DEPARTMENT OF ECOLOGY
State of Washington

2015 Application for Coverage Under the General Permit for Biosolids Management

1. Facility Information	
Name of Facility	West Lincoln Project Beneficial Use Facility (WLP)
Owner	King County Department of Natural Resources and Parks (KCDNRP)
Ownership Status	☐ Federal ☐ State ☑ Local ☐ Private ☐ Other:
Physical Address	201 S. Jackson Street, Seattle, Washington 98104
Mailing Address	Same
Permit Number	Pending Approval BT1802

2. Facility Contacts		
	Primary Contact	**Responsible Official**
Name	Jake Finlinson	Christie True
Title	Program Project Manager	Director, KCDNRP
Phone	206-477-3524	206-477-4550
Email	jake.finlinson@kingcounty.gov	christie.true@kingcounty.gov

3. **Facility type** (*check all that apply*)
☐ Major sewage treatment facility (design *flow of ≥1 mgd or serving a population of ≥10,000*)
☐ Minor sewage treatment facility (design *flow of <1 mgd and serving a population of <10,000*)
☐ Class I sewage treatment facility (*have a pretreatment program or designated as Class I*)
☐ Composting facility (*receive biosolids or sewage sludge for composting*)
☐ Septage management facility (*land apply or prepare septage for land application*)
☑ Beneficial use facility (*receive biosolids from others for direct land application*)
☐ Lagoon facility *(all solids are stored in lagoons)*
☐ Out-of-State (importing material to a facility within Washington State)
☐ Other—describe:

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2015 Application for Coverage Under the General Permit for Biosolids Management

4. **Other Permits** (*check all that apply*)	
☐ National Pollutant Discharge Elimination System (NPDES) – Permit Number:	
☐ State Waste Discharge – Permit Number:	
☐ National Emission Standards for Hazardous Pollutants Preconstruction	
☐ Prevention of Significant Deterioration Program	
☐ Ocean Dumping	☐ Nonattainment Program
☐ Stormwater Discharge	☐ Underground Injection Control Program
☐ Dredge or Fill	☐ Hazardous Waste Management Program
☑ Other – Describe: None.	

5. **Pathogen Reduction** (*check all that apply; see WAC 173-308-170 or WAC 173-308-270[3]*)	
Class A	**Class B**
☑ Alternative 1 (*time/temperature*)	☑ Alternative 1 (7 *samples*)
☑ Alternative 2 (*pH/time/temperature/% solids*)	Alternative 2 (*process to significantly reduce pathogens [PSRP]*) ☑ Aerobic digestion ☑ Air drying ☑ Anaerobic digestion ☑ Composting ☐ Liming (septage, see below)
Alternative 3 (*process to further reduce pathogens [PFRP]*) ☑ Composting ☑ Heat drying ☑ Heat treatment ☐ Pasteurization ☐ Beta ray irradiation ☐ Gamma ray irradiation ☐ Thermophilic aerobic digestion	
☑ Alternative 4 (*PFRP equivalent*)	☑ Alternative 3 (*PSRP equivalent*)
Septage	☐ **Sent for Further Treatment**
☐ Injection	
☐ Incorporation	☐ **Did not meet requirements** (explain):
☐ pH stabilization	

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6. Vector Attraction Reduction (see WAC 173-308-180 or WAC 173-308-270[3])	
☑ Alternative 1 (*38% volatile solids reduction*) ☑ Alternative 1a (*bench test-anaerobic*) ☑ Alternative 1b (*bench test-aerobic*)	☐ Alternative 4 (*pH stabilization*)
	☑ Alternative 5 (*≥75% solids*)
	☑ Alternative 6 (*≥90% solids*)
☑ Alternative 2 (*SOUR*)	☐ Alternative 7 (*injection*)
☑ Alternative 3 (*aerobic process*)	☑ Alternative 8 (*incorporation*)
☐ **Sent for Further Treatment**	☐ Did not meet requirements (explain): NA

7. Pollutants *(not applicable to septage unless required by permit; see WAC 173-308-160)*	
Number of pollutant monitoring events in the past year:	Responsbility of treatment works.
Pollutants Exceeding Table 1 or 3 Values:	Only biosolids meeting Table 3 values will be accepted at the WLP.

8. Process, Production & Storage	
How are your biosolids produced and managed?	Produced:Responsibility of the treatment works. Managed: See the WLP Site Specific Land Application Plan.
Planned Changes?	No known planned changes.
Average Production (+/- 10 dry tons)	Biosolids are produced at the treatment works. No biosolids are produced at the WLP.
How often and what time of year testing conducted?	Analytical testing is conducted by the treatment works. Biosolids may be tested at the application site as needed.
Who hauls your biosolids?	Treatment plants are responsible for the haul of their biosolids.
Where do your biosolids go? How much?	The WLP only receives biosolids for land application on permitted, actively farmed, agricultural sites.
If you are not a Lagoon Facility proceed to Section 9 (all lagoon facilities must answer the following)	
Date of last measured depth. How much has accumulated?	NA.

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When was the last dredging event?	
Do you plan to dredge during this permit cycle?	

9. Attachments (Check off each requirement for your facility type)

Wastewater Treatment Plants that DO NOT Land Apply Biosolids

- ☐ **Vicinity Map.** The map must extend at least 1 mile around the perimeter of the facility and any associated treatment or storage facilities. The map must also show the location and means of access.
- ☐ **Facility Schematic.** The Facility Schematic must show how you process and/or manage biosolids.
- ☐ **State Environmental Policy Act (SEPA).** The act of applying for coverage under this permit triggers a requirement for review under SEPA. This does not necessarily mean that a new SEPA threshold determination will be required.
- ☐ **Contingency Plan.** Describe your plans for handling biosolids in the event that your biosolids cannot be sent to their usual end use location or fail to meet quality goals.
- ☐ **N/A.** We have long-term treatment (lagoons).
- ☐ **Biosolids/Soil Sampling & Analysis Plan (SAP).** A Biosolids/Soil Sampling and Analysis Plan is required when you sample your biosolids and land application site(s).
- ☐ **N/A.** We have long term treatment or send for further treatment.
- ☐ **Analytical Data.** The past two years of data related to your biosolids, land application site soil, and/or land application site waters.
- ☐ **N/A.** We have long term treatment or send for further treatment and have no data.
- ☐ **Spill Prevention & Response Plan.** Required if you or your agent transport your biosolids.

Wastewater Treatment Plants that Land Apply Biosolids

- ☐ **Vicinity Map.** The map must extend at least 1 mile around the perimeter of the facility and any associated treatment or storage facilities. The map must also show the location and means of access.
- ☐ **Facility Schematic.** The Facility Schematic must show how you process and/or manage biosolids.
- ☐ **Contingency Plan.** Describe your plans for handling biosolids in the event that your biosolids cannot be sent to their usual end use location or fail to meet quality goals.
- ☐ **N/A.** We have long-term treatment (lagoons).

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State of Washington

2015 Application for Coverage Under the General Permit for Biosolids Management

☐ **Analytical Data.** The past two years of data related to your biosolids, land application site soil, and/or land application site waters.
☐ **Spill Prevention & Response Plan.** Required if you or your agent transport your biosolids.
☐ **Biosolids/Soil Sampling & Analysis Plan (SAP).** A Biosolids/Soil Sampling and Analysis Plan is required when you sample your biosolids and land application site(s).
☐ **Site Specific Land Application Plan (SSLAP).** Required for every site where non-exceptional quality biosolids are applied.
☐ **General Land Application Plan (GLAP).** To maintain the option of proposing new sites for applying non-exceptional quality biosolids during the term of this permit.
☐ **State Environmental Policy Act (SEPA).** The act of applying for coverage under this permit triggers a requirement for review under SEPA. This does not necessarily mean that a new SEPA threshold determination will be required.
☐ **Public Notice.** Depending on your operation you may be required to conduct Public Notice as part of submitting this application.
Beneficial Use Facilities
☑ **Vicinity Map.** The map must extend at least 1 mile around the perimeter of the facility and any associated treatment or storage facilities. The map must also show the location and means of access.
☑ **Spill Prevention & Response Plan.** Required if you or your agent transport your biosolids.
☑ **Analytical Data.** The past two years of data related to your biosolids, land application site soil, and/or land application site waters.
☑ **Biosolids/Soil Sampling & Analysis Plan (SAP).** A Biosolids/Soil Sampling and Analysis Plan is required when you sample your biosolids and land application site(s).
☑ **Site Specific Land Application Plan (SSLAP).** Required for every site where non-exceptional quality biosolids are applied.
☑ **General Land Application Plan (GLAP).** To maintain the option of proposing new sites for applying non-exceptional quality biosolids during the term of this permit.

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2015 Application for Coverage Under the General Permit for Biosolids Management

☑ **State Environmental Policy Act (SEPA).** The act of applying for coverage under this permit triggers a requirement for review under SEPA. This does not necessarily mean that a new SEPA threshold determination will be required, but any decisions regarding what is needed in order to comply with SEPA must be made by the SEPA Lead Official.
☑ **Public Notice.** Depending on your operation you may be required to conduct Public Notice as part of submitting this application.
Other
☐ **Temporary Disposal Plan.** Required if you dispose sewage sludge in a landfill on a temporary basis (see WAC 173-308-300(8)).
☑ **N/A.** We do not send (or plan to send) any sewage sludge to a landfill.

10. Certification Statement (*must be signed by the **Responsible Official listed above**) (see **WAC 173-308-310***)

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Responsible Official Signature _____ Date 6/20/2016

Responsible Official Name and Title Director, DNRP

Spill Prevention and Response Plan

WEST LINCOLN PROJECT
BENEFICIAL USE FACILITY

SPILL PEVENTION AND RESPONSE PLAN

Submitted as an attachment to the *Application for Coverage Under the General Permit for Biosolids Management*

Submitted by:
King County Department of Natural Resources & Parks
Wastewater Treatment Division

June 2018

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INTRODUCTION

This *Spill Response Plan (Spill Plan)* is being submitted as required by the *General Permit for Biosolids Management*. West Lincoln Project Beneficial Use Facility (WLP) may use contractors or sub-contractors to haul dewatered biosolids throughout the year from various Washington wastewater treatment facilities to land application sites located in Lincoln County. In addition, the WLP may transfer biosolids during routine, daily operations from one site to another site when product relocation is necessary. Typically, these biosolids transfers are relatively short distances occurring on minor, minimally travelled roadways.

! IMPORTANT - PRIMARY SPILL RESPONSE CONTACTS !

1) **9-1-1** for injury accidents and accidents involving other vehicles or property
2) **Jake Finlinson**, King County (KC) Project Manager at (206) 305-4272 (cell) and (206) 477-3524 office
3) **Betty Ann Bickner**, Department of Ecology at (509) 638-3739 (cell) (Primary contact person. If unavailable, contact the appropriate Ecology spill response contact on page 3 for assistance)

   The following persons are provided as a secondary regulatory contact to Betty Ann Bickner:

   - Terri Costello, Department of Ecology at 509-329-3579; and
   - Kyle Dorsey, Department of Ecology at (360) 407-6559

4) **Your company** dispatcher or company contact for emergencies

Refer to pages 3 - 7 for additional contact information.

ROUTES TRAVELED

See Attachment 1

SPILL PREVENTION MEASURES

To minimize the possibility of spills, King County and its hauling contractor has implemented the following measures:

- All vehicles are regularly inspected and serviced
- Drivers will not exceed the posted speed limit and only travel at speeds appropriate for current road conditions
- Drivers attend a "Defensive Driving" course at least every 3 years

- Loads are to be fully covered with a tarp during transportation or as determined by the biosolids generator. Tarping exceptions include short biosolids transfers from one WLP application site to another application site

- Vehicles are certified to be "leak-proof" upon purchase and are regularly examined to ensure no leaking occurs

- Drivers consult the Washington State Department of Transportation's (DOT) website during times of possible inclement weather

SPILL RESPONSE EQUIPMENT

In order to be able to promptly and properly respond to a spill, King County and its hauling contractor equips biosolids transportation vehicles with the following items:

- A copy of the most current *Spill Prevention/Response Plan.*
- A cell phone
- Gloves and boots
- Hazard flares
- Reflective traffic cones
- A shovel

SPILL RESPONSE MEASURES

In the event of a spill, the following measures may occur:

- Safely exit roadway if possible
- Place reflective traffic cones along roadway leading up to the spill (use flares if needed)
- If the spill has or could result in an emergency situation: immediately dial 9-1-1
- If the spill poses a risk to public or environmental health or is odorous, hydrated lime may be used to cover exposed biosolids, if available
- Report <u>all</u> spills to KC Project Manager. For large spills the KC Project Manager will contact other key stakeholders as needed and will coordinate a spill response company to excavate or pump all biosolids and clean up the site.
- If the spill is large, immediately contact the Department of Ecology (Ecology) Biosolids Coordinator and the Ecology Spill Response Team

- If the spill is on a state highway or interstate and may obstruct traffic for an extended period, contact the appropriate DOT regional office (Pg. 5)
- If the spill is small, use shovel to remove all biosolids and place back into the hauling truck
- Contact the biosolids coordinator at Ecology's Eastern Regional Office as soon as possible, but not more than 24 hours following the spill. Unless waived by Ecology, submit a written explanation of the spill within 5 days. The written explanation must include the following:
    - A description of the spill and its cause
    - The exact date and time of the spill, and, if it has not been cleaned-up, the anticipated time when cleanup will occur
    - Steps taken or planned to reduce, eliminate, and prevent reoccurrence of spills
- Contact the appropriate staff at the local health department in the county where the spill occurs (Pg. 4)
- If a spill may have affected natural resources other than fish or wildlife, contact the appropriate Washington Department of Natural Resources (WADNR) regional office (Pg. 6)
- If a spill enters surface water (i.e. stream, river, lake), contact the appropriate Washington Department of Fish and Wildlife (WDFW) regional office (Pg. 7)

SPILL RESPONSE CONTACTS

King County

- Jake Finlinson, Project Manager: (206) 305-4272 cell
- Tony Chiras, Transportation Manager: (206) 375-2003 cell

***Department of Ecology, Spill Response Team*:**

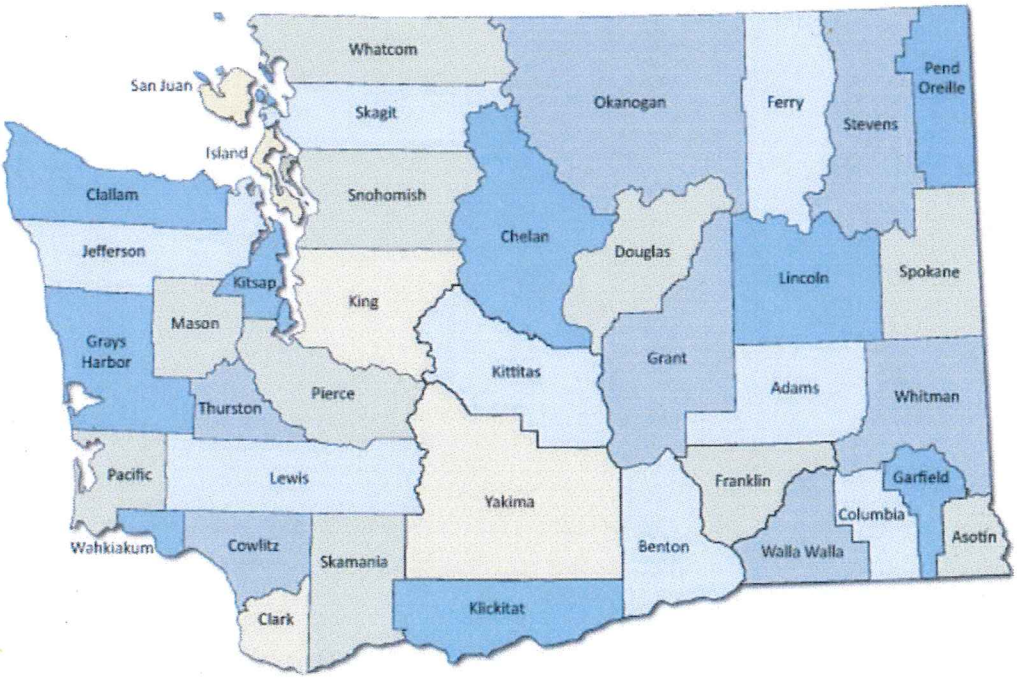
- Central Regional Office: (509) 575-2490
- Eastern Regional Office: (509) 329-3400
- Northwest Regional Office: (425) 649-7000
- Southwest Regional Office: (360) 407-6300

***Department of Ecology, Biosolids Coordinators*:**

- Kyle Dorsey (Statewide Coordinator): (360) 407-6108
- Betty Ann Bickner, Eastern Region: (509) 329-3505
- Peter Severtson, Central Region: (509) 379-4737
- Amber Corfman, Northwest Region: (425) 649-7258
- Meeta Pannu, Southwest Region: (360) 407-6393

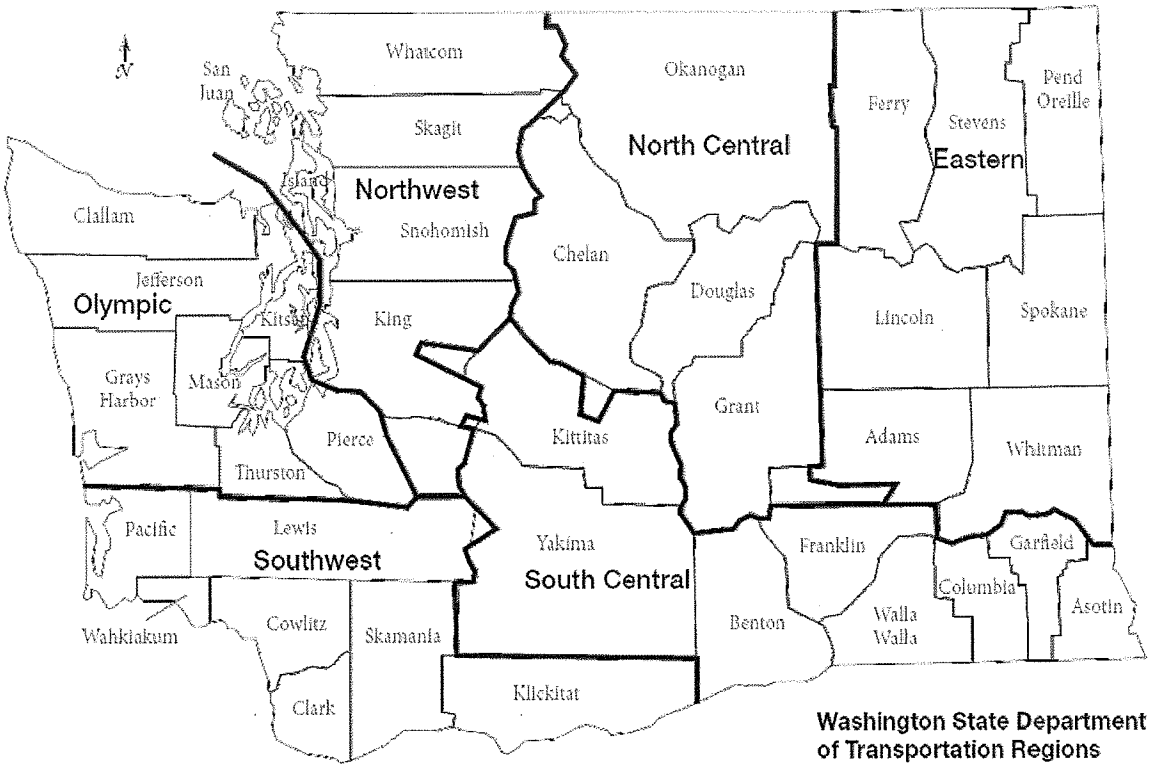
Local Health Departments and Districts:

- Chelan-Douglas Health District: (509) 886-6400 or (509) 886-6499 after-hours.
- Grant County Health District: (509) 766-7960 or (509) 398-2083 after-hours.
- King County Public Health Department: (206) 296-4600 or (800)-325-6165
- Kittitas County Health Department: (509) 962-7515.
- Lincoln County Health Department: (509) 725-1001 or (509) 725-2501
- Snohomish County Health Department: (425) 339-5200 or (425) 775-3522



***Department of Transportation Regional Offices*:**

- Northwest Region: (206) 440-4000.
- North Central Region: (509) 667-3000
- Olympic Region: (360) 357-2600.
- South Central Region: (509) 577-1600
- Eastern Region: (509) 324-6000



Washington State Department of Transportation Regions

***Department of Natural Resources Regional Offices*:**

- Northeast Region: (509) 684-7474
- Northwest Region: (360) 856-3500
- Olympic Region: (360) 374-2800
- Pacific Cascade Region: (360) 577-2025
- South Puget Sound Region: (360) 825-1631
- Southeast Region: (509) 925-8510
- Toll-Free line: (800) 562-6010
- WA DNR Headquarters: (360) 902-1000

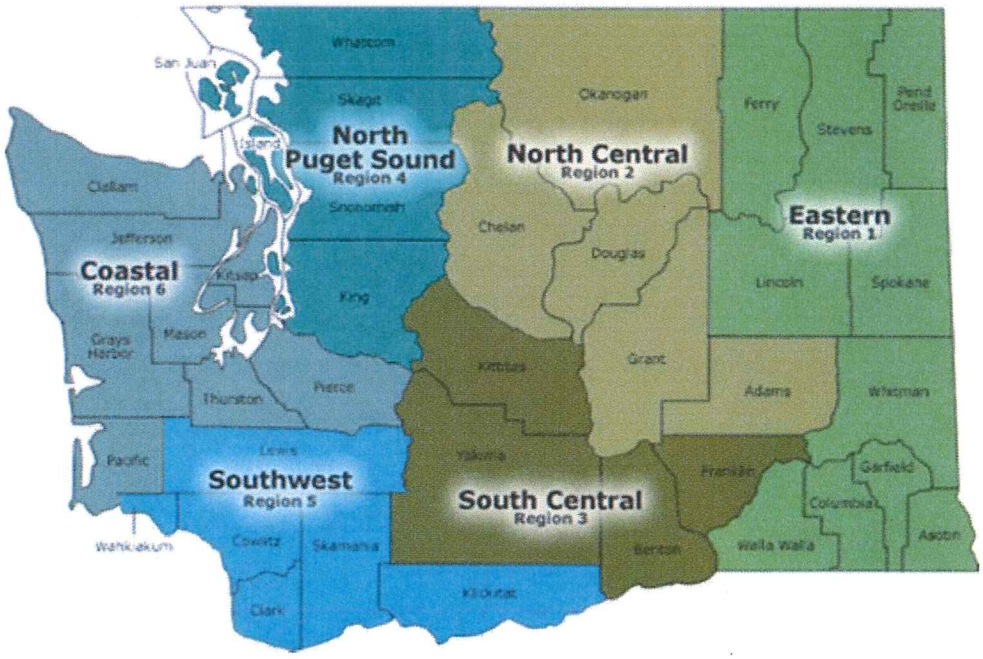
***United States Forest Service Pacific Northwest Region 6*:**

- Pacific Northwest Regional Office Headquarters: (503) 808-2468
- Mt. Baker-Snoqualmie National Forest: (425) 783-6000
- Okanogan and Wenatchee National Forest: (509) 664-9200

***Department of Fish and Wildlife*:**

- WDFW Main Office: (360) 902-2200
- Eastern Region 1: (509) 892-1001
- North Central Region 2: (509) 754-4624
  - Wenatchee District Office (509) 662-0452
- South Central Region 3: (509) 575-2740
- North Puget Sound Region 4: (425) 775-1311
- Southwestern Region 5: (360) 696-6211
- Coastal Region 6: (360) 249-4628

WDFW Regions



ATTACHMENT 1

ROUTES TRAVELED

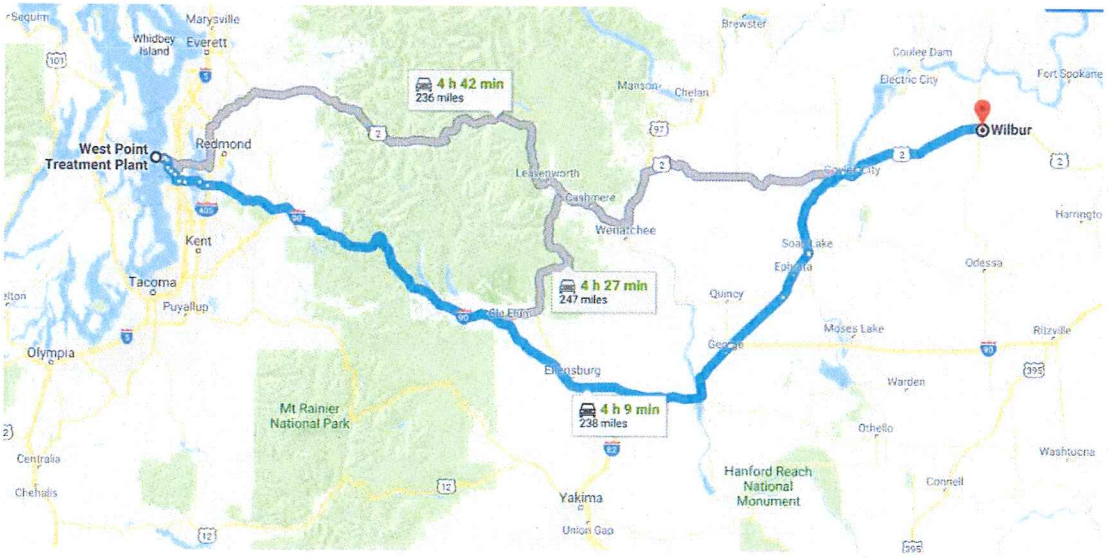
King County and its hauling contractor utilize the following route options to haul biosolids to WLP land application project sites.

In the event of road closures for extended periods or emergencies haul trucks may utilize other public roads to get over the mountains including White Pass, Columbia Gorge, or Stevens Pass. General route maps for the primary haul routes are attached.

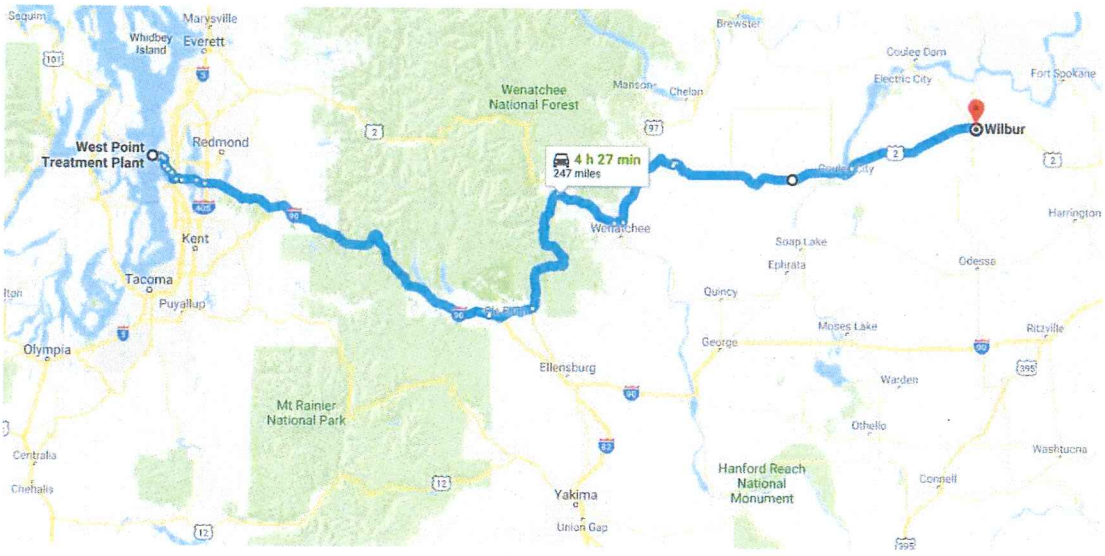
- Primary route from Seattle areas sources to WLP application site area via I-90
- Secondary route from Seattle areas sources to WLP application site area via State Route 2

<u>Routes from Seattle areas sources to WLP application site area via I-90:</u>

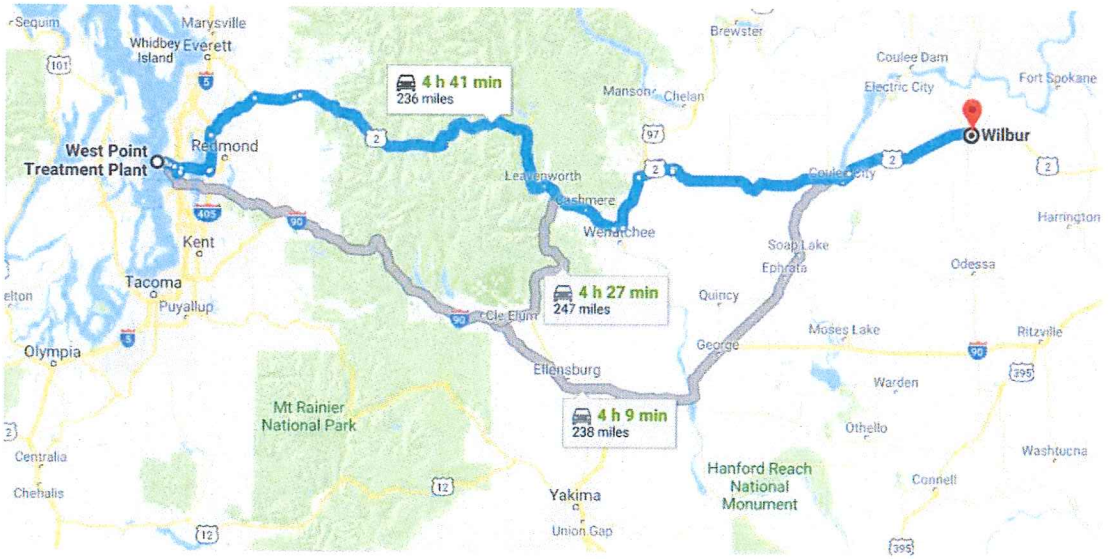
Option #1: I-90 East to Exit 151/WA-283 N, continue on WA-28 E to WA-17 N, to US-2 E arriving in Wilbur, WA. Total distance traveled 238 miles.



Option #2: I-90 East to Exit 85-US 970 to US-97 N to US-97/US-2E to US-2 E arriving in Wilbur, WA. Total distance traveled 247 miles.



Option #3: US-522 to US-2 E arriving in Wilbur, WA. Total distance traveled 236 miles.



ATTACHMENT 2

PRIMARY RESPONSE CONTRACTORS

Primary Response Contractors (PRCs) are companies or cooperatives that support plan holders in responding to spills when they occur. To be cited by a plan holder to meet planning standards, the contractor must be approved by Ecology.

(*Source:* https://ecology.wa.gov/DOE/files/b5/b571de76-2413-476a-98a5-26caf10757cf.pdf)

Company Name	Company Location	Phone Number	Vac Truck	Eastern WA	Western WA
Able Clean-up Technologies	Spokane	(509) 466-5255	X	X	
Big Sky Industrial	Spokane	(509) 624-4949	X	X	
Clean Harbors Environmental Services	Kent, Moses Lake, Pasco	(800) 645-8265	X	X	X
National Response Corp. (NRC)	Seattle, Tacoma, Spokane, Burlington, Pasco	(800) 899-4672	X	X	X

GENERAL LAND APPLICATION PLAN

WEST LINCOLN PROJECT BENEFICIAL USE FACILITY

Submitted for the West Lincoln Project Beneficial Use Facility
Application for Coverage
Under the General Permit for Biosolids Management

This Plan is developed in accordance to Chapter 173-308-90004 WAC,
Appendix 4: Minimum Content for a General Land Application Plan

The general area described in this Plan is located in
Lincoln County, Washington
Water Resource Inventory Area Upper Crab Creek # 43

Township 26N, Range 31E, Section 13
Township 26N, Range 32E, Section 18
Township 26N, Range 33E, Sections 14, 15, 20, 21, 22

August 2018

Prepared by:

King County Department of Natural Resources and Parks
201 S. Jackson, KSC-NR-0512, Seattle, WA 98104

PREFACE

This document is written in accordance with WAC 173-308-90004, Appendix 4, Minimum Content for a General Land Application Plan (GLAP). The purpose of this plan is to:

1) Provide general information about the geographical area where the West Lincoln Project Beneficial Use Facility, hereafter referred to as the West Lincoln Project (WLP), manages and land applies biosolids.
2) Set forth general site selection criteria on how new fields can be identified and added to the WLP for Coverage under the General Permit for Biosolids Management.
3) Describe general biosolids management guidelines for areas receiving biosolids.
4) Outline procedures for providing advance notice to the permit authority(s) and the public when adding new fields to the WLP's permit coverage.
5) Provide for advance public notice as required in Chapter 173-308-310(13) WAC, and that is reasonably calculated to reach potentially interested adjacent and abutting property owners.

GEOGRAPHICAL AREA

Biosolids storage and land application sites are located in Lincoln County, Washington. The geographical area described in this GLAP is located in the areas described below:

- Township 26N, Range 31E, Section 13
- Township 26N, Range 32E, Section 18
- Township 26N, Range 33E, Sections 14, 15, 20, 21, 22

The water resource inventory area (WRIA), or watershed, where biosolids may be applied under the WLP's permit coverage is known as the Upper Crab-Wilson WRIA #43. "The Upper Crab-Wilson Watershed includes that portion of the Upper Crab Creek above Stratford and Wilson Creek. In addition, there are numerous tributary creeks and streams of which most are seasonal." (Ecology, 2017[1])

SITE SELECTION CRITERIA

The WLP wants to maximize the beneficial use of biosolids as encouraged by the Washington State Department of Ecology (Ecology) in Chapter 173-308-010(2)(a). Site selection criteria will focus on actively farmed, agricultural lands with sufficient soils to grow crops and or soil that can be improved with biosolids applications. Biosolids will be applied to sites managed for commercial agriculture, pasture and rangeland, and land reclamation.

Application sites shall be approved by Ecology prior to biosolids storage and land application. Sites are evaluated on a case-by case-basis for suitability based on a number of elements including:

- Topography
- Soil characteristics

[1] Department of Ecology, Focus on Water Availability, Revised January 2017.

- Depth to groundwater
- Proximity to surface waters
- Proximity to dwellings and wells
- Zoning and adjacent land use
- Site access and storage

Biosolids Management Guidelines for Washington State (Ecology Publication #93-80, July 2000), and any subsequent revisions, may be used as a guide for site selection. In addition, the University of Washington and Washington State University biosolids researchers, extension agents, or professional soil scientists may provide additional site selection assistance.

SITE MANAGEMENT
The WLP will manage all sites in accordance with the following

- Chapter 173-308 WAC
- A Site-Specific Land Application Plan (SSLAP), and
- All conditions noted in Ecology's Letter of Final Coverage under the *General Permit for Biosolids Management* (General Permit).

ADVANCE NOTICE TO THE PERMITTING AUTHORITY FOR NEW OR EXPANDED LAND APPLICATION SITES
The following outlines the procedure for proposing a new land application site or expansion of an existing land application site under this GLAP:

1. SEPA will be done for new or expanded land application sites.
2. Public notice will be provided for new sites not currently under Permit Coverage
3. Advance notice of at least 30 days to Ecology with the information contained in WAC 173-308-90003, Appendix 3: Items 1, 2, 7, 8, 9, 12, and 13. This information may be submitted electronically or by hard copy to the Ecology Regional Biosolids Coordinator.
4. Review of the proposed land application site(s) by Ecology.
5. Concurrence of WLP and Ecology about biosolids land application site details to include, but not limited to: application site location, acreage, buffers, truck access, biosolids staging and or storage location(s), and any site specific application restrictions or requirements.

ADVANCE PUBLIC NOTICE FOR NEW OR EXPANDED LAND APPLICATION SITES
Following submittal of the advance notice information to Ecology, the WLP will post proposed new application sites in accordance with the General Permit. After the proposed application site has been posted for a minimum of 30 days, Ecology shall evaluate received public comments and provide the WLP a permitting decision in writing that either approves or denies coverage under the General Permit.

SITE SPECIFIC LAND APPLICATION PLAN

WEST LINCOLN PROJECT
BENEFICIAL USE FACILITY

This Plan is a component of King County Department of Natural Resources and Parks Application for Coverage Under the General Permit for Biosolids Management

This Plan is developed in accordance to Chapter 173-308-90003 WAC, Appendix 3: Minimum Content for a Site Specific Land Application Plan

The site described in this plan is located in Lincoln County, WA.

The area described in this plan is located in
Water Resource Inventory Area #43, Upper Crab Creek

Township 26N, Range 31E, Section 13
Township 26N, Range 32E, Section 18
Township 26N, Range 33E, Sections 14, 15, 20, 21, 22

August 2018

Prepared by:
King County Department of Natural Resources and Parks
201 S. Jackson St., KSC-NR-0512, Seattle, WA 98104

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Appendix 4: Application Rate Worksheet Example

Appendix 5: Biosolids and Soil Sampling Plan

Appendix 6: Public Notice Signage and Site Access Restriction Signage Examples

Appendix 7: Records

1.0 Ownership, Management, and Landowner Agreements

The West Lincoln Project Beneficial Use Facility (WLP) will be permitted, operated, and managed under King County Department of Natural Resources and Parks, Wastewater Treatment Division (King County). King County is responsible for assuring the WLP is managed in a professional manner. The WLP management and operations will continually support and work towards excellence in biosolids land application practices, meeting all regulatory compliance obligations, and providing meaningful opportunities for biosolids research and public outreach.

The WLP has regulatory obligations under Chapter 173-308 WAC, the General Permit for Biosolids Management (General Permit), and this Site-Specific Land Application Plan (SSLAP or plan). This SSLAP sets forth procedures for land application and details regulatory requirements for site operations. The Washington State Department of Ecology (Ecology) has permitting and oversight authority for the implementation of this plan.

As part of Ecology's approval process for adding a new site to coverage under the General Permit, the WLP will obtain landowner signature(s) prior to any land application of biosolids to a site. The WLP project manager will provide Ecology an electronic copy of the signed Landowner Agreement(s) (as distinguished from a lessee, farmer, or others entitled to use the land) that acknowledges the applicability and requirements of WAC 173-308-120(6) when biosolids are delivered, stored, and applied to their land. Landowner agreement documentation will be kept on file and remain valid until the landowner withdraws from the project by written notification to Ecology. The Landowner Agreement provides the name and contact information of the responsible landowner or personal representative. Landowner Agreements are available in Appendix 1 of this plan.

Also refer to Appendix 2 for the WLP *Master List of Project Sites*, which provides the names of the landowner and grower, Site identifier (WLP ID), and site information.

2.0 Past Biosolids Use

No biosolids have been applied to the proposed sites.

3.0 Maps

The proposed sites of the WLP are located within Lincoln County, Washington within the locations described below. See Appendix 3, Exhibit 1 for reference.

- Township 26N, Range 31E, Section 13
- Township 26N, Range 32E, Section 18
- Township 26N, Range 33E, Sections 14, 15, 20, 21, 22

WLP maps will be generated using Geographic Information Systems (GIS) mapping software or obtained from other sources as needed. There are several types of WLP maps produced to communicate specific information that include a general location map, individual application site maps, and soil survey maps.

All maps shall be clear and properly contain, at a minimum, the WLP site identifier, a title, a date, a north arrow, a legend that defines map symbols, and a map scale. Note: the WLP site identifier (WLP ID) is the primary site identifier and includes the farmer and or landowner initials followed by the assigned site number (i.e. "BH01"). The site number will be increased sequentially if additional sites are added to the Master List of Project Sites (Appendix 2). The WLP ID will be shown on maps and used for referencing individual application sites.

3.1 General Location Map

The General Location Map is a small scale map showing the general location of application sites and the surrounding area. Maps may include significant geographic reference points such as cities and towns, major roads and highways, parcels, and large water bodies. See Appendix 3, Exhibit 1.

3.2 Individual Site Maps

The Individual Site Map is a large scale map (1:24,000) providing site-specific information that should include the field boundary line, parcel boundary line, biosolids storage area(s), tillable acres, buffers, contour lines, perennial and intermittent streams, wetlands, public roadways and associated haul routes, locations of dwellings, domestic and irrigation wells, Township, Range, and Section (T-R-S) designations , zoning classification, presence and extent of known threatened or endangered species or related critical habitat, the location of any critical areas on site as required to be identified under chapter 36.70A RCW in the county's growth management plan, the 100-year floodplain, and locations where informational signs may be posted. Lincoln County Building and Land Services (LCBLS), Planning/GIS Division and Ecology GIS will be the predominant source of information (https://www.co.lincoln.wa.us/land-services/). WLP Site Maps are provided in Appendix 3, Exhibit 2.

3.3 Soil Maps

The Soil Map uses the United State Department of Agriculture's (USDA), Farm Service Agency (FSA) maps and or the Natural Resource Conservation Service (NRCS) Web Soil Survey maps. FSA maps are generally provided by the farmer or landowner. The NRCS Web Soil Survey maps are available on-line at http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx.

- FSA maps provides accurate acreage information and the erodible soil determination for the field that includes highly erodible land (HEL), not highly erodible land (NHEL), and undetermined (UHEL).

- NRCS Web Soil Survey information will be examined for each new land application site to be permitted under this SSLAP. Soil maps will be made available to Ecology upon request or to the grower as required by federal programs. Soil map information will be based on Hydraulic Soil Group and will include map unit symbol, map unit name, rating information, and approximate acreage of the area of interest. WLP Soil Maps are provided in Appendix 3, Exhibit 3.

4.0 Daily and Seasonal Timing of Biosolids Applications

Biosolids applications will take place during normal farming hours. Biosolids will be applied during daylight hours and when weather and site conditions allow for proper application and operations.

Biosolids will not be applied if the soil is frozen, covered with snow, or oversaturated. Biosolids will not be applied to areas of the site if groundwater is within three feet of ground surface.

5.0 Biosolids Staging and Storage

Biosolids will be produced, hauled, and delivered to WLP sites from approved wastewater facilities. All biosolids deliveries to WLP sites shall be accompanied by a haul ticket or other documentation record containing the following information (see Appendix 7 – Records for an example):

- Name of hauling company and driver's name
- Name of biosolids source or generator
- Date of delivery
- Ticket or invoice number
- Weight of biosolids delivered in pounds, wet tons, and or dry tons

A SSLAP Addendum may be submitted periodically to show where biosolids deliveries are planned on any new sites or if delivery locations change on existing sites. The biosolids storage locations will be approved in advance by Ecology. All potential storage locations will be clearly identified on individual application site maps as described in Section 3.2. Staging and storage sites will be visibly posted with signage to notify unauthorized persons to not enter the site until biosolids have been applied and the site access restriction period has been met. The sites are private property and no trespassing rules may be enforced by landowners as needed. Refer to Section 6 for signage examples.

Biosolids may be staged while biosolids deliveries occur and land application equipment is mobilized. During the winter, biosolids may be stored for several months or longer. This allows for needed accumulation of biosolids on sites scheduled for application the following Spring. Potential run-on and run-off of precipitation is mitigated by selecting locations in sites that are generally level and located well inside the site property line.

Berms may be used at storage locations to prevent potential run-off from site on an as-needed basis.

Biosolids from different generators will be staged and or stored separately on permitted sites primarily due to varying nitrogen concentrations. Where biosolids from different generators are stored at the same application site, each generator's biosolids will be clearly marked with signage indicating the source of the biosolids to ensure no co-mingling of product occurs and to ensure that each biosolids product is applied at its approved agronomic rate. These signs will remain legible and be maintained during the entire period of staging and or storage. Ecology may rescind storage or application approvals if storage sites or signage are not properly maintained.

6.0 Cropping Practices and Livestock Management

Dryland winter wheat is the primary crop grown on soils receiving biosolids applications at the WLP, although some spring wheat, canola, triticale, sunflowers, hay, and other crops may also be grown. Site management criteria will be appropriate to the farmer's plan including crop type and projected crop yield.

Dryland farming sites are typically planted every other year in late-summer or early- fall. This is designated as a two-year, summer-fallow rotation. On occasion, all or portions of fields may be re-cropped to spring wheat or other crop as determined by the farmer. Re-cropping is a common practice that is performed to return a field to its proper or preferred rotation. Recropping may also be done to control weeds, to minimize pest pressures, for nutrient management, or to increase crop production in favorable years.

Crops grown on these sites may be used for human and or livestock consumption. Per the General Permit, crop harvest waiting periods will be 30 days after biosolids application for food, feed, or fiber crops. At this time, no livestock graze at these sites. Should this change, livestock grazing will be restricted for 30 days after biosolids application.

7.0 Other Nutrient Sources and Soil Amendments

Any use of other nutrient sources or soil amendments will be taken into consideration when determining biosolids application rates. This may include manures and residual mineralization of soil amendments recently applied to the site.

Cover crops may be used to improve the soil by adding organic matter, to control weeds, stabilize soil, and scavenge leftover nutrients.

8.0 Methods of Application

Land application of biosolids will be conducted with equipment suitable for the product being land applied. This means that land application methods will produce relatively

consistent spread patterns in accordance with calculated and approved agronomic rates.

Biosolids will be sufficiently dewatered (>12 percent total solids) to allow the product to be land applied as typical biosolids cake, suitable for land application using a tractor and rear discharge industrial manure spreader, or other application equipment as appropriate. Biosolids having a total solids content of less than 12 percent may be accepted at WLP's sole discretion on a case-by-case basis.

Biosolids will be applied when weather and site conditions allow for proper land application and management. Biosolids will not be applied if the soil is flooded, frozen, snow-covered, or oversaturated conditions.

Applications are typically done on summer-fallow wheat fields beginning after harvest. Biosolids application periods usually extend from August through November or until the ground becomes oversaturated, frozen, or snow covered. Applications resume after the ground is thawed and field conditions allow continued operations to occur, typically in mid-late March, and may continue through July. Daily applications will take place during normal farming hours. All significant operational and application activities will be recorded by the WLP and made available to Ecology upon request.

Biosolids applied to application sites will maintain the following minimum buffer distances:

- Public roadway: 5 feet
- Dwellings: 50 feet
- Domestic wells: 100 feet
- Streams: 33 feet

Buffers will be included in the legend of each individual site map (see section 3.2). Actual buffer distances may not be shown graphically on maps due to map scale.

The *Biosolids Management Guidelines for Washington State* (Ecology, July 2000) may be referenced and or landowners may be consulted when considering site specific factors.

9.0 Determining and Validating Application Rates

Agronomic application rates for biosolids will be approved by Ecology prior to land application. Agronomic rates will be calculated using representative pre-application soil analytical data collected from the site where biosolids will be applied, and representative biosolids analytical data. Biosolids analytical data is required for each biosolids source that is delivered to the site and each source will have a calculated application rate.

9.1 Determining the Plant Available Nitrogen (PAN) Requirement

Developing an application rate will include collection and analysis of soil samples from the site where biosolids will be applied.

Application rates for biosolids will be based on the following:

- Estimated pounds per acre nitrogen uptake (if yield-based, data will be provided)
- Nitrogen content of the biosolids per documentation provided by the biosolids generator
- Soil nitrogen analytical data results representative of the application site
- Total soil organic matter results representative of the application site
- Estimated biosolids volatilization and mineralization rate

Cooperative Extension Services, University fertilizer guidelines, and or an agronomist / soil scientist will be the basis of recommendations for PAN additions. The information upon which the application rate recommendation is based will be provided to Ecology prior to approving a biosolids application rate.

9.2 Calculating the Application Rate

Agronomic rates will be calculated separately for different crop species grown on a given application site. In addition, application rates for crops grown on irrigated fields and capable of producing higher yields, will be calculated and adjusted accordingly. Additional rate calculation factors or adjustments will be documented as a footnote in the application rate sheet. Refer to Appendix 4 for application rate worksheet example.

All pertinent data specified above for application rates will be compiled and drafted by the WLP. Draft application rates, soil test results, and recent biosolids data from the source may be sent to an agronomist or soil scientist to review, verify, modify, and finalize agronomic calculations. Final agronomic rate recommendations will be submitted to Ecology for approval.

9.3 Verification of Application Rate

Biosolids application equipment is equipped with global positioning systems (GPS) and auto-steer functions. GPS technology allows equipment operators the ability to track and record applied areas in real-time, visually see areas on GPS monitors that have been applied, and send application reports to a central computer for ongoing review, documentation, and reporting. The GPS auto-steer function ensures equipment follows established application coordinates that allows more precise applications and minimizes potential for overlapping of applications.

Application rates are regularly calibrated and checked by equipment operators. Field applications may be checked against the prescribed (or target) application rates by measuring an application area and determining the quantity applied. The actual tons applied are compared with the target rate. This information can be recorded using GPS technology. Given the type of application and the nature of the material, operations

strive for an accuracy of the target rate plus or minus 15 percent. This degree of accuracy is consistent with land application of bulk fertilizers.

10.0 Biosolids and Soil Sampling

Pre-application composite soil samples will be collected at each site where biosolids will be applied. Soil samples will be taken separately from each foot of soil 0 to 12", 12 to 24", and 24-36". There may be instances where soil sample depth may be limited due to rock or impenetrable materials impeding progress of soil augers. These conditions can result in shallow or restricted sample depths and therefore, soil sample depth may vary by site.

Pre-application composite samples will be analyzed for pollutant concentrations as defined in WAC 173-308-160 for any new project site or any project site that has not previously had biosolids applied to document background soil conditions. The pollutant analysis will be conducted for the 0" to 12" samples only. Each composite soil sample at 0" to 12" will be analyzed for ammonia-nitrogen (NH4), nitrate-nitrogen (NO3), percent organic matter (OM), and phosphorus (P) at a minimum. Composite samples at 12" to 24" and 24" to 36" will be analyzed for NH-4 and NO3 only.

A minimum of twenty individual samples (per Ecology approval) will be taken within each 1-foot horizon and mixed to constitute one composite sample. The individual samples are soil core samples collected from indicated depths. The individual samples shall be located in an unbiased fashion, evenly distributed in order that the composite sample is representative of the soil across the entire application site. A separate sampling event will be conducted prior to each biosolids application in order to assess soil conditions as accurately as possible for agronomic rate calculations.

Refer to the Biosolids and Soil Sampling Plan in Appendix 5 for more detailed information.

11.0 Groundwater Protection Plan

Agricultural dryland and irrigated farming sites are typically located above the groundwater table for effective crop production. WLP land applications do not typically occur from December to late-March, which are generally considered relatively high precipitation months. Average annual precipitation for the Wilbur area is 12.52 inches. Available data suggests that depth to groundwater is greater than 6.56 feet (200 centimeters) throughout the project area (NRCS Web Soil Survey).

Land application of biosolids will not occur if groundwater levels are with 3-feet of the ground surface. Land applications on sites that may be affected by high water tables may be temporarily restricted on specific areas of a site as determined by Ecology. Ecology's guidance on Assessing Seasonal High Groundwater may be referenced as needed.

12.0 Erosion Control Plan

Agricultural sites are typically managed to control erosion, given that farmers rely on their soil for their livelihood. The farming community is very knowledgeable in farming practices that help minimize soil erosion. Many farms in Lincoln County have adopted no-till or reduced tillage system practices that (1) leave soil mostly undisturbed and (2) leave high levels of crop residues behind that provide ground cover and can significantly reduce soil erosion.

Biosolids are a nutrient-rich, organic product that returns valuable nutrients and carbon to the land. Biosolids enrich soils and increase soil tilth by adding organic matter keeping sites productive and healthy. There is evidence that biosolids applications help reduce wind and water erosion effects.

Application sites at the WLP will be managed to control erosion. Growers will adhere to the requirements of their erosion control contracts and or agreements as prescribed. This may include considerations of slope, timing of application, site conditions, and distance to surface waters. Depending upon the site and details of land application activities, an Erosion Control Plan may be written on an as-needed basis. NRCS and FSA erosion control contract information may be made available upon request.

Biosolids land applied to "no-till" farmed sites will meet Vector Attraction Reduction (VAR) requirements per the United States Environmental Protection Agency, Environmental Regulations and Technology, Control of Pathogens and Vector Attraction Reduction in Sewage Sludge (EPA/625/R-92/013).

13.0 Noxious Weed Plan

Landowners are required to control the spread of noxious weeds in accordance with RCW 17.10.140, Owners Duty to Control Spread of Noxious Weeds.

Land application procedures that result in the spread of noxious weeds will be interpreted by Ecology as not meeting the Beneficial Use requirements of WAC 173-308-080.

Agricultural sites are typically managed to control weeds and will usually not be subject to this requirement.

14.0 Restricting Site Access

Signage approved by Ecology will be posted at all significant site access points and along common points of public contact once biosolids are delivered to the application site. Signs will be located at least every ½ mile along roadways and or at all major access points at the discretion of the WLP, unless otherwise requested by Ecology. Upon approval by Ecology, 'No Trespassing' signs may be used.

Site access restriction signage will not include a date while biosolids deliveries and land application is occurring at the application site. Signs will be dated with a site restriction date for 30 days following the last date of application of Class B biosolids. Signs will provide contact information for Ecology's Eastern Region Biosolids Coordinator and King County. An example of this site access restriction sign is provided in Appendix 6.

15.0 Recordkeeping

The WLP will keep specific records of land application activities. These records will be available for inspection by Ecology upon request. At a minimum, the following information will be included in land application site records:

- Source or generator of biosolids delivered
- Amount of biosolids delivered by year
- Amount of biosolids applied by year
- Number of acres biosolids were applied to
- Agronomic rate information of application
- The date biosolids were applied
- The targeted vegetation (crop) and its nitrogen requirement
- Sampling and analysis data used to make decisions on land application and agronomic rates
- VAR documentation and any associated incorporation records
- Amount in storage by year (carry-over)

16.0 Transportation

Biosolids delivery trucks will follow designated haul routes as shown on the project's Spill Prevention and Response Plan (Spill Plan) and application site maps. Actual haul routes may be subject to change due to a variety of weather and road-related conditions. Haul routes will be coordinated as needed per communications with Lincoln County's Department of Public Works, the department that regulates traffic on county roads, particularly during periods of snowfall and spring thaw.

Any truck transporting biosolids to WLP sites will have a Spill Plan on-board containing emergency contact information and other pertinent information. The WLP Spill Prevention and Response Plan is available upon request.

Appendices 1 through 7

Appendix 1: Landowner Authorization Forms

Appendix 2: West Lincoln Project Master List of Sites

Appendix 3: Maps (General Location Map, Individual Site Maps, Soil Maps)

Appendix 4: Application Rate Worksheet Example

Appendix 5: Biosolids and Soil Sampling Plan

Appendix 6: Public Notice Signage and Site Access Restriction Signage Examples

Appendix 7: Records

Appendix 1

LANDOWNER AUTHORIZATIONS

West Lincoln Project Beneficial Use Facility
Landowner Agreement to Land Apply Biosolids

This document provides acknowledgement and consent to land apply biosolids to property described below in accordance with Chapter 173-308 WAC. The following properties are covered by this consent form:

Parcel #	T(N)-R(E)-SEC	Description	Acreage	WLP ID/Site ID
2633020500011, 2633020500030	26-33-20	NE, N1/2SE	247.9	BH-LC-08/BH01
2633021200010	26-33-21	NW	154.0	BH-LC-09/BH02

My acknowledgement and consent for land application of biosolids recognizes that all applicable requirements under Chapter 173-308 WAC may directly affect the properties described above. Additionally, authorized individuals from the Department of Ecology and the jurisdictional health department may access these properties to inspect and insure that the biosolids rule requirements are being met .

The undersigned certifies that they are the landowner(s) of record and have the full and complete authority to make the approval stated herein:

Land Owner Name (print clearly): Braidy Haden

Signed: [signature] Date: 6/13/18

Address: 37862 Sheffels Rd N. Wilbur WA 99185

Co-Landowners—fill in with "N/A" if not applicable

Land Owner Name (print clearly): Amy Haden

Signed: [signature] Date: 6/13/18

Address: 37862 Sheffels Rd N Wilbur, WA 99185

Land Owner Name (print clearly): _____

Signed: _____ Date: _____

Address: _____

West Lincoln Project Beneficial Use Facility
Landowner Agreement to Land Apply Biosolids

This document provides acknowledgement and consent to land apply biosolids to property described below in accordance with Chapter 173-308 WAC. The following properties are covered by this consent form:

Parcel #	T(N)-R(E)-SEC	Description	Acreage	WLP ID/Site ID
2633015000010	26-33-15	NW, NESW, E1/2E1/2SW	202	BH-LC-10/BH03
2633015000010	26-33-15	NWSW, SWSW, SESW	88.9	BH-LC-11/BH04
2633022200040	26-33-22	N1/2NW	79.9	BH-LC-12/BH05
2633014300000; -2633015000010	26-33-14, -15	SW; NE, SE	432.8	BH-LC-13/BH06

My acknowledgement and consent for land application of biosolids recognizes that all applicable requirements under Chapter 173-308 WAC may directly affect the properties described above. Additionally, authorized individuals from the Department of Ecology and the jurisdictional health department may access these properties to inspect and insure that the biosolids rule requirements are being met .

The undersigned certifies that they are the landowner(s) of record and have the full and complete authority to make the approval stated herein:

Land Owner Name (print clearly): CRAIG MARSHALL

Signed: _____ Date: 3/19/2018

Address: 1303 N. MADISON ST SPOKANE, WA 99201

Co-Landowners—fill in with "N/A" if not applicable

Land Owner Name (print clearly): _____

Signed: _____ Date: _____

Address: _____

Land Owner Name (print clearly): _____

Signed: _____ Date: _____

Address: _____

West Lincoln Project Beneficial Use Facility
Landowner Agreement to Land Apply Biosolids

This document provides acknowledgement and consent to land apply biosolids to property described below in accordance with Chapter 173-308 WAC. The following properties are covered by this consent form:

Parcel #	T(N)-R(E)-SEC	Description	Acreage	WLP ID/Site ID
2631013100020; 2632018700000	26-31-13; 26-32-18	NE; N1/2	470	MS-LC-01/MS01

My acknowledgement and consent for land application of biosolids recognizes that all applicable requirements under Chapter 173-308 WAC may directly affect the properties described above. Additionally, authorized individuals from the Department of Ecology and the jurisdictional health department may access these properties to inspect and insure that the biosolids rule requirements are being met .

The undersigned certifies that they are the landowner(s) of record and have the full and complete authority to make the approval stated herein:

Land Owner Name (print clearly): Mark M. Sheffels

Signed: Mark M. Sheffels Date: 06/13/18

Address: 34023 Sheffels Rd. N Wilbur, WA 99185

Co-Landowners—fill in with "N/A" if not applicable

Land Owner Name (print clearly): _____

Signed: _____ Date: _____

Address: _____

Land Owner Name (print clearly): _____

Signed: _____ Date: _____

Address: _____

Appendix 2

WEST LINCOLN PROJECT MASTER LIST

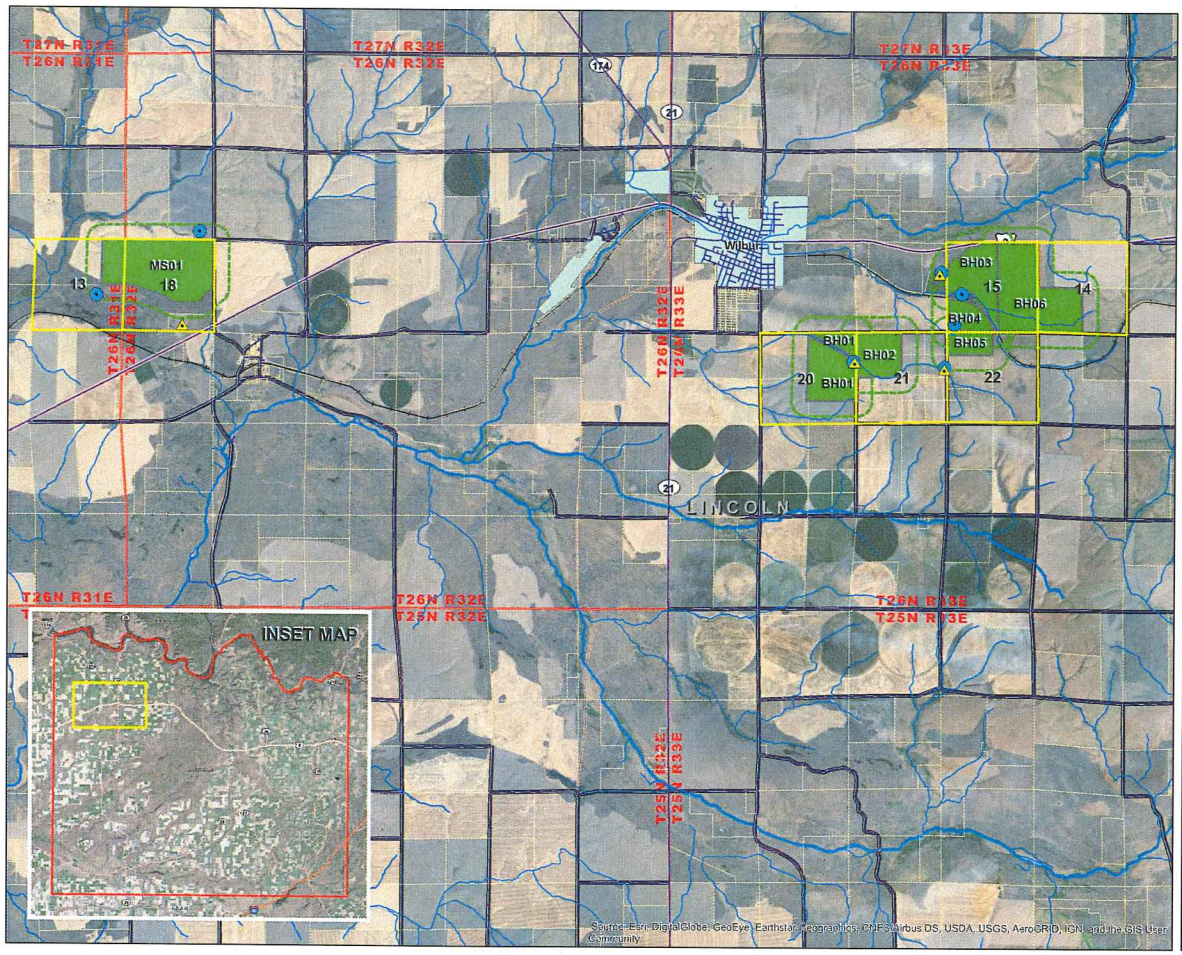
West Lincoln Project Master List

Last Updated: 6/22/2018

SPONSOR/ FARMER	LAND OWNER	SITE ID	WLP ID	LOCATION T(N)-R(E)-SEC	DESCRIPTION	TILLABLE ACREAGE	APPLIED ACREAGE	LAST APPLIED DATE (mm/yyyy)	PARCEL NUMBER	FINAL COVERAGE DATE (mm/yyyy)
Braidy Haden	Norman H Geib Testamentary	BH-LC-01		27-32-33	SW	161.3			2732033300000	
	Norman H Geib Testamentary	BH-LC-02		27-32-33; -34	SESE; SWSW	80.1			2732033400021, -4300020	
	Norman H Geib Testamentary	BH-LC-03		26-32-10	NE	158			2632010100000	
	Norman H Geib Testamentary	BH-LC-05		27-32-35	SW	151.6			2732035300170	
	Braidy J & Amy A Haden	BH-LC-08		26-33-20	NE, N1/2SE	247.9			2633020500011, -500030	
	Braidy J & Amy A Haden	BH-LC-09		26-33-21	NW	154			2633021200010	
	Craig A Marshall	BH-LC-10		26-33-15	NW, NESW, E1/2E1/2SW	202			2633015000010	
	Craig A Marshall	BH-LC-11		26-33-15	NWSW, SWSW, SESW	88.9			2633015000010	
	Craig A Marshall	BH-LC-12		26-33-22	N1/2NW	79.9			2633022200040	
	Craig A Marshall	BH-LC-13		26-33-14, -15	SW; NE, SE	432.8			2633014300000; -5000010	
Mark Sheffels	Mark Sheffels	MS-LC-01		26-31-13; 26-32-18	NE; N1/2	470			2631013100020; 2632018700000	

Appendix 3 – Exibit 1

General Location Map



West Lincoln Project Beneficial Use Facility

General Location Map

Lincoln County, WA
WRIA 43 Upper Crab-Wilson

- Residence/Well <1/4 mile - 100 ft. buffer
- Well - 100 ft. buffer
- Proposed Permitted Section
- Streams (unverified) - 33 ft. buffer
- Road - 5 ft. buffer
- Proposed Project Site
- Site - 1/4 mile Boundary Line
- City Limits
- Parcels
- Railroads
- BPA Transmission Lines

NORTH

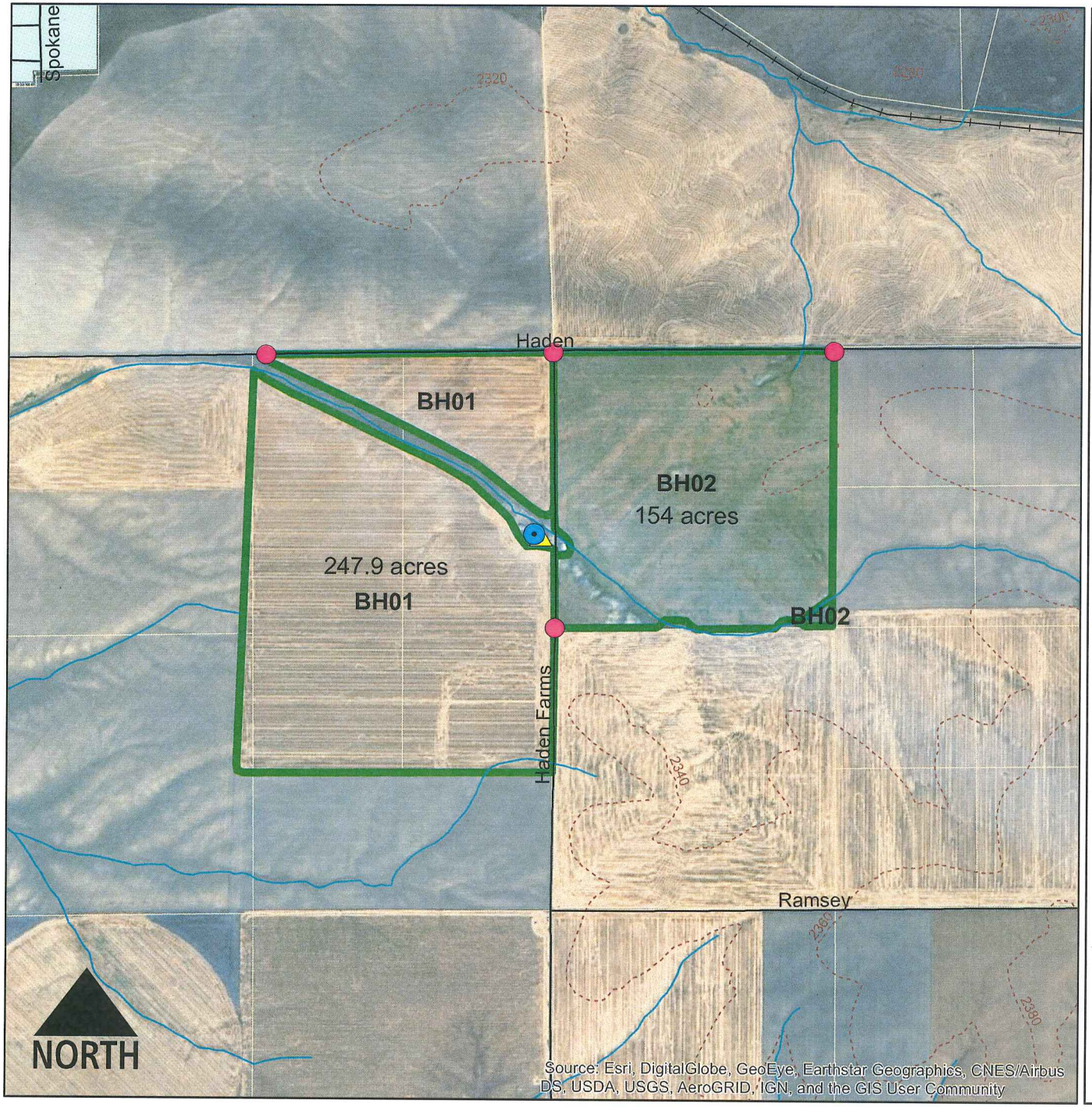
0 0.425 0.85 1.7 2.55 3.4 Miles

King County

File Name: F:\Resource Recovery\BIOSOLIDS\AGRICULTURE \BPP-LincolnCounty\GIS-Mapping\West Lincoln Biosolids.mxd - J. Finlinson

Appendix 3 – Exibit 2

Individual Site Maps



West Lincoln Project Beneficial Use Site

Sites: BH01 & BH02

Grower: BA Farms JV
Landowner: Braidy & Amy Haden

T26N-R33E-S20 and T26N-R33E-S21
Lincoln County, WA
WRIA 43 Upper Crab Creek
Zoning: Resource-Agriculture
August 2018

- Proposed Project Site
- Residence/Well - 100 ft. buffer
- Well - 100 ft. buffer
- Public Notice Sign
- Road - 5 ft. buffer
- WSDOT State Route
- Stream (unverified) - 33 ft. buffer
- Contours-20ft
- Railroad
- Parcels

Biosolids applied to applications sites will maintain the minimum buffer widths as provided in the Site Specific Land Application Plan.

0 0.1 0.2 0.4 0.6 0.8 Miles

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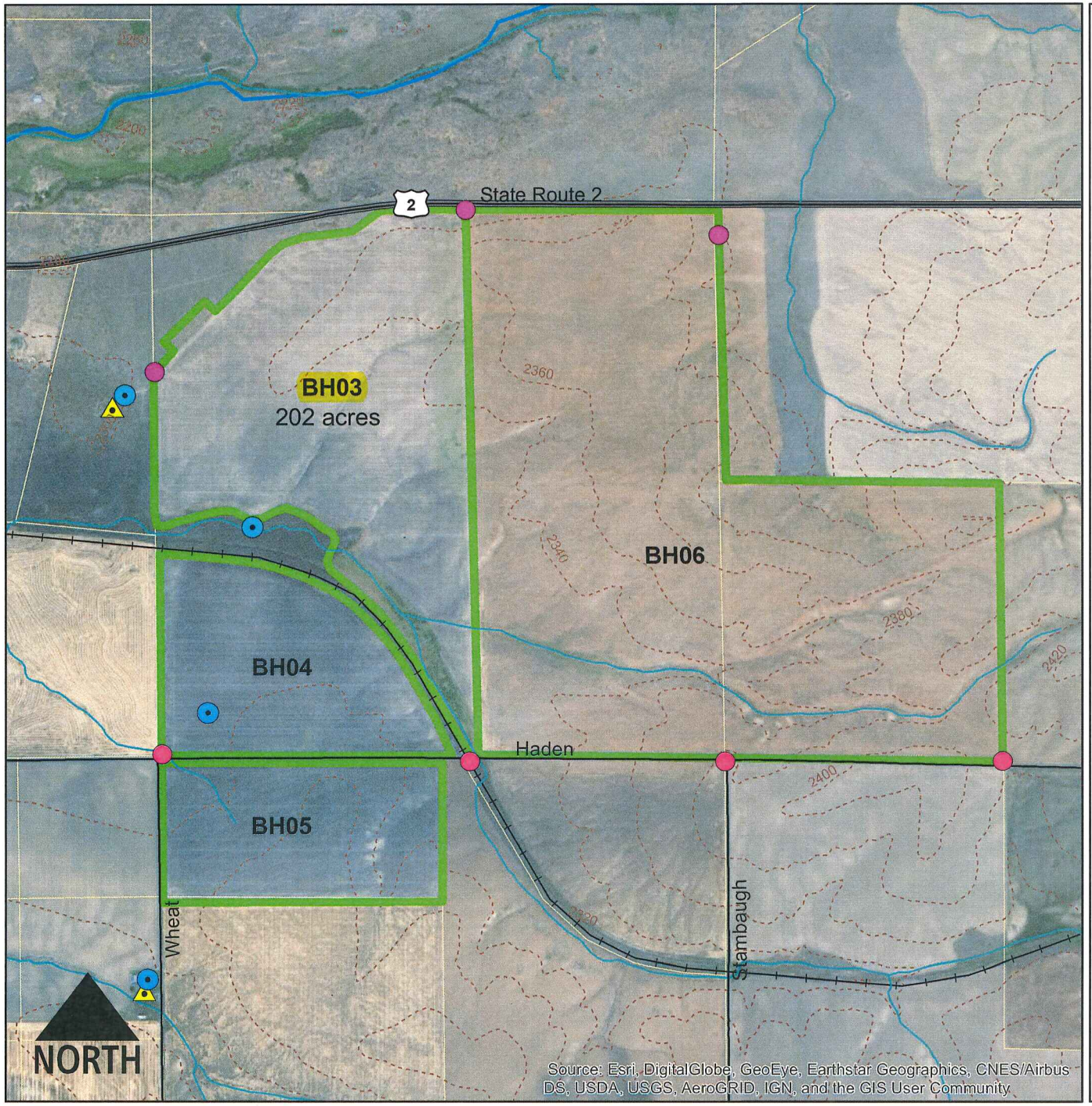

West Lincoln Project Beneficial Use Site

Site: BH03

Grower: BA Farms JV
Landowner: C. Marshall

T26N-R33E-S15
Lincoln County, WA
WRIA 43 Upper Crab Creek
Zoning: Resource-Agriculture
August 2018

- Proposed Project Site
- Residence/Well - 100 ft. buffer
- Well - 100 ft. buffer
- Public Notice Sign
- Road - 5 ft. buffer
- WSDOT State Route
- Stream (unverified) - 33 ft. buffer
- Contours-20ft
- Railroad
- Parcels

Biosolids applied to applications sites will maintain the minimum buffer widths as provided in the SiteSpecific Land Application Plan.

Miles
0 0.1 0.2 0.4 0.6 0.8

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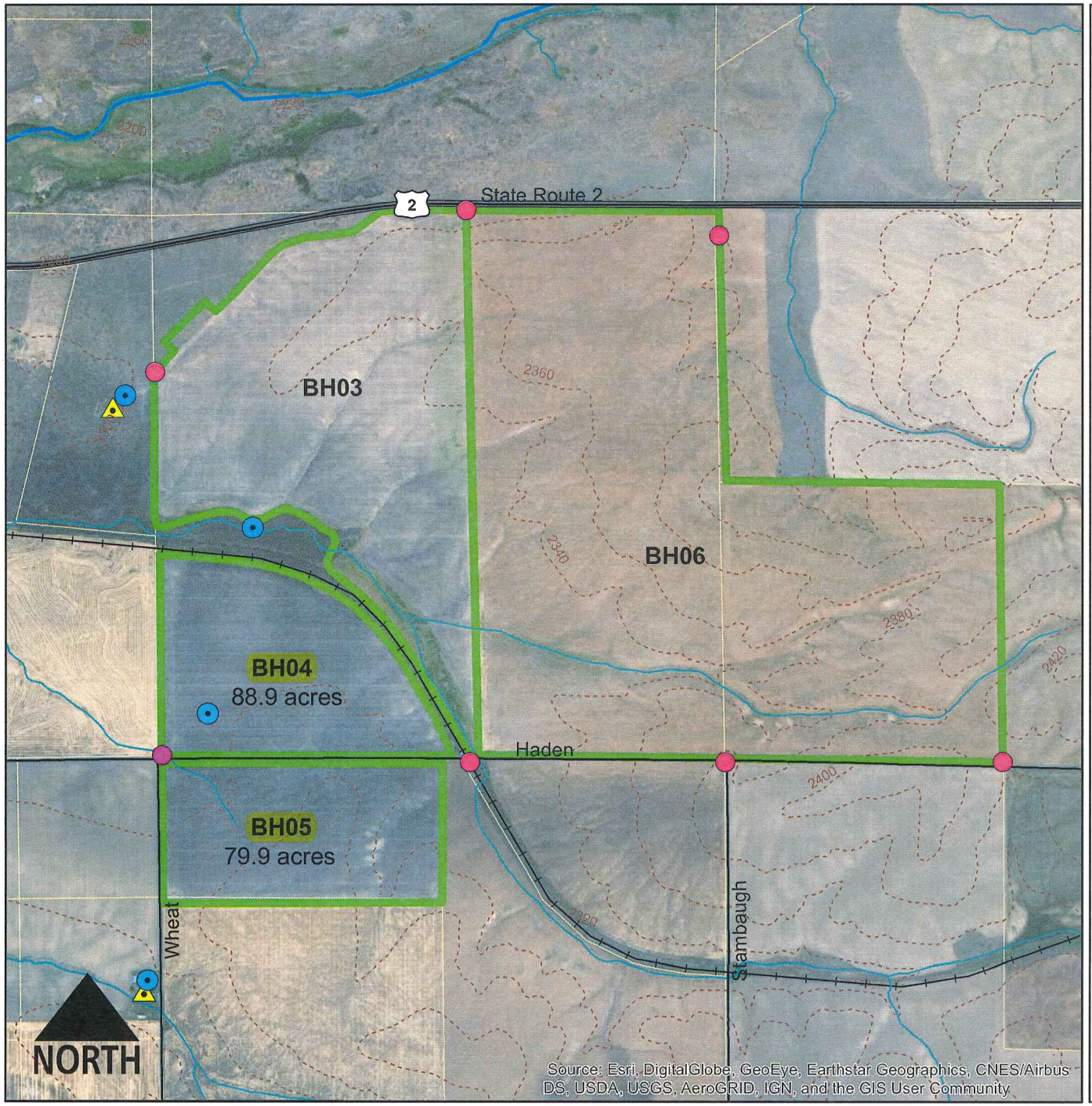


West Lincoln Project Beneficial Use Site

Sites: BH04 & BH05

Grower: BA Farms JV
Landowner: C. Marshall

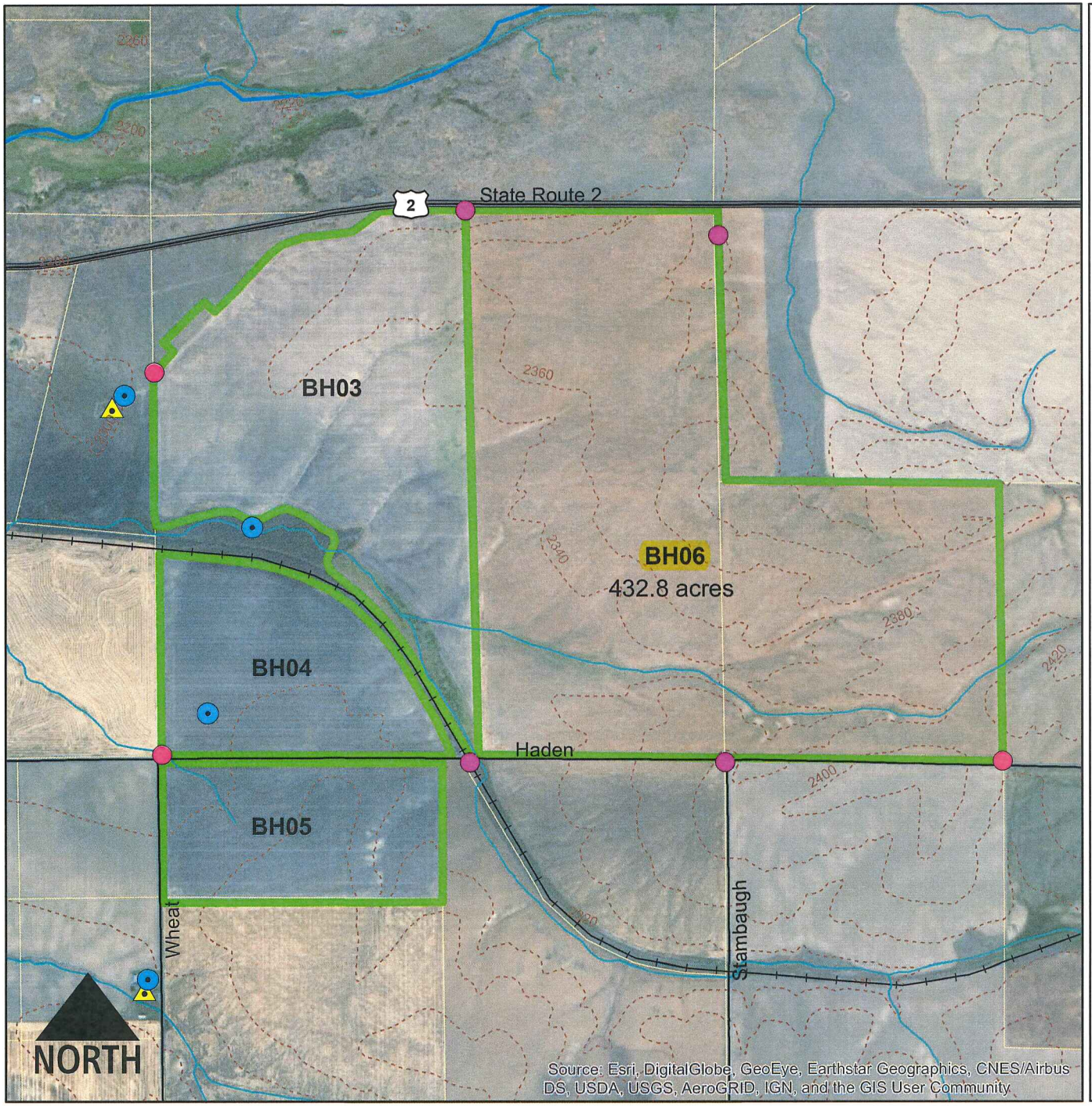
T26N-R33E-S15 and T26N-R33E-S22
Lincoln County, WA
WRIA 43 Upper Crab Creek
Zoning: Resource-Agriculture
August 2018

- Proposed Project Site
- Residence/Well - 100 ft. buffer
- Well - 100 ft. buffer
- Public Notice Sign
- Road - 5 ft. buffer
- WSDOT State Route
- Stream (unverified) - 33 ft. buffer
- Contours-20ft
- Railroad
- Parcels

Biosolids applied to applications sites will maintain the minimum buffer widths as provided in the SiteSpecific Land Application Plan.

0 0.1 0.2 0.4 0.6 0.8 Miles

File Name: F:\Resource Recovery\BIOSOLIDS\AGRICULTURE \BPP-LincolnCounty\GIS-Mapping\West Lincoln Project Sites.mxd



West Lincoln Project Beneficial Use Site

Site: BH06

Grower: BA Farms JV
Landowner: C. Marshall

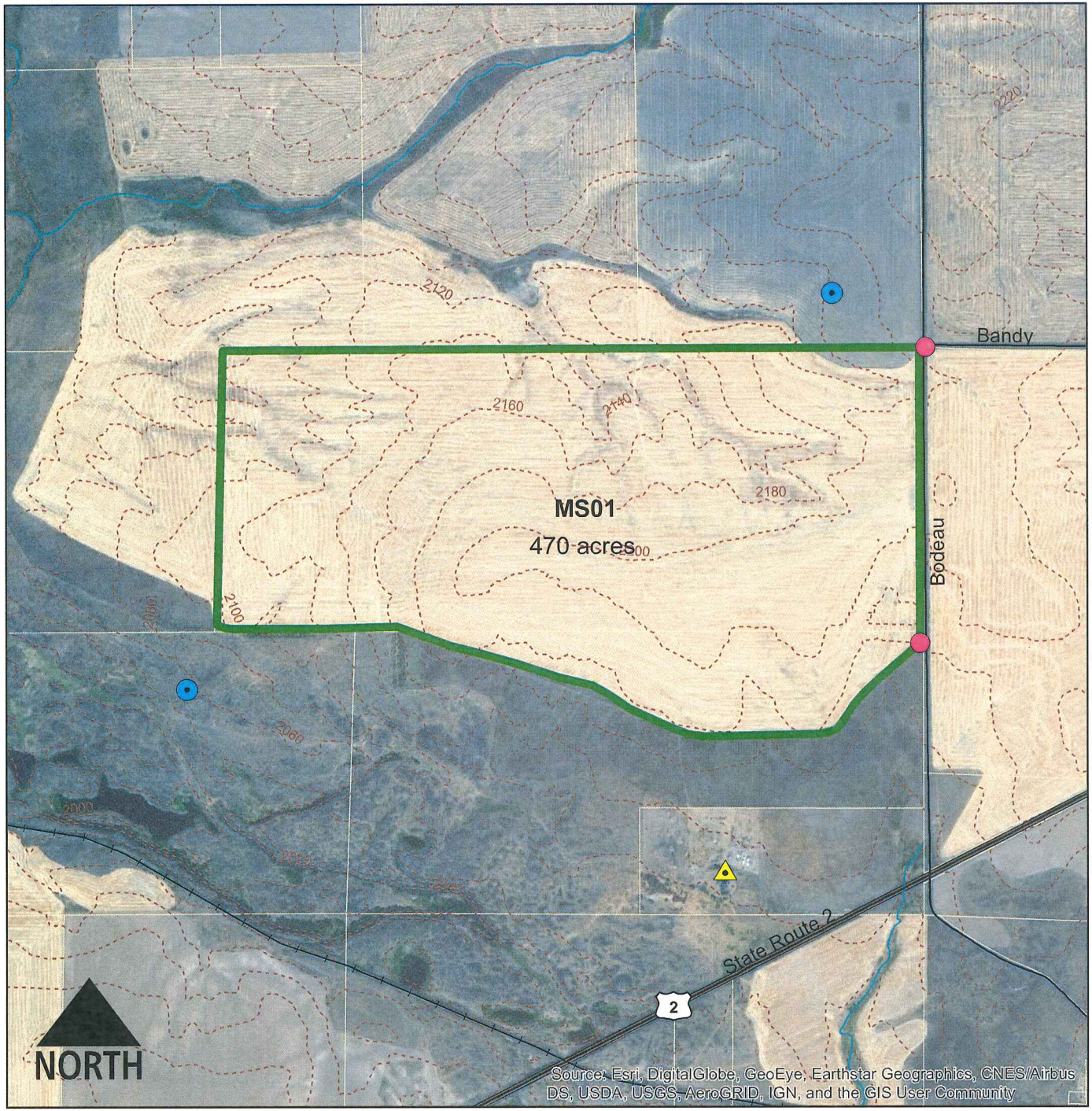
T26N-R33E-S14 and T26N-R33E-S15
Lincoln County, WA
WRIA 43 Upper Crab Creek
Zoning: Resource-Agriculture
August 2018

- Proposed Project Site
- Residence/Well - 100 ft. buffer
- Well - 100 ft. buffer
- Public Notice Sign
- Road - 5 ft. buffer
- WSDOT State Route
- Stream (unverified) - 33 ft. buffer
- Contours-20ft
- Railroad
- Parcels

Biosolids applied to applications sites will maintain the minimum buffer widths as provided in the SiteSpecific Land Application Plan.

Miles
0 0.1 0.2 0.4 0.6 0.8

File Name: F:\Resource Recovery\BIOSOLIDS\AGRICULTURE \BPP-LincolnCounty\GIS-Mapping\West Lincoln Project Sites.mxd



West Lincoln Project Beneficial Use Site

Site: MS01

Grower: Mark Sheffels
Landowner: Mark Sheffels

T26N-R31E-S13 & T26N-R32E-S18
Lincoln County, WA
WRIA 43 Upper Crab Creek
Zoning: Resource-Agriculture
August 2018

- Proposed Project Site
- Residence/Well - 100 ft. buffer
- Well - 100 ft. buffer
- Public Notice Sign
- Road - 5 ft. buffer
- WSDOT State Route
- Stream (unverified) - 33 ft. buffer
- Contours-20ft
- Railroad
- Parcels

Biosolids applied to applications sites will maintain the minimum buffer widths as provided in the SiteSpecific Land Application Plan.

0 0.1 0.2 0.4 0.6 0.8 Miles

File Name: F:\Resource Recovery\BIOSOLIDS\AGRICULTURE \BPP-LincolnCounty\GIS-Mapping\West Lincoln Project Sites.mxd

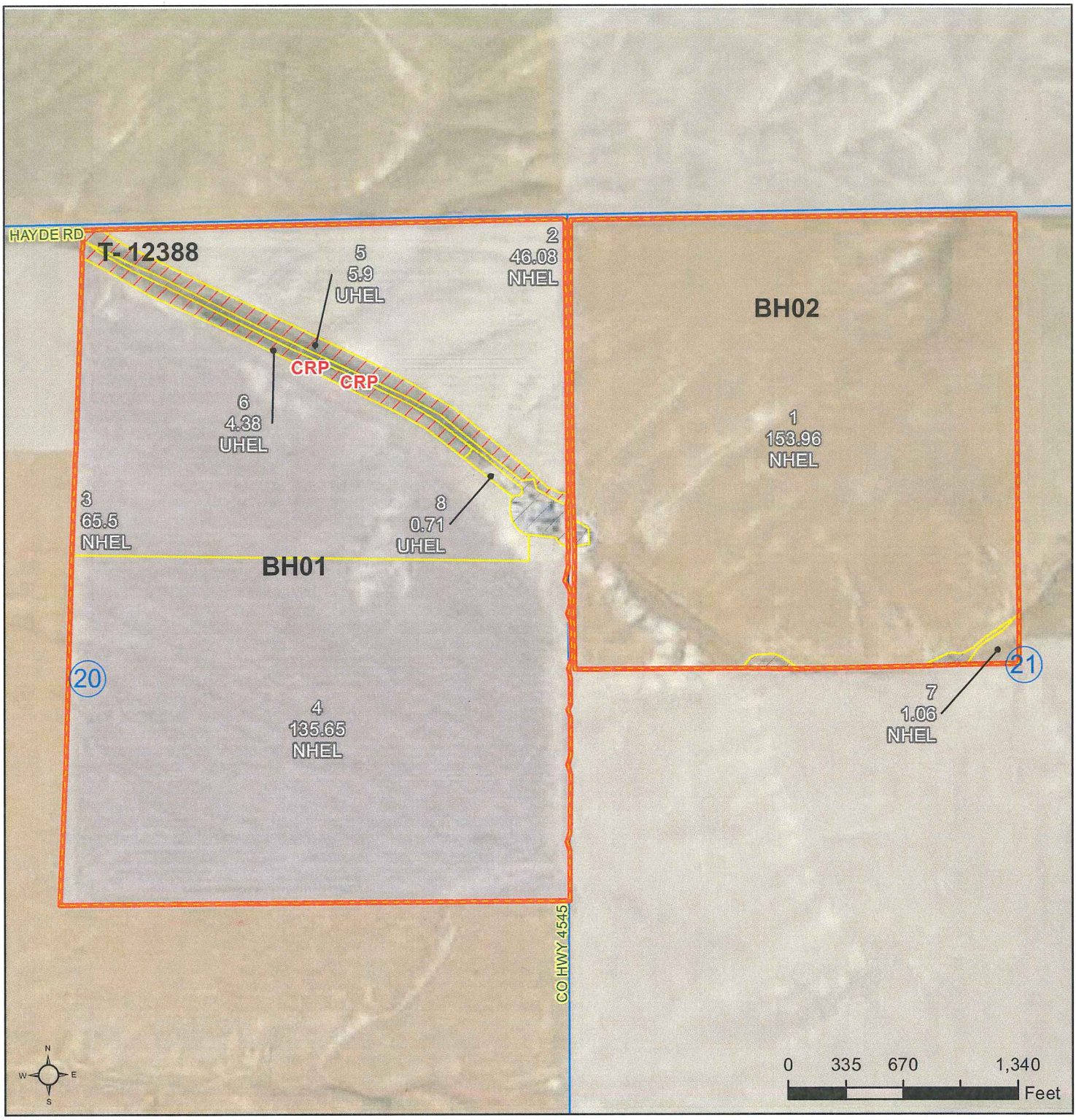
Appendix 3 – Exibit 3

Soil Maps

FSA Maps and NRCS Web Soil Maps

USDA United States Department of Agriculture

Lincoln County, Washington



Tract Boundary
Common Land Unit
Cropland
Other Ag
CRP

Wetland Determination Identifiers

- Restricted Use
- Limited Restrictions
- Exempt from Conservation Compliance Provisions

2017 Program Year

Map Created April 17, 2017

Farm **5563**

Tract **12388**

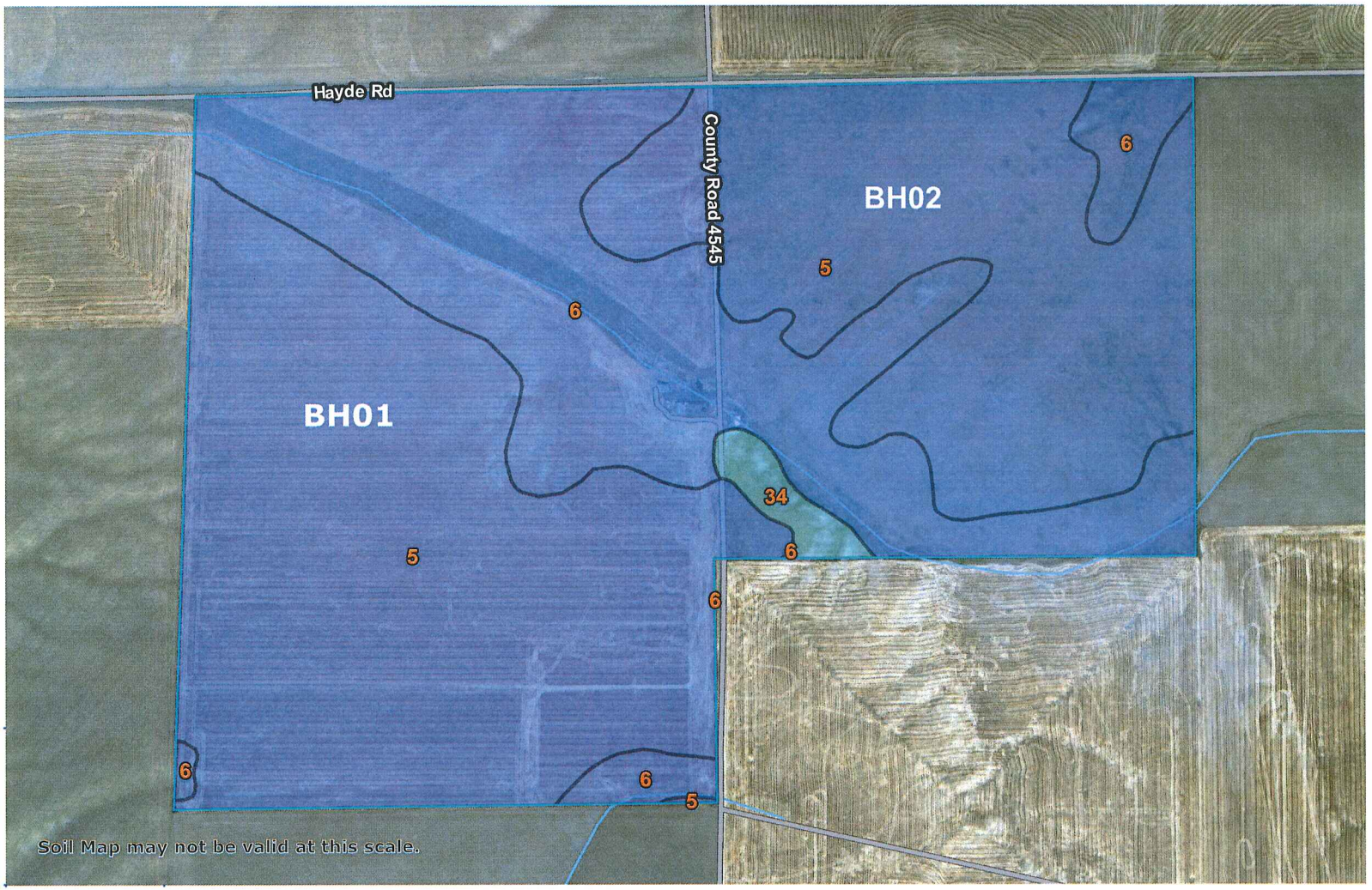
Tract Cropland Total: 413.24 acres

United States Department of Agriculture (USDA) Farm Service Agency (FSA) maps are for FSA Program administration only. This map does not represent a legal survey or reflect actual ownership; rather it depicts the information provided directly from the producer and/or National Agricultural Imagery Program (NAIP) imagery. The producer accepts the data 'as is' and assumes all risks associated with its use. USDA-FSA assumes no responsibility for actual or consequential damage incurred as a result of any user's reliance on this data outside FSA Programs. Wetland identifiers do not represent the size, shape, or specific determination of the area. Refer to your original determination (CPA-026 and attached maps) for exact boundaries and determinations or contact USDA Natural Resources Conservation Service (NRCS).

Hydrologic Soil Group—Lincoln County, Washington
(T-12388_Farm5563_T26N-R33E-S20&21)

BH01 & BH02

118° 41' 36" W
118° 39' 47" W
47° 44' 40" N
47° 43' 53" N



Map Scale: 1:10,300 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 150 300 600 900

Feet: 0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84

BH01 & BH02

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
5	Bagdad silt loam, 0 to 7 percent slopes	B	280.0	67.1%
6	Bagdad silt loam, 7 to 25 percent slopes	B	131.9	31.6%
34	Endicott silt loam, 5 to 25 percent slopes	C	5.4	1.3%
Totals for Area of Interest			**417.4**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

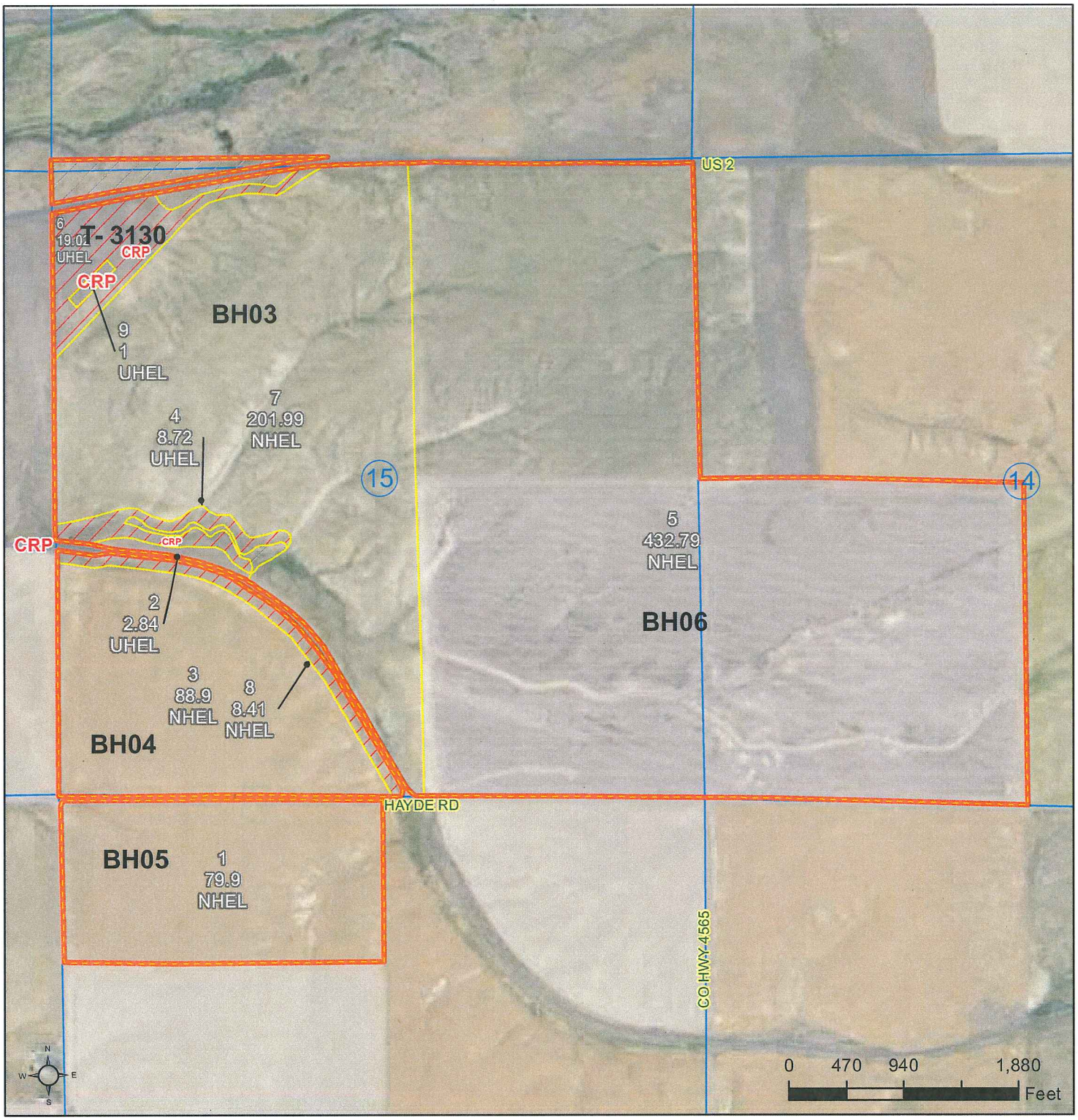
Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

USDA United States Department of Agriculture

Lincoln County, Washington



Tract Boundary
Common Land Unit
Cropland
Other Ag
CRP

Wetland Determination Identifiers
- Restricted Use
- Limited Restrictions
- Exempt from Conservation Compliance Provisions

2017 Program Year
Map Created October 06, 2016

Farm **1274**
Tract **3130**

Tract Cropland Total: 843.57 acres

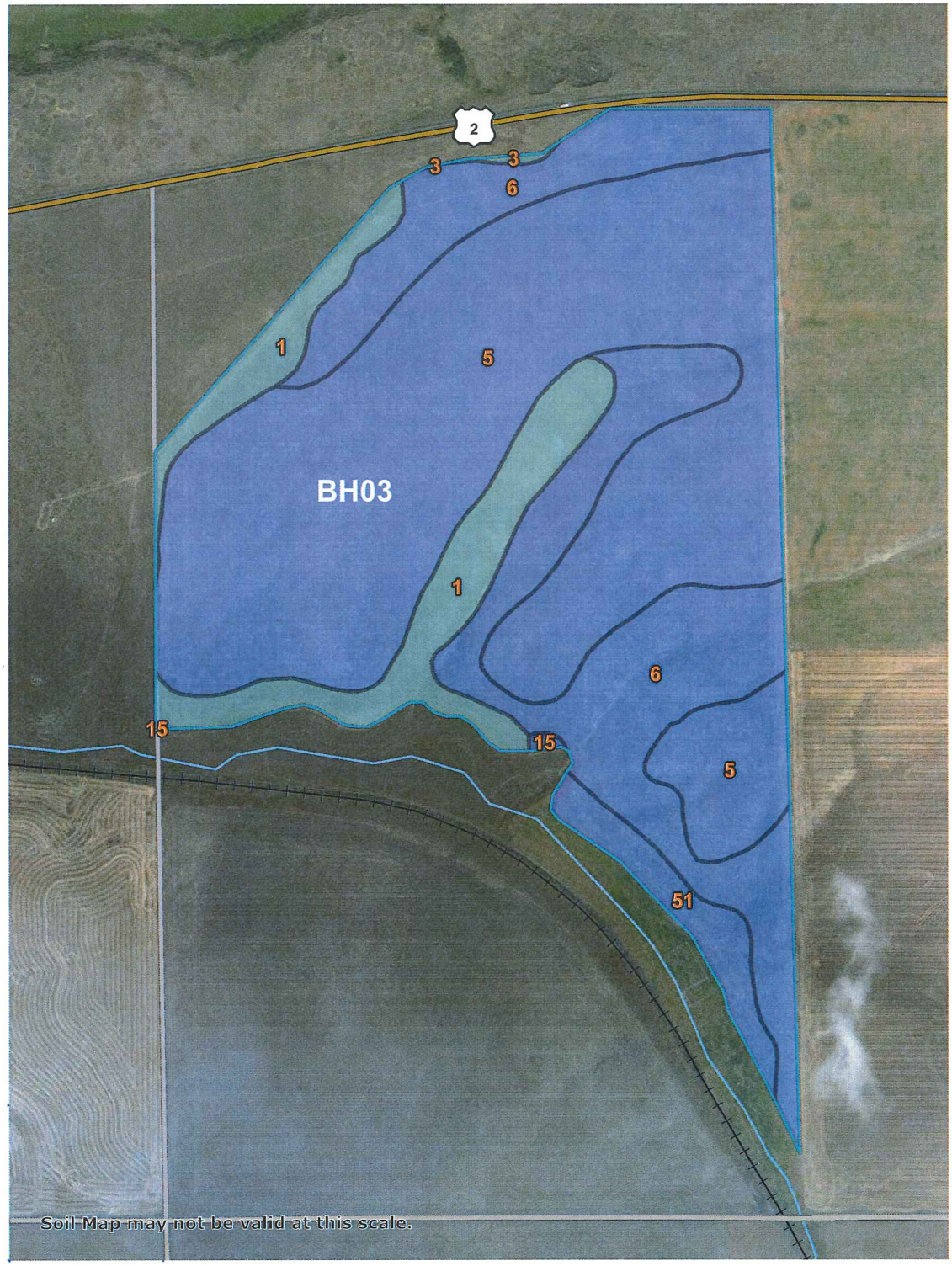
WA043_T3130

United States Department of Agriculture (USDA) Farm Service Agency (FSA) maps are for FSA Program administration only. This map does not represent a legal survey or reflect actual ownership; rather it depicts the information provided directly from the producer and/or National Agricultural Imagery Program (NAIP) imagery. The producer accepts the data 'as is' and assumes all risks associated with its use. USDA-FSA assumes no responsibility for actual or consequential damage incurred as a result of any user's reliance on this data outside FSA Programs. Wetland identifiers do not represent the size, shape, or specific determination of the area. Refer to your original determination (CPA-026 and attached maps) for exact boundaries and determinations or contact USDA Natural Resources Conservation Service (NRCS).

Hydrologic Soil Group—Lincoln County, Washington
(T-3130, Farm 1274, T26N-R33E-S15-NW)

BH03

118° 39' 33" W
118° 38' 29" W
47° 45' 32" N
47° 44' 35" N



Map Scale: 1:8,640 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 100 200 400 600

Feet
0 400 800 1600 2400

Map projection: Web Mercator Corner coordinates: WGS84

BH03

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
1	Anders silt loam, 0 to 5 percent slopes	C	21.5	11.4%
3	Anders-Bakeoven-Rock outcrop complex, 0 to 15 percent slopes	C	0.3	0.2%
5	Bagdad silt loam, 0 to 7 percent slopes	B	108.4	57.5%
6	Bagdad silt loam, 7 to 25 percent slopes	B	51.4	27.3%
15	Benge silt loam, 0 to 15 percent slopes	B	0.3	0.1%
51	Onyx silt loam	B	6.6	3.5%
Totals for Area of Interest			**188.4**	**100.0%**

BH03

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

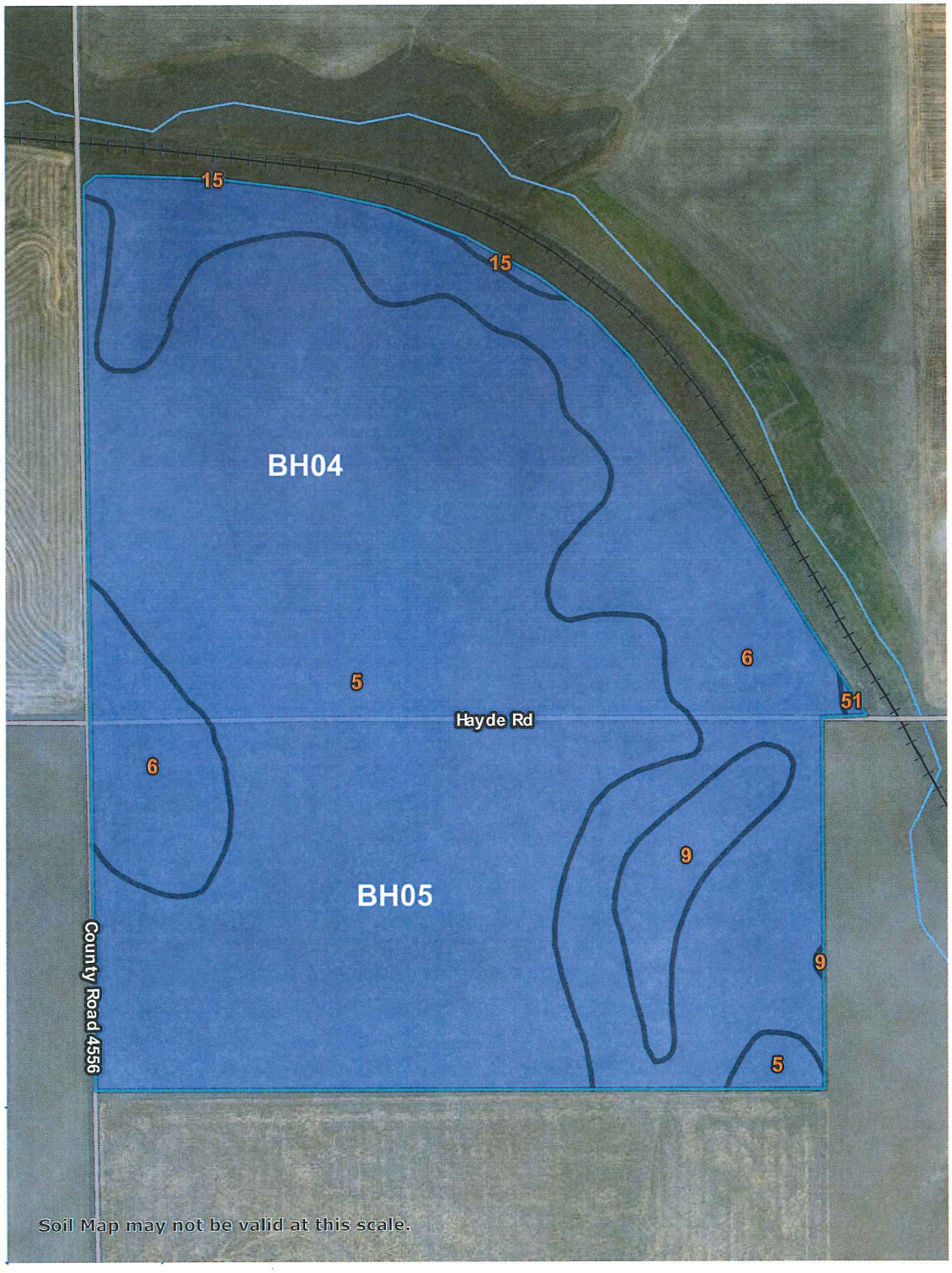
Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Hydrologic Soil Group—Lincoln County, Washington
(T-3130, Farm 1274, T26N-R33E-S15-SW,S22-N1/2NW)

BH04 & BH05

118° 39' 26" W
118° 38' 37" W
47° 45' 1" N
47° 44' 18" N



Map Scale: 1:6,600 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 50 100 200 300

Feet
0 300 600 1200 1800

Map projection: Web Mercator Corner coordinates: WGS84

BH04 & BH05

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
5	Bagdad silt loam, 0 to 7 percent slopes	B	109.7	64.3%
6	Bagdad silt loam, 7 to 25 percent slopes	B	54.5	31.9%
9	Bagdad-Endicott silt loams, 7 to 25 percent slopes	B	5.9	3.4%
15	Benge silt loam, 0 to 15 percent slopes	B	0.5	0.3%
51	Onyx silt loam	B	0.1	0.1%
Totals for Area of Interest			**170.6**	**100.0%**

BH04 & BH05

Description

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If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Hydrologic Soil Group—Lincoln County, Washington
(T-3130, Farm 1274, T26N-R33E-S14-SW,S15-E1/2)

BH06

Map Scale: 1:11,800 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 150 300 600 900

Feet: 0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84

BH06

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
5	Bagdad silt loam, 0 to 7 percent slopes	B	243.8	56.6%
6	Bagdad silt loam, 7 to 25 percent slopes	B	144.3	33.5%
9	Bagdad-Endicott silt loams, 7 to 25 percent slopes	B	42.1	9.8%
51	Onyx silt loam	B	0.2	0.1%
Totals for Area of Interest			**430.3**	**100.0%**

Description

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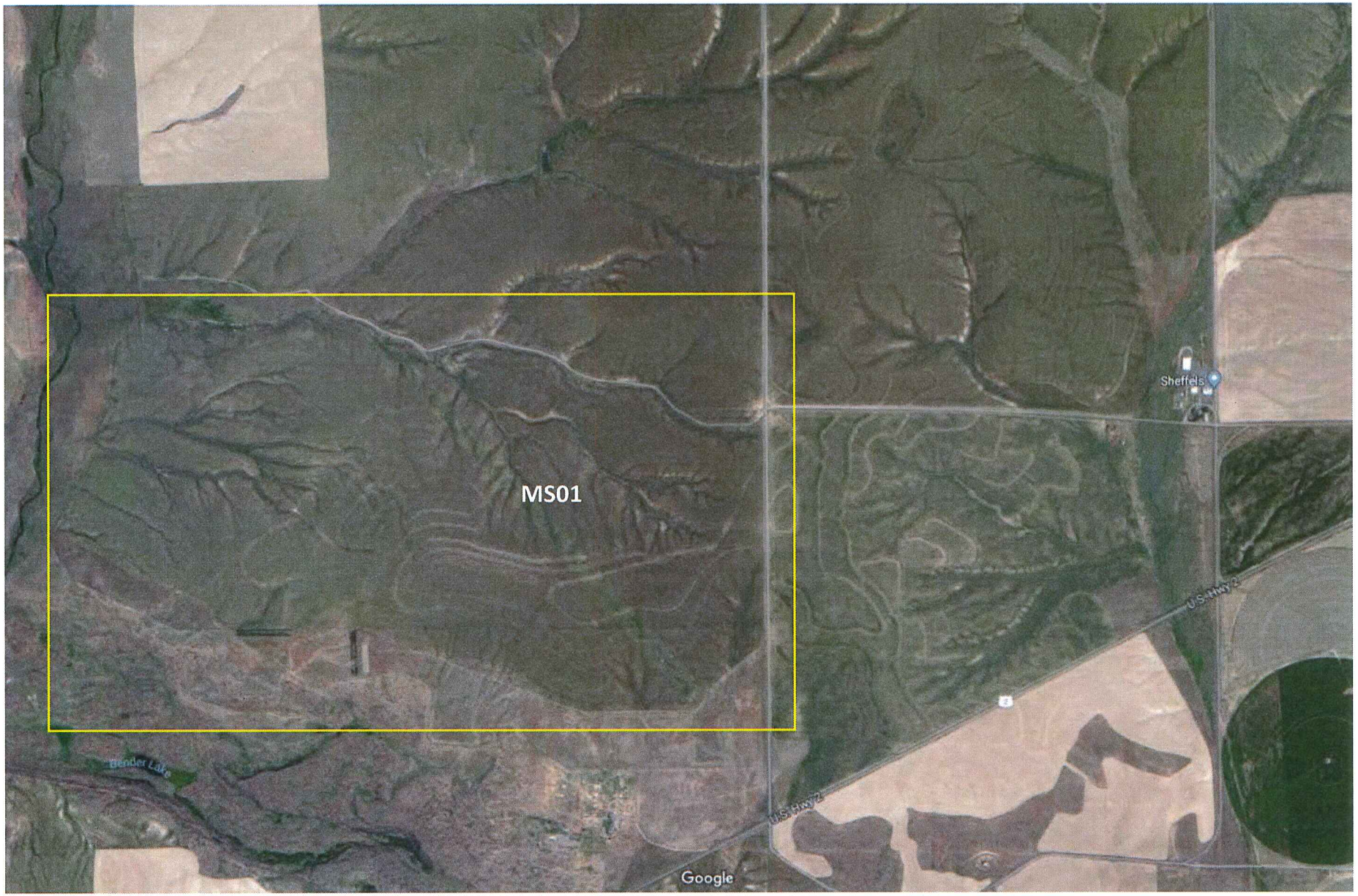
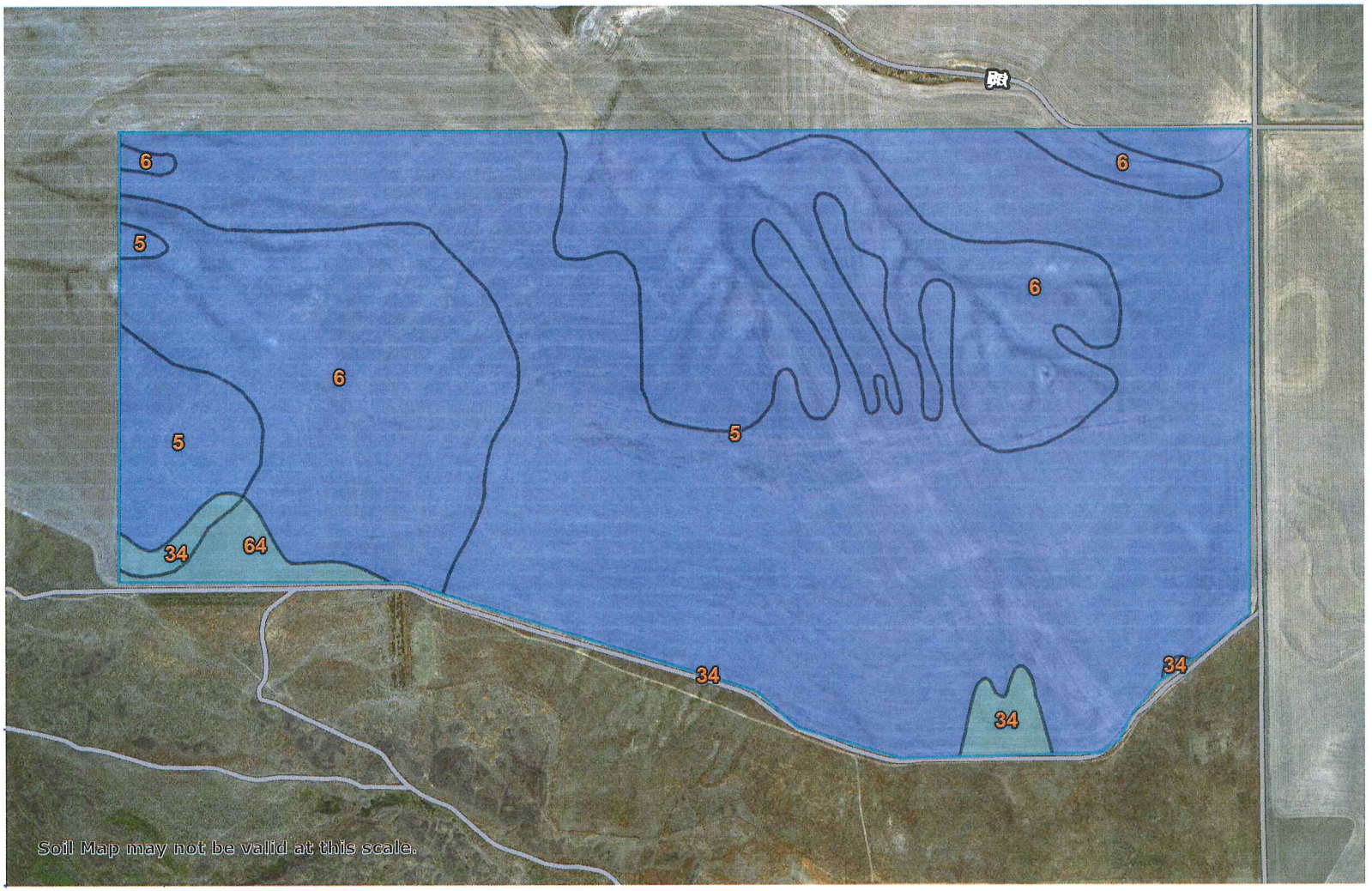
If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Mark Sheffels 509-641-0175, FSA Farm #5309, Tracts 10935 and 12441, 470 acres. T26N-R31-S13 and T26N-R32E-S18



Hydrologic Soil Group—Lincoln County, Washington
((T-10935&T-12441, Farm 5309, T26N-R31E-S13&T26N-R32E-S18))

118° 51' 32" W
118° 49' 38" W
47° 45' 33" N
47° 44' 44" N



Map Scale: 1:10,800 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 150 300 600 900

Feet
0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Lincoln County, Washington
Survey Area Data: Version 13, Sep 5, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 28, 2014—Sep 20, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
5	Bagdad silt loam, 0 to 7 percent slopes	B	278.1	62.0%
6	Bagdad silt loam, 7 to 25 percent slopes	B	157.2	35.1%
34	Endicott silt loam, 5 to 25 percent slopes	C	7.0	1.6%
64	Roloff silt loam, 0 to 5 percent slopes	C	6.0	1.3%
Totals for Area of Interest			**448.3**	**100.0%**

Description

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If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Appendix 4

APPLICATION RATE WORKSHEET
EXAMPLE

APPENDIX III

BIOSOLIDS APPLICATION RATE WORKSHEET

Example

WASHINGTON STATE UNIVERSITY

BHXX

2018

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Field(1)	Biosolids Source	Yield Goal bu/a	Crop N Requirement lb./a (2)	Soil Depth inches	SOIL NO_3-N + NH_4-N (Inorganic-N) mg/kg(3)	Soil NO_3-N + NH_4-N (Inorganic-N) lb./a (4)	Soil Profile NO_3-N + NH_4-N (Inorganic-N) lb./a (5)	Soil Organic Matter 0-12 inch	Soil TKN Est. of (Org-N) Release lb. N/a (6)	Previous BS Applications lb. N/a (7)	Estimated N from Crop and Soil	Crop Fertilizer N Req. lbs/a (8)	Biosolids Avail N lbs N/DT (9)	Biosolids Applic. Rate DT/a (10)	Biosolids Applic. Rate WT/a (11)	Total Solids (12)
BH-XX	KC	55	149	0-12	3.5	12.3	13.7	0.9	18.0	0.0	31.7	116.9	45.5	**2.6**	**12.9**	0.199
2018	Brightwater	70	189	12-24	0.4	1.4	13.7	0.9	18.0	0.0	31.7	157.4	45.5	**3.5**	**17.4**	0.199
BH-XX	KC	55	149	0-12	3.5	12.3	13.7	0.9	18.0	0.0	31.7	116.9	43.2	**2.7**	**11.8**	0.230
2018	South Plant	70	189	12-24	0.4	1.4	13.7	0.9	18.0	0.0	31.7	157.4	43.2	**3.6**	**15.8**	0.230
BH-XX	KC	55	149	0-12	3.5	12.3	13.7	0.9	18.0	0.0	31.7	116.9	37.5	**3.1**	**10.7**	0.291
2018	West Point	70	189	12-24	0.4	1.4	13.7	0.9	18.0	0.0	31.7	157.4	37.5	**4.2**	**14.4**	0.291

Orange color indicates a data entry cell

(1) Field and Year of biosolids generation

(2) Crop N Requirement = Column 3 X 2.7 +- 0.2 lb. N/Bu from *Extension Bulletin EB1987, Dryland Winter Wheat, Eastern Washington Nutrient Management Guide*

(3) Raw soil test values in mg/kg/1ft

(4) Lbs N/a = mg/kg * 3.5 from *EB1987*

(5) Profile total N lb/a

(6) Assumes 20 lbs Org-N release rate x % organic matter in a 12 inch soil depth.

(7) N avability from previous biosolids applications per *Extension Bulletin PNW0511e, Worksheet for Calculating Biosolids Application Rates in Agriculture*

(8) Column 4 (crop N requirement) minus column 12 (estimated N from crop and soil) equals crop fertilizer requirement.

(9) For example: 37.5 lbs N/dry ton (WP) using 30% mineralization rate and 60% volatilization rate per *Extension Bulletin PNW0511e*

(10) Application rate dry ton/acre = column 13 / column 14

(11) For example: application rate wet ton/acre = column 8 divided by 29.1% Total Solids West Point.
(Soil analyses performed by Soiltest of Moses Lake. Please contact King County for data, if needed.)

(12) Biosolids solids content for calculating wet/acre

(13) Application History: BH-XX has no known prior biosolids applications.

Note1: Crop is soft white wheat unless otherwise specified.

Grower: BA Farms JV

Site: BH-XX - [Site Name]

Crop: Soft White Winter Wheat

Appendix 5

BIOSOLIDS AND SOIL SAMPLING PLAN

West Lincoln Project Beneficial Use Facility

SAMPLING AND ANALYSIS PLAN

A GUIDE FOR BIOSOLIDS & SOIL SAMPLING

JUNE 2018

Table of Contents

1 Introduction

2 Selecting an Analytical Laboratory

3 Biosolids Sampling Protocols

3.1 Tools needed for sampling

3.2 Sampling for Percent Solids, Nutrients, and Pollutants

3.3 Sampling for Fecal Coliform—7-Samples Method

4 Biosolids Analysis

Table 1-Biosolids Analytical Methods, Preservation, & Holding Time

5 Soil Sampling

5.1 Tools Needed for Soil Sampling

5.2 Sampling Procedures

Table 2: Common Soil Analysis

6 Shipping samples

1.0 Introduction

An important part of the West Lincoln Project Beneficial Use Facility (WLP) land application program is based upon valid analytical data derived from representative sampling practices. The collection of a sample and its proper preservation during shipment is critical for obtaining reliable analytical results.

The concentration of nutrients, pathogens, and pollutants in biosolids are variable. In addition, pathogenic organisms are both time and temperature sensitive. Establishing a written protocol is important in order to collect samples that are both representative and consistent.

Analysis of pollutants and pathogens provide the basis for establishing Class B biosolids. Nutrient concentrations are used to determine agronomic rates when biosolids are land applied. The analysis of biosolids will follow the methods outlined in WAC 173-308-140. Biosolids sampling frequency is set forth in WAC 173-308-150. Samples shall be tested for the pollutants in section WAC 173-308-160.

In addition to sampling biosolids, soil sampling at land application sites provides important crop nutrient data. Nitrogen content in the soil is combined with nitrogen of the biosolids and the predicted crop uptake to develop agronomic rates at which the biosolids are applied to the land. Accurate assessment of soil and biosolids nitrogen concentration is dependent on defendable and repeatable sampling techniques.

This plan will describe procedures for sampling biosolids at a wastewater treatment plant and soils in a field. The intent is to be complete and concise so that sample collection, preservation, and shipment to a lab for may be performed with little or no assistance outside this document.

2.0 Selecting an Analytical Laboratory

There are variety of analytical laboratories across the state of Washington to conduct analysis of biosolids and soil. Analytical data in the Washington State program must meet the following requirements:

- Laboratories conducting the analysis must be accredited by the Washington State Department of Ecology (Ecology). This Ecology website provides accreditation details of labs and the methods for which they are accredited: https://fortress.wa.gov/ecy/laboratorysearch/ .

Make sure the analytical laboratory can provide the analysis required including:

- Laboratories should meet needed turn-around-times (TAT) for laboratory reports when samples are delivered
- Laboratories should have the ability to report the results in a format appropriate for the project goals and objectives (e.g. dry-weight basis, mg/kg, etc.)
- Laboratories should provide quality assurance/quality control (QA/QC) reports

3.0 Biosolids Sampling Protocols

Biosolids sampling will be conducted by the responsible treatment works producing the biosolids. The treatment works shall comply with all applicable requirements in accordance with WAC 173-308-130, -140, and -150. Biosolids analytical results shall be provided to the WLP for review and use in determining agronomic rate calculations.

The may be instances where biosolids may be sampled at the staging and or storage locations such as verification of reported analyses. There's a number of items needed to properly collect samples and different methods of collection. The following sections describe the accepted protocols for the biosolids program managed by Ecology:

3.1 Tools Required for Sample Collection

- Nitrile gloves
- Hi-density polyethylene (HDPE) sample containers provided by the analytical laboratory
- Ice chest
- Ice, "blue ice", or dry ice
- Shipping containers, if different from the ice chest
- Sharpie® pens, ink pens, labels for sample containers
- Chain-of-Custody (COC) forms
- Large spoon(s) other utensil(s) for grab samples
- Stainless steel bowl(s) or food-grade bucket(s)

3.2 Sampling for Percent Solids, Pollutants, & Nutrients

1) Label and date the lab sample containers before collecting samples
2) Put on clean nitrile gloves
3) Collect 15-20 small, separate, sub-samples (referred to as "grab" samples) of biosolids into a clean stainless bowl or food-grade container
4) Thoroughly mix all the sub-samples together
5) Once the sub-samples have been thoroughly mixed, take a portion of the total and place it in the lab-supplied container (repeat as necessary for multiple sample containers)
6) Place the sample(s) on ice in the cooler making sure it's properly labeled and immediately fill out the COC form
7) Samples shall be kept on ice and stored for transport at 4 degrees celcius (°C)

3.3 Sampling for Fecal Coliform - 7 Samples Method - WAC 173-308-170

1) This method requires the responsible treatment works to collect of seven separate samples over a 2-week period. Do not collect all seven samples at once unless approved in advance by the Ecology Regional Biosolids Coordinator
2) Coordinate with the analytical laboratory in advance of sample delivery. Labs have restricted hours of collection of samples when being analyzed for fecal coliform. The commonly used method requires the lab analysis to start within eight hours of sample collection, so advanced planning is necessary to collect and ship the sample for processing
3) Label and date the sample container before collecting the sample
4) Put on clean nitrile gloves
5) Collect a single sample and place it in the laboratory-supplied container
6) Place the sample on ice in the cooler making sure it's properly labeled and immediately fill out the COC form
7) Deliver to the lab immediately or within parameter hold times

4.0 Biosolids Analysis

The COC form will specify the sample parameter(s) to be analyzed by the laboratory. Table 1 provides information about methods, preservation needs, and hold times as shown below.

Table 2-Biosolids Analytical Methods, Preservation, & Holding Time

Constituent	Analysis Method	Temperatures	Hold-Time
Arsenic	SW-846 Method 6010, 6020, 7010, 7061	Cool to 39^0 F or 4° C	6 months
Cadmium	SW-846 Method 6010, 6020, 7000B, 7010	Cool to 39^0 F or 4° C	6 months
Copper	SW-846 Method 6010, 6020, 7000B, 7010	Cool to 39^0 F or 4° C	6 months
Lead	SW-846 Method 6010, 6020, 7000B, 7010	Cool to 39^0 F or 4° C	6 months
Molybdenum	SW-846 Method 6010, 6020, 7000B, 7010	Cool to 39^0 F or 4° C	6 months
Nickel	SW-846 Method 6010, 6020, 7000B, 7010	Cool to 39^0 F or 4° C	6 months
Selenium	SW-846 Method 6010, 6020, 7010, 7741	Cool to 39^0 F or 4° C	6 months
Zinc	SW-846 Method 6010, 6020, 7000B, 7010	Cool to 39^0 F or 4° C	6 months
Mercury	SW-846 Method 7470, 7471	Cool to 39^0 F or 4° C	6 months
Total Kjeldahl Nitrogen (TKN)	SM 4500- N_{org} B or C	Cool to 39^0 F or 4° C	28 days
Nitrate-Nitrogen NO_3-N	EPA 300.0 or 353.2	Cool to 39^0 F or 4° C	28 days

Ammonia-Nitrogen NH_4-N	SM4500-NH_3 B+C, D,E, or G	Cool to 39^0 F or 4° C	28 days
Fecal Coliform	SM 9221 C or E	Cool to 39^0 F or 4° C	Analysis in 8 hours from time of collection
Fecal Coliform	EPA 1680 or 1681	Cool to 39^0 F or 4° C	Analysis within 24 hours
Salmonella	SM 9260 D	Cool to 39^0 F or 4° C	
Total Solids	SM 2540 G	Cool to 39^0 F or 4° C	7 days

5.0 Soil Sampling

Background: Soil sampling is an important element in the biosolids program. Background soil samples will be collected on all new sites prior to biosolids land application and analyzed for metals to determine preexisting metals concentrations in the soil. At a minimum, background metals analyses should include the following:

Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Copper (Cu)	Lead (Pb)
Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Selenium (Se)	Zinc (Zn)

Soil samples are used to determine the quantity biosolids to land apply on a given field as part of the agronomic rate calculation. The analysis determines available nitrogen, phosphorus, and other constituents in the soil, typically in the top 3 feet. If possible, separate samples will be collected for the 1st, 2nd, and 3rd foot of soil in a given field. All the samples sent to a lab for analysis will be made up of at least 20 sub-samples collected from specific locations evenly distributed across the entire field. If using a private company for sampling services, then representative sampling will be according to their establish procedures. The objective is to gather a "composite" sample that is representative of the overall soil in the field being sampled.

The timing of sampling may vary depending upon the planned biosolids application date(s) and the purpose for which the data is being collected. Early growing season samples provide data on nutrient carryover from the previous year. Late spring & early summer samples may provide information on mineralization of organic matter after soils warm-up and fall sampling can provide information on what's left over after crops are harvested. Ecology may request any or all of the above samples to be collected and analyzed depending on the crops, soils, and farming practices.

5.1 Tools Needed for Soil Sampling

- Sample chain-of-custody forms
- Sharpie® pens and ink pens
- Soil sample bags—typically provided by the lab, however Ziploc bags are acceptable

- Clean buckets labeled by sample depth (don't put the 2-foot sample in the 1-foot bucket)
- Field book to record field description, dates, and information on sample location.
- Clean large spoon to mix samples;
- Soil sampler (e.g. hand auger, probe, etc.)
- Cooler for samples
- Sufficient Ice;
- Shipping labels if delivered by courier

5.2 Sampling Procedures

1) All samples must be taken within the boundaries of the field where land application will occur. **Bring the field map** so samples are not located in areas outside permitted boundaries
2) **Plan in advance** and determine field size and the number of samples needed to be representative of the site soils
3) Be aware of areas that don't represent the field overall, such as eroded areas and rocky outcrops and avoid taking samples in these locations
4) At each sampling location, remove the loose, organic matter on the surface of the soil to create a place where the soil probe will be inserted
5) Using the soil sampling probe, collect soil in 12-inch intervals to desired depth or until refusal. Be careful to replace the sampler back into the same hole for the 2nd and 3rd foot samples
6) If multiple 12-inch intervals are being collected (i.e. 1, 2, & 3 foot intervals) ensure the collection buckets are labeled appropriately for holding the respective subsamples
7) After collecting each subsample, move to the next subsample location and repeat sample collection process
8) Once the appropriate number of subsamples are collected to create a composite sample, mix the collected soil together thoroughly and fill a properly labeled lab sample container
9) Once the samples are collected and properly labeled, immediately fill out the COC. **Crosscheck the samples with the chain of custody form to verify the information is correct**;
10) **It's critical to preserve the samples on ice immediately**. Cooling the samples stops biological activity that can impact the results--cool below 39^0 F (4˚C). The soil sample containers must be kept cooled until they reach the lab
11) Place the COC form in a Ziploc® bag and include it with samples inside the cooler.

Table 2-Common Soil Analysis

Constituent	What is it?
NH_4-N	Nitrogen in the form of ammonia. It is a form of mineral nitrogen, is directly plant available, and common in mineral fertilizer. **This is required when sampling for agronomic rates in the biosolids program.**
NO_3-N	Nitrogen in the form of nitrate. It is another form of mineral nitrogen, is directly plant available and common in fertilizer. (NO_3 is derived from oxidizing NH_4.) **This is required when sampling for agronomic rates in**

	the biosolids program.
Total Nitrogen	Organic Nitrogen & NH4-N ***& NO3-N***. See difference from TKN. By subtracting mineral nitrogen this gives an estimate of nitrogen in soil organic matter.
TKN	Total Kjehldahl Nitrogen: Organic nitrogen & NH4-N; ***no NO3-N***. By subtracting mineral nitrogen this gives an estimate of nitrogen in soil organic matter.
Phosphorus (P)	Phosphorus, an important nutrient plants need in relatively large amounts. On the west side of the Cascades use the Bray method and east of the Cascades use Olsen. **This is recommended when sampling for agronomic rates in the biosolids program.**
Sulfur (S)	Sulfur, an important nutrient plants need in relatively large amounts. **This is recommended when sampling for agronomic rates in biosolids program.**
Potassium (K)	Potassium, an important nutrient plants need in relatively large amounts
pH	A measure of soil acidity. The scale runs from 0 (extremely acid) to 14 (extremely basic). Battery acid is near zero and liquid drain cleaner is near 14. Most agricultural soils are between 5 and 8. Most crops do best between 6.0 –7.5. **This is recommended when sampling for agronomic rates in biosolids program.**
Cation Exchange Capacity (CEC)	Cation Exchange Capacity. It's a measure of a soil's capacity to retain elements such as K, Ca, Mg, and Na. Generally speaking, sandy soils have low CEC and soil with high organic matter and clay have higher CEC. **This is recommended when making an initial assessment of a field.**
% Organic Matter	Organic matter is important for holding water & nutrients, supporting microorganisms, and creating soil structure. It also mineralizes nitrogen and micro-nutrients. For every 1% organic matter about 20 lbs of plant available nitrogen is mineralized each year. **Recommended when making an initial assessment of a field.**

Note: The cost of soil analysis varies among labs. Many labs offer pricing for a suite of analytes for less than the sum of individual analytes. Good sampling and quality analysis is essential for achieving high yields and consistent outcomes over time without leaching nutrients or burning up crops.

6.0 Shipping Samples

1) **Be sure that the COC form is accurate!** Place the completed COC form into a Ziploc® bag, seal, and place it into the shipping container. It keeps the paperwork legible when it arrives at the lab;
2) Ensure lids are sealed tightly and place in cooler on ice. Hot and sunny afternoons can easily heat samples and damage them—Samples must be kept on ice at 4°C until reaching the lab;
3) Check necessary pickup and delivery times when shipping samples so as to minimize hold times.

Appendix 6

SITE ACCESS RESTRICTION AND PUBLIC NOTICE SIGNAGE EXAMPLE

PUBLIC NOTICE

Notice is hereby given that West Lincoln Project Beneficial Use Facility (WLP) submitted an application to the Washington State Department of Ecology to obtain coverage under the General Permit for Biosolids Management to approved, actively farmed agricultural lands located at T26N-R31E-S13; T26N-R32E-S18; T26N-R33E-S14, 15, 20, 21, 22. The permit application includes a Site Specific Land Application Plan that describes how biosolids would be managed at this site. The permit application also includes a General Land Application Plan that describes how future application sites will be identified and managed. Public information regarding this permit application can be found at https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Biosolids-permits-forms#Publicinformationonbiosolidspermitapplications.

The SEPA Lead Agency, King County Department of Natural Resources & Parks Wastewater Treatment Division issued a Determination of Nonsignificance (DNS) on August 22, 2018 and comments on the DNS and environmental checklist will be accepted through September 7, 2018. See the DNS for information on where to send comments. The DNS and environmental checklist can be found at https://www.kingcounty.gov/depts/dnrp/wtd/capital-projects/environmental-planning.aspx.

To comment on this proposal or to request a public hearing or meeting, you must send written comments or requests to the Department of Ecology contact listed below by September 23, 2018.

If you wish to be included on an interested parties list to receive notification of activities relating to this project, please notify, in writing, the WLP contact listed below. WLP will provide written confirmation by certified mail, return receipt requested, to each interested person or organization that their name has been placed on the list. Contacts for questions, comments, or requests:

West Lincoln Project
Beneficial Use Facility
Jake Finlinson
201 S. Jackson ST.
MS# KSC-NR-0512
Seattle, WA 98104
(206) 477-3524

Department of Ecology
Betty Ann Bickner
Department of Ecology
Solid Waste Management
4601 N. Monroe ST.
Spokane, WA 99205
(509) 329-3505

It is a violation of law for any person to remove this sign during the public notice period.

BIOSOLIDS PROJECT SITE

This field is scheduled to receive or has had biosolids applied to the land. Biosolids are a nutrient-rich, organic product of wastewater treatment - a never ending resource - that can be beneficially recycled for its nutrients and soil amendment properties.

Only authorized persons working on this project can enter until the date shown:

_____
(Date)

For more information please contact any or all of the following:

Betty Ann Bickner (Regulatory Official)
Washington Department of Ecology-ERO
N. 4601 Monroe ST. Ste. 100
Spokane, WA 99205-1295
509-329-3505

Jake Finlinson (Permittee)
King County Dept. of Natural Resources & Parks
201 South Jackson Street, MS#KSC-NR-0512
Seattle, WA 98104
206-477-3524

Private Property – No Trespassing

Appendix 7

Records Example

Biosolids Haul Order
Brightwater

Order No.

King County

Department of
Natural Resources and Parks
Wastewater Treatment Division

Project Site _____ Driver _____

Delivery Area _____ Truck No. _____

Loading Crew : A B C D Net Wet Tons

Date/Time
Depart from Plant

Date/Time
Arrive @ delivery area

Date/Time
Depart delivery area

EXAMPLE

Problem Areas
Wet load?
Overweight?
Tarps secure?
Tarp damage?
Other damage?

Comments

0885 (New 4/12) White – Plant Goldenrod – Hauler Yellow – Project Site

Biosolids Haul Order
Brightwater

Order No.

King County

Department of
Natural Resources and Parks
Wastewater Treatment Division

Project Site _____ Driver _____

Delivery Area _____ Truck No. _____

Loading Crew : A B C D Net Wet Tons

Date/Time
Depart from Plant

Date/Time
Arrive @ delivery area

Date/Time
Depart delivery area

EXAMPLE

Problem Areas
Wet load?
Overweight?
Tarps secure?
Tarp damage?
Other damage?

Comments

0885 (New 4/12) White – Plant Goldenrod – Hauler Yellow – Project Site