p>formed. Lora Lake was formed by peat mining activities, so the presence of peat in the subsurface is also expected, although only one sediment core advanced in Lora Lake encountered peat material. The extent of subsurface peat at the LL Parcel is not known.</p>	
<p>d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.</p> <p>There are no surface indications or history of unstable soils within the project area.</p>	
<p>e. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.</p> <p>Approximately 19,000 cubic yards of soil will be excavated and disposed of off-site at an appropriate licensed disposal facility from the LL Apartments Parcel. An additional approximate 30,000 cubic yards of soil from the LL Apartments Parcel will either be capped on the LL Apartments Parcel or excavated and consolidated at the DMCA within the Site. Consolidation of soil at the DMCA would include excavation of the material from the LL Apartments Parcel, transport of the material across the street to the DMCA, where the material will be placed, graded and compacted, and surfaced with a clean soil cover, compacted gravel, or asphalt. This consolidation may be conducted to reduce the footprint of the Site where contaminants in soil exceed the Site cleanup level.</p> <p>Open water filling of Lora Lake is described below in Section 3.</p>	
<p>f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.</p> <p>Erosion control measures will be installed prior to start of any ground-disturbing work at the Site. Erosion and sediment controls will be utilized throughout the work to mitigate potential erosion during excavation and grading.</p>	
<p>g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?</p> <p>This project involves remedial excavation and backfilling. Depending on the surface completion, impervious surfaces will cover the same percentage, or a smaller percentage of the site than existing conditions.</p>	
<p>h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:</p> <p>Erosion and sediment controls, such as silt fences, straw bales or waddles, etc, will be used during construction to prevent erosion or transport of soil from the property. Appropriate construction BMPs will be in place for erosion control in all areas subject to earth disturbance (including clearing, grading, stockpiling, and materials or equipment storage). A Storm Water Pollution Prevention Plan will be prepared as part of the Engineering Design Report for the project.</p>	

2. Air	
<p>a. What types of emissions to the air would result from the proposal (i.e., dust, automobile, odors, industrial wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities if known.</p> <p>Upland excavation and operation of construction equipment may result in dust and exhaust emissions from equipment within the project vicinity during construction only. Dust control measures such as wetting exposed soil will be implemented during construction, as necessary, to prevent visible dust.</p>	
<p>b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.</p> <p>No.</p>	
<p>c. Proposed measures to reduce or control emissions or other impacts to air, if any:</p> <p>During construction, dust suppression BMPs will be implemented, including: watering of exposed soil surfaces, cleaning of construction vehicles to prevent track-out, and street cleaning, as may be necessary.</p>	
Revised Text	Agency Evaluation
3. Water	
a. Surface:	
<p>1. Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.</p> <p>Yes, Lora Lake is located in the Miller Creek watershed and receives stormwater runoff from the LL Apartments Parcel, City of Burien residential and commercial drainage areas upgradient of the LL Apartments Parcel, and surrounding roadways downgradient of the LL Apartments Parcel (e.g., Des Moines Memorial Drive, SR 518 interchange, City of SeaTac) through a single outfall located near the northwestern edge of the lake and via non-point source overland flow from the LL Parcel. Water was also observed entering Lora Lake from the nearby wetlands to the south, indicating surface water connectivity between the wetlands and lake. Water from a drainage channel flowing into Lora Lake in the southwest corner of the lake has also been observed. An overflow discharge culvert and overflow berm is present at the southeast end of the lake. Seasonally, when Lora Lake surface water levels are elevated, lake water discharges to Miller Creek through the discharge culvert and by overtopping the overflow berm. When Miller Creek surface water elevations are elevated (i.e., during periods of heavy rainfall), Miller Creek surface water discharges to Lora Lake via the same culvert and overflow berm.</p>	

<p>2. Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.</p> <p>Open water filling of Lora Lake will occur on the LL Parcel to rehabilitate the wetland and isolate the contaminated sediments beneath clean backfill. Following filling of the lake, the area will be graded and planted to establish a scrub/shrub wetland consistent with the surrounding aquatic wetland mitigation area. Figure 4.2 of the Cleanup Action Plan shows the area of Lora Lake to be filled, and the surrounding wetland mitigation area.</p>	
<p>3. Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.</p> <p>Filling of Lora Lake would consist of the placement of approximately 39,000 cubic yards of fill material over the open water area of Lora Lake (approximately 120,000 square feet). Fill depth will range from approximately 2 feet to 13 feet based on existing bathymetry. This will convert all open water areas of the property to emergent wetland. The source of the fill is not known at this time, but the source will be provided to Ecology for approval once determined.</p>	
<p>4. Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.</p> <p>Stormwater that enters Lora Lake in the northwest corner of the lake, as described above in #1 above, may need to be diverted during filling activities. Stormwater management will be included in the remedial design.</p>	
<p>5. Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.</p> <p>The Lora Lake open water area to be filled and rehabilitated as wetland, and portions of the DMCA are located within the Miller Creek 100-year floodplain, as shown on Figure A.1 (Miller Creek 100-Year Floodplain) of the STIA Natural Resource Mitigation Plan (Parametrix 2001) (attached). The Miller Creek 100-year floodplain is located in the stream reach between South 156th Way and South 160th Street, and is relatively confined to the channel ravine and is approximately 60 to 100 ft wide. In the stream reach south of South 160th Street, the floodplain is approximately 80 to 150 ft wide in the upper reaches. However, farther downstream, it widens to approximately 200 to 250 ft. Urbanization and agriculture have significantly altered the floodplains associated with Miller Creek. The 100-year floodplain in the vicinity of the Vacca Farm Site is several acres in size. The wetland area and poor drainage that existed prior to agricultural drainage activities are evident from the 100-year floodplain estimated by the Federal Emergency Management Agency (FEMA).</p> <p>The approximate 100-year flood elevations, vary from 266 ft at the Miller Creek detention facility outlet to approximately 265 ft at the downstream end of the Vacca Farm site. A floodway has also been delineated and mapped in a portion of the floodplain (Figure A.1).</p>	

<p>6. Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.</p> <p>Temporary silt control and BMPs will be used during construction to ensure that fill operations do not adversely impact downstream water quality. For locations with soft, unconsolidated sediments, lake filling would likely be completed in two phases. The first layers of sand would be placed in a manner to minimize disruption and gradually strengthen the underlying sediments. The remainder of the fill would then be placed with a more efficient and more cost-effective methodology. Following the placement of fill material, topsoil would be placed, and fine grading conducted on the converted surface for wetland creation and vegetation plantings.</p>	
<p>b. Ground:</p>	
<p>1. Will ground water be withdrawn, or will water be discharged to ground water? Give general description, purpose, and approximate quantities if known.</p> <p>Groundwater remediation will occur through soil source removal. Because soil remedial actions include excavation and consolidation of deep soil contamination, soil located below the water table will be removed. Dewatering will be required to manage groundwater in the excavation during soil excavation. Dewatered groundwater during subsurface excavation (an approximate less than 1 month period), will be contained within Baker tanks, treated as needed to remove solids and chemical contaminants to comply with discharge requirements, and likely discharged to the sanitary sewer under a permit approval.</p>	
<p>2. Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.</p> <p>None.</p>	
<p>c. Water runoff (including stormwater):</p>	
<p>1. Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.</p> <p>Stormwater runoff is currently collected onsite by an existing catch basin conveyance system connected to the storm water mainline crossing the Site. During construction, stormwater runoff will be collected in ponds, and other temporary collection facilities, and either treated onsite and discharged to the sanitary sewer, or hauled offsite for disposal.</p>	
<p>2. Could waste materials enter ground or surface waters? If so, generally describe.</p> <p>The property is a clean up site with soils containing concentrations of constituents of concern greater than Washington State Department of Ecology's MTCA cleanup levels. These constituents have impacted soils, sediments, and ground water at the Site. This project is not expected to result in any further impacts to ground or surface waters, and will improve the environmental quality of the property and parcels.</p>	

<p>d. Proposed measures to reduce or control surface, ground, and runoff water impacts, if any:</p> <p>Construction stormwater BMPs, such as silt fencing, geotextiles, stormwater collection, straw bales or wattles, etc. will be used during construction, and the engineered surface constructed at the DMCA will allow for infiltration.</p>	
<p>Revised Text</p>	<p>Agency Evaluation</p>
<p>4. Plants</p>	
<p>a. Check or circle types of vegetation found on the site:</p> <p><input checked="" type="checkbox"/> deciduous tree: alder, maple, aspen, other</p> <p><input type="checkbox"/> evergreen tree: fir, cedar, pine, other</p> <p><input checked="" type="checkbox"/> shrubs</p> <p><input checked="" type="checkbox"/> grass</p> <p><input type="checkbox"/> pasture</p> <p><input type="checkbox"/> crop or grain</p> <p><input checked="" type="checkbox"/> wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other</p> <p><input type="checkbox"/> water plants: water lily, eelgrass, milfoil, other</p> <p><input type="checkbox"/> other types of vegetation</p>	

<p>b. What kind and amount of vegetation will be removed or altered?</p> <p>The majority of the LL Apartments Parcel is covered with paved parking areas and apartment building foundations. The parcel is vacant and is surrounded by a fence. There is no significant vegetation located on the LL Apartments Parcel. The only vegetated areas currently present at this parcel exist along the parcel margins, are located on median strips and dividers in the parking lots, or are in areas where plants have colonized breaks in the pavement. The majority of vegetation within these limited areas will be removed by construction.</p> <p>The LL Parcel is currently a constructed wetland aquatic habitat mitigation area, part of the Miller Creek/Lora Lake/Vacca Farm Wetland and Floodplain Mitigation Area. The LL Parcel is densely vegetated and contains a mixture of grasses, forbs, emergent wetland plants, and a canopy of mixed deciduous trees. The Miller Creek/Lora Lake/Vacca Farm Wetland and Floodplain Mitigation Area was enhanced by the Port to support aquatic, amphibian, and wetland habitat as part of the mitigation requirements associated with development of the STIA 3rd Runway (Port of Seattle 2010). The operation and maintenance requirements for the Miller Creek/Lora Lake/Vacca Farm Wetland and Floodplain Mitigation Area are described in the NRMP (Parametrix 2001). Capping or soil removal in the aquatic habitat mitigation area would destroy established plant communities and would cause more ecological harm than the threat posed by the existing low-level site contamination. Monitoring and institutional controls will be put in place. If monitoring shows a risk to human health or the environment, additional actions may be required. It is estimated that approximately 10,000 square feet of vegetation will be removed for access to the Lake during lake filling activities, and will be replanted at the completion of construction activities.</p> <p>The eastern half of the DMCA is currently a vegetated area covered by a mixture of grasses and invasive and pioneering plant species, while the western half of the DMCA lies underneath the Approach Lighting System for the STIA 3rd Runway, is covered in gravel, and is maintained by the Port to be free of vegetation. The DMCA is located outside of the Miller Creek/Lora Lake/Vacca Farm Wetland and Floodplain Mitigation Area, but remains subject to the WHMP as it is located within the FAA RPZ-Extended Object Free Area. The full DMCA area will be cleared of vegetation as part of this action.</p>	
<p>c. List threatened or endangered species known to be on or near the site.</p> <p>USFWS identified the threatened bald eagle as potentially occurring near the project site.</p>	
<p>d. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.</p> <p>No.</p>	

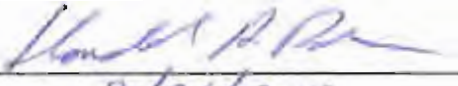
<p>e. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:</p> <p>The proposed project is a short-term construction project, without long term equipment operation, and there will be negligible energy impacts during remediation activities. . Low fuel consumption equipment will be used where possible, and construction activities will be conducted during daylight hours to avoid the requirement for sight lighting.</p>	
<p>7. Environmental Health</p>	
<p>a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.</p> <p>The property is a clean up site with soils containing concentrations of contaminants of concern greater than Washington State Department of Ecology's MTCA cleanup levels. These contaminants have impacted soil, sediments, and groundwater at the Site. Project environmental field staff and contractors may come into contact with the Site soil, sediment, or groundwater. Protection monitoring during remedy construction will be conducted to provide protection of human health and the environment during the construction and operation and maintenance activities required at the Site. Protection monitoring requirements will be described in worker Health and Safety Plans covering the worker activities both during construction, and during any future operations and maintenance of the constructed remedy. Any activities conducted at the LL Apartments Parcel following remedy implementation that disturb capped areas will require following an appropriate Health and Safety Plan.</p>	
<p>1. Describe special emergency services that might be required.</p> <p>The emergency services that might be required include normal emergency medical , fire, or police response. Emergency procedures will be followed per the Site Health and Safety Plan(s). No special emergency services will be required.</p>	
<p>2. Proposed measures to reduce or control environmental health hazards, if any:</p> <p>Safe work practices and protection monitoring requirements will be described in worker Health and Safety Plans covering the worker activities both during construction, and during any future operations and maintenance of the constructed remedy. The Health and Safety Plans will also include descriptions of the appropriate Personal Protective Equipment to be used during site activities.</p>	
<p>b. Noise</p>	
<p>1. What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?</p> <p>The site is bordered by a freeway, and an airport. Noise associated with roadway and air traffic at STIA is currently present at the Site, but not expected to affect this project.</p>	

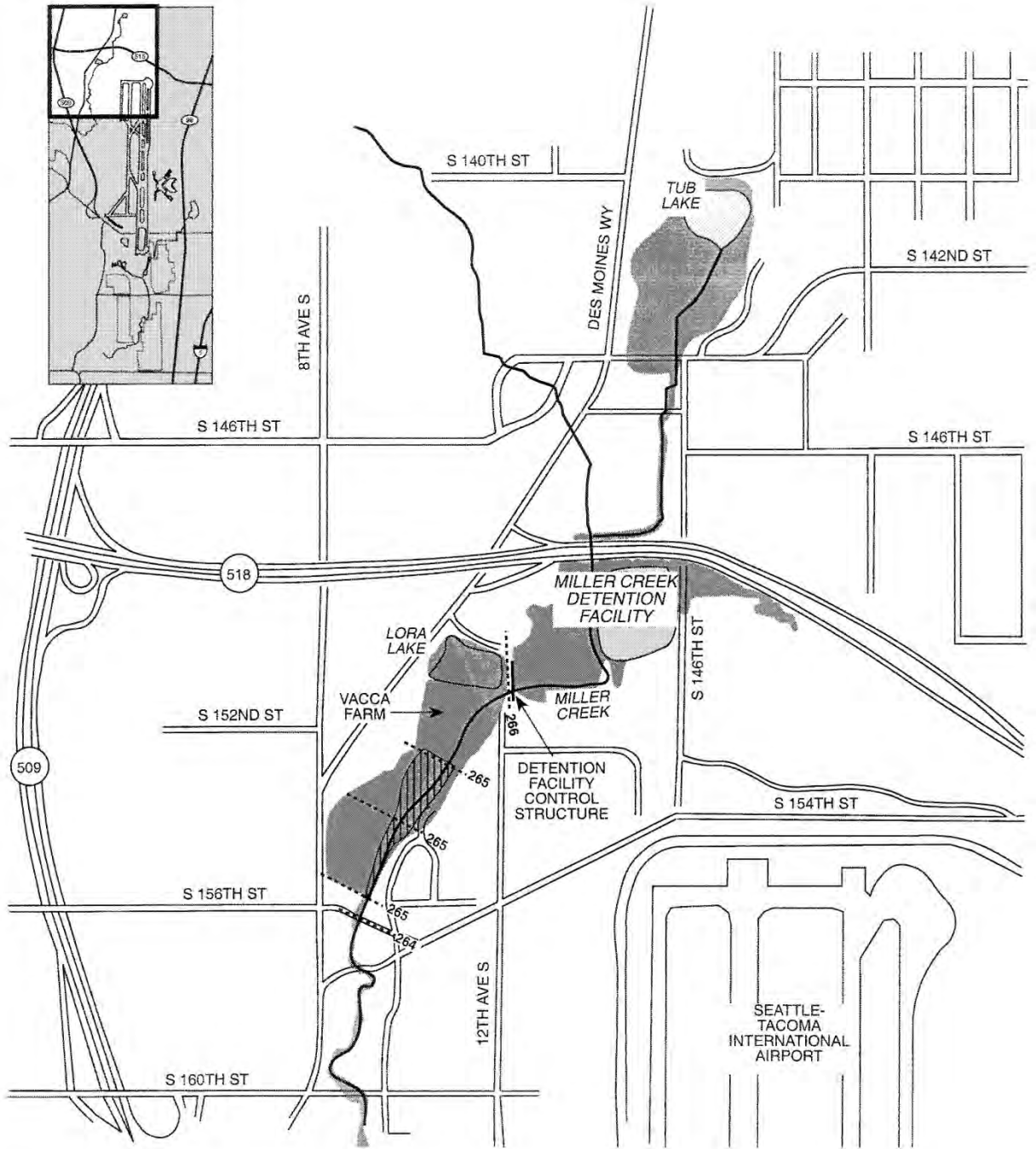
<p>2. What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.</p> <p>Construction of the proposed project will involve temporary short-term increase in noise associated with the use of construction equipment and/or heavy truck traffic. There are no long-term contributions to area noise levels.</p>	
<p>3. Proposed measures to reduce or control noise impacts, if any:</p> <p>All construction will be completed during daytime work hours, in accordance with City of Burien and SeaTac construction noise ordinances.</p>	
<p>8. Land and shoreline use</p>	
<p>a. What is the current use of the site and adjacent properties?</p> <p>The LL Apartments Parcel is currently vacant, and fenced. All above-ground structures including buildings, parking covers, and play areas were removed in 2009. Slab on grade building foundations, curbs, and pavement remain in place.</p> <p>The majority of the LL Parcel is currently located within security fencing for the STIA, and is monitored and access-controlled by Port security as STIA property. The Port constructed a habitat mitigation area, the "Miller Creek/Lora Lake/Vacca Farm Wetland and Floodplain Mitigation Area," which includes the LL Parcel and other properties located adjacent to the STIA to the north, east, and south of the LL Parcel following completion of the STIA 3rd Runway in 2008. Restrictive covenants and local zoning designations prohibit future development on the LL Parcel to assure permanent use of the property as a protected wetland aquatic habitat area.</p>	
<p>b. Has the site been used for agriculture? If so, describe.</p> <p>Through the 1930s, the area was primarily agricultural, containing family farms, suburban development, and supporting commercial businesses. The Lora Lake Apartments property was farmland until the mid 1940s, when the Novak Barrel Cleaning Company was established.</p>	
<p>c. Describe any structures on the site.</p> <p>There are no structures present within the LL Apartments Parcel or LL Parcel. There are building foundations remaining at the LL Apartments Parcel.</p> <p>The third runway approach lighting system crosses the DMCA, and two support structures are present on the DMCA. These structures are metal truss structures, with a concrete foundations that are approximately 15-20 feet square.</p>	
<p>d. Will any structures be demolished? If so, what?</p> <p>None, beyond the removal of the remaining apartments buildings foundations.</p>	
<p>e. What is the current zoning classification of the site?</p> <p>The property is currently zoned within the boundary of City of Burien as "Airport Industrial 1" and within the boundary of City of SeaTac as "Aviation Commercial (AVC) and Aviation Operations (AVO)".</p>	

<p>f. What is the current comprehensive plan designation of the site?</p> <p>Based on the City of Burien and City of SeaTac Comprehensive Plan Future Land Use Map, the property is designated as Airport Industrial. The City of SeaTac land use map utilizes a single designations ("Airport") for all properties owned or to be owned by the Port of Seattle under the Airport Master Plan as updated August 1, 1996.</p>	
<p>g. If applicable, what is the current shoreline master program designation of the site?</p> <p>Not applicable.</p>	
<p>h. Has any part of the site been classified as an "environmentally sensitive" area? If so, specify.</p> <p>There are no "environmentally sensitive" areas within the LL Apartments Parcel or the DMCA; however the LL Parcel includes Lora Lake and a constructed wetland aquatic habitat mitigation area, which is part of the Miller Creek/Lora Lake/Vacca Farm Wetland and Floodplain Mitigation Area.</p>	
<p>i. Approximately how many people would reside or work in the completed project?</p> <p>No one would reside in the project area. If the site or a portion of the site is redeveloped for airport compatible commercial or industrial uses there is the potential that people will work within the completed project area in the future following redevelopment, which is outside the scope of this project.</p>	
<p>j. Approximately how many people would the completed project displace?</p> <p>None.</p>	
<p>k. Proposed measures to avoid or reduce displacement impacts, if any:</p> <p>Not applicable.</p>	
<p>l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:</p> <p>The proposal will have no impact on the existing land uses, and is consistent with future land use regulations, zoning, and applicable planning documents.</p>	
9. Housing	
<p>a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.</p> <p>Not applicable.</p>	
<p>b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.</p> <p>Not applicable.</p>	
<p>c. Proposed measures to reduce or control housing impacts, if any:</p> <p>Not applicable.</p>	

10. Aesthetics	
a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed? Not applicable.	
b. What views in the immediate vicinity would be altered or obstructed? Not applicable.	
c. Proposed measures to reduce or control aesthetic impacts, if any: Not applicable.	
11. Light and glare	
a. What type of light or glare will the proposal produce? What time of day would it mainly occur? Light and glare will not be produced by lighting installed as part of the project since construction will be conducted during daytime hours.	
b. Could light or glare from the finished project be a safety hazard or interfere with views? No.	
c. What existing off-site sources of light or glare may affect your proposal? None.	
d. Proposed measures to reduce or control light and glare impacts, if any: Not applicable.	
12. Recreation	
a. What designated and informal recreational opportunities are in the immediate vicinity? None.	
b. Would the proposed project displace any existing recreational uses? If so, describe. No.	
c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any: Not applicable.	

13. Historic and cultural preservation	
<p>a. Are there any places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site? If so, generally describe.</p> <p>No registered or listed sites are located on the LL Apartments Parcel, LL Parcel, or DMCA. An online search of records maintained by the Washington Department of Archaeology and Historic Preservation (DAHP) was completed to locate any known sites either on and/or adjacent to the property. The Washington Information System for Architectural and Archaeological Records Data (WISAARD) did not identify any registered or listed properties.</p> <p>There are several historic property inventories that have been completed for a residential area located to the west of 8th Avenue South between S 150th Street and S 152nd Street. One historic property inventory (residence) was located at 15060 Des Moines Memorial Drive, located adjacent to both the LL Apartments Parcel and LL Parcel. While these resources are considered historic resources (greater than 50 years old), they are not registered or listed properties.</p>	
<p>b. Generally describe any landmarks or evidence of historic, archaeological, scientific, or cultural importance known to be on or next to the site.</p> <p>None.</p>	
<p>c. Proposed measures to reduce or control impacts, if any:</p> <p>Since there are no areas of importance, no measures are necessary to control impacts.</p>	
14. Transportation	
<p>a. Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any.</p> <p>The LL Apartments Parcel is accessed by Des Moines Memorial Drive and 8th Avenue South. The LL Parcel and DMCA are accessed by Des Moines Memorial Drive.</p>	
<p>b. Is site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?</p> <p>The nearest public transit is 0.5 miles NE of the Site.</p>	
<p>c. How many parking spaces would the completed project have? How many would the project eliminate?</p> <p>Not applicable.</p>	
<p>d. Will the proposal require any new roads or streets, or improvements to existing roads or streets, not including driveways? If so, generally describe (indicate whether public or private).</p> <p>None.</p>	
<p>e. Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.</p> <p>The Site is located near the northwest corner of the Seattle-Tacoma International Airport.</p>	

<p>f. How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur.</p> <p>During construction, approximately 19,000 CY of contaminated soil will be transported from the Site by truck and trailer to a licensed Subtitle D landfill. This will generate approximately 1,000 truck trips during the project. Approximately 30,000 CY of contaminated soil will be transported by truck from the LL Apartments Parcel to the DMCA for consolidation. This will generate approximately 1,500 truck trips from the LL Apartments Parcel to the DMCA.</p> <p>Approximately 46,000 CY of material will be imported to the LL Parcel to fill Lora Lake. This will generate approximately 2,400 truck trips to the LL Parcel.</p> <p>The scheduling of vehicular trips is unknown.</p>	
<p>g. Proposed measures to reduce or control transportation impacts, if any:</p> <p>Use of larger vehicles that transport more material, reducing the total number of trips required will be implemented as possible. Trips may also be scheduled during the lowest traffic times of the day to reduce impact on the surrounding roadways.</p>	
<p>15. Public services</p>	
<p>a. Would the project result in an increased need for public services (for example: fire protection, police protection, health care, schools, other)? If so, generally describe.</p> <p>No.</p>	
<p>b. Proposed measures to reduce or control direct impacts on public services, if any.</p> <p>Not applicable.</p>	
<p>16. Utilities</p>	
<p>a. Circle utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other.</p> <p>Not Applicable. All utilities previously serving the Site have been disconnected.</p>	
<p>b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.</p> <p>Sanitary sewer may be required during the project for discharge of dewatering water, or collected stormwater. Sanitary service would be provided by the Southwest Suburban Sewer District.</p>	
<p>C. Signature</p>	
<p>The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.</p> <p>Signature: <u></u></p> <p>Date Submitted: <u>8/26/2013</u></p>	





Source: FEMA 1995

Port of Seattle/Natural Resource Mitigation Plan/556-2912-001/01(03) 11/01 (K)



NOT TO SCALE

- 100-year Flood Elevation (approximately 265.4 ft)
-  Floodway
-  100-Year Floodplain



**Cleanup Action Plan
Lora Lake Apartments Site
Burien Washington**

Figure A.1
Miller Creek 100-Year
Floodplain

DRAFT

Exhibit C

Exhibit C: Scope of Work and Schedule

Deliverable/Milestone	Completion/Due Date
Lodge Consent Decree in Court	12/31/2013
Progress Reports	Monthly on the 15th of the month beginning after effective date of Consent
Cost Estimate for Consent Decree Implementation (per Consent Decree Section XXI)	60 days after effective date of Consent Decree
Proof of Financial Assurances (per Consent Decree Section XXI)	60 days following Ecology approval of the Cost Estimate for Consent Decree Implementation
Annual Financial Assurance Report (per Consent Decree Section XXI)	Annually, within 30 days of the anniversary date of Consent Decree
Draft Compliance Monitoring Plan for the LL Apartments Parcel and DMCA	Submitted to Ecology within 30 days of effective date of Consent Decree
Final Compliance Monitoring Plan for the LL Apartments Parcel and DMCA	Submitted to Ecology within 30 days following receipt of Ecology comments
Draft 60% LL Apartments Parcel and DMCA EDR	2/1/2015
Draft 100% LL Apartments Parcel and DMCA EDR, Project Plans and Specifications, and O&M Plan	8/1/2015
Final 100% LL Apartments Parcel and DMCA EDR, Project Plans and Specifications, and O&M Plan	10/1/2015
Completion of LL Apartments Parcel and DMCA Cleanup Construction	12/31/2017
Draft LL Apartments Parcel and DMCA As Built Report (includes Environmental Covenants for LL Apartments Parcel and DMCA)	Submitted to Ecology within 90 days of completion of LL Apartments Parcel Cleanup Construction
Final LL Apartments Parcel and DMCA As Built Report (includes Environmental Covenants for LL Apartments Parcel and DMCA)	Submitted to Ecology within 30 days of receipt of Ecology comments on the Draft As Built Report
Submit proof of recording of LL Apartments Parcel and DMCA Environmental Covenants to Ecology	6/15/2018
Groundwater compliance with Cleanup Levels achieved throughout the Site	12/31/2022
As Built Report for final barrier to wildlife on the LL Apartments Parcel	12/31/2021
Draft 60% LL Parcel EDR (includes Compliance Monitoring Plan and O&M Plan)	2/1/2015
Draft 100% LL Parcel EDR, Project Plans and Specifications, Compliance Monitoring Plan, and O&M Plan	8/1/2015
Final 100% LL Parcel EDR, Project Plans and Specifications, Compliance Monitoring Plan, and O&M Plan	10/1/2015
Completion of LL Parcel Cleanup Construction	12/31/2017
Draft LL Parcel As Built Report (includes Environmental Covenant for LL Parcel)	Submitted to Ecology within 90 days of completion of LL Parcel Cleanup Construction.
Final LL Parcel As Built Report (includes Environmental Covenant for LL Parcel)	Submitted to Ecology within 30 days of receipt of Ecology comments on the Draft As Built Report.
Submit proof of recording of LLA Parcel Environmental Covenants to Ecology	6/15/2018
Periodic Reviews Conducted by Ecology	Every 5 years from the effective date of Consent Decree

Exhibit D

**EXHIBIT D:
Applicable or Relevant and Appropriate Requirements**

Approvals/permits required:

Local Approvals/Permits:

- King County Industrial Discharge Authorization

Federal Approvals/Permits:

- US Army Corps of Engineers (USACE) Clean Water Act Section 404 Nationwide Permit No. 38
(Required for the Lora Lake (LL) Parcel remedial action)

State Approvals/Permits:

- Washington State Department of Ecology (Ecology) State Environmental Policy Act (SEPA) Checklist
- Ecology National Pollutant Discharge Elimination System (NPDES) Construction General Permit
- Washington State Department of Fish and Wildlife (WDFW) Hydraulic Project Approval (Required for the LL Parcel remedial action)

Exhibit E

EXHIBIT E: Procedurally Exempt Requirements

Approvals/Permits Required:

- City of Burien Clearing and Grading Permit (Project is exempt from the procedural requirements, but must comply with the substantive requirements of this law. WAC 173-340-710)
- City of SeaTac Clearing and Grading Permit (Project is exempt from the procedural requirements, but must comply with the substantive requirements of this law. WAC 173-340-710)
- City of SeaTac Critical Area Review (Project is exempt from the procedural requirements, but must comply with the substantive requirements of this law. WAC 173-340-710)