Biosolids Management Plan
for
<Permittee Name>
<NPDES/WPCF> Permit No. <number>
File No. <number>
<Permittee contact name>
<Permittee contact phone number>

INTRODUCTION

The **<permittee>** (facility) owns and operates a municipal wastewater collection and treatment system, and manages a biosolids land application program. Wastewater processed by the treatment works is primarily of domestic origin, **<and no/but a>** formal pretreatment program is required to be implemented under our **<NPDES/WPCF>** permit. **<The facility also receives and processes septage>**. This biosolids management plan, as required by the **<NPDES/WPCF>** permit, outlines the liquids and solids processes at the facility, how biosolids are managed to meet federal and state requirements, and how the biosolids land application program is operated. The **<permittee's>** biosolids management plan was originally approved by the Oregon Department of Environmental Quality (Department) on **<date>** and is being updated at this time to address **<state changes>**.

WASTEWATER TREATMENT FACILITY

Liquids Processing

<Permittee> operates **<type of facility>** located at **<street address>** in **<name>** county. Treated effluent is discharged **<year-round/state months>** to **<receiving stream name>** at river mile **<number>**. The designed average dry weather flow is **<number>** million gallons per day (MGD). Actual flows during the **<year>** dry season averaged **<number>** MGD and during the wet season averaged **<number>** MGD. The peak flow design capacity is **<number>** MGD. The origin of the wastewater processed is **<number>** percent domestic, **<number>** percent commercial, and **<number>** percent industrial.

**Note: This section should describe the wastewater treatment facility liquid process flow schematic step-by-step and address the following. A diagram should also be included.*

- <Liquids processing components, including the number of components and the volume of each unit, and the current operating capacity (e.g., one headworks screenings and grit drop box - 5,000 gallon; two oxidation ditches - 1.6 MGD each).
- Upgrades or modifications made to the process since the facility's previously approved biosolids management plan (e.g., in 2001 a new 20,000 gallon concrete chlorine contact basin was constructed which provides approximately 2 hours detention time).
- Fluctuations in flow (e.g., inflow and infiltration; septage received; impact of tourism or vacation home use).
- Changes in mode of operation during seasonal conditions or fluctuations in flow (e.g., reclaimed water use, bypassing under what conditions).
- Process flow used for solids processing.
- Process monitoring units (e.g., effluent flows through a 6-inch concrete Parshall flume which is equipped with an ultrasonic flow meter).>

Solids Processing

**Note: This section should describe the wastewater treatment facility solids process flow schematic and address the following. A diagram should also be included.*

- <Primary, secondary, and tertiary solids processing components, including the number of components and the volume of each unit, and the current operating capacity (e.g., two sludge holding tanks - 155,000 gallons each, one asphalt drying pad - 180,000 square feet).
- Operational information of component (e.g., time that solids remain in digester, drying bed, or compost pile; operating temperature of each digester; type and quantity of polymer used in solids thickening process).
- Operational controls for odor minimization (e.g., the solids dewatering process takes place in an enclosed solids handling facility).
- End product and volume resulting from process (e.g., an annual average of 360 dry tons of dried biosolids are collected from the storage area and land applied).
- Upgrades or modifications made to the process (e.g., in 1999, a 175,000 gallon sludge storage tank was constructed to accommodate storage of digested sludge during the winter months).
- Solids processing operational changes during seasonal conditions or fluctuations in flow (e.g., during the months when field access is limited for application, biosolids are air dried on the drying pad or stored in the sludge storage tank which serves as a secondary digester).
- Solids process monitoring (e.g., temperature readings are taken daily from the anaerobic primary digester to attain the necessary requirement for Class B pathogen reduction).>

Septage Processing

**Note: If the wastewater treatment facility receives and processes septage, this section must be included and address the following.*

- <Type of septage received (e.g., septic tank, holding tank, chemical toilet).
- Average number of gallons received each year.
- Receiving facility screening practices.
- Receiving and processing components, including the volume of each component.
- Septage processing operational changes during seasonal conditions or fluctuations in flow.
- Septage process monitoring (e.g., flow measurement, screening, pH readings).>

Pretreatment Program

The **<permittee> <is/is not>** required at this time to implement an industrial wastewater pretreatment program as **<state reason>**. Pollutant monitoring requirements as stated in the permit will ensure land application of biosolids occurs within federal and state limitations.

BIOSOLIDS TREATMENT PROCESSES

Under 40 CFR Part 503 and Oregon Administrative Rules Chapter 340, Division 50, pathogen reduction and vector attraction reduction for biosolids must be met prior to land application. Vector attraction reduction requirements can also be met at the time of land application if biosolids are injected below the surface of the land or incorporated into the soil within 6 hours after application to the land. Biosolids are categorized as Class A or Class B depending on the method used to determine pathogen reduction. Biosolids may also be classified as exceptional quality (EQ) if the product meets: pollutant concentration limits in 40 CFR Part 503, one of the Class A pathogen reduction alternatives in 40 CFR §503.32(a), and one of the vector

attraction reduction options in 40 CFR §503.33(b)(1) through (8). To meet regulatory requirements, pathogen reduction must be met before or at the same time that vector attraction reduction is achieved.

The **<permittee>** will certify in writing that Class **<A/B>** pathogen requirements and vector attraction reduction requirements are met. The **<permittee>** will also notify the Department in writing and obtain written approval prior to any process change that would use a pathogen reduction or vector attraction reduction method other than what is specified in this biosolids management plan.

Pathogen Reduction

Pathogen reduction requirements of 40 CFR Part 503 and OAR 340-050 are met through **<state class(es) of biosolids, state which alternative(s) is met, how and when the treatment process achieves the alternative(s), and include supporting data within the biosolids management plan or as an appendix>**.

Class B Pathogen Requirements

**Note: Must meet one of the following alternatives. Check applicable alternative.*

☐ Alternative 1: The geometric mean of the density of fecal coliform of seven representative samples shall be less than either 2 million Most Probable Number (MPN) or 2 million Colony Forming Units (CFU) per gram of total solids (dry weight basis).
☐ Alternative 2: Biosolids shall be treated in one of the Processes to Significantly Reduce Pathogens (PSRP) described in the table below.
☐ Alternative 3: Biosolids shall be treated in a process that is equivalent to a PSRP, as determined by the permitting authority.

Processes to Significantly Reduce Pathogens (PSRP) Listed in Appendix B of 40 CFR Part 503

**Note: Check applicable PSRP*

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☐	Aerobic Digestion	Sewage sludge is agitated with air or oxygen to maintain aerobic conditions for a specific mean cell residence time (i.e., solids retention time) at a specific temperature. Values for the mean cell residence time and temperature shall be between 40 days at 20ºC (68ºF) and 60 days at 15ºC (59ºF).
☐	Air Drying	Sewage sludge is dried on sand beds or on paved or unpaved basins. The sewage sludge dries for a minimum of 3 months. During 2 of the 3 months, the ambient average daily temperature is above 0ºC (23ºF).
☐	Anaerobic Digestion	Sewage sludge is treated in the absence of air for a specific mean cell residence time (i.e., solids retention time) at a specific temperature. Values for the mean cell residence time and temperature shall be between 15 days at 35ºC to 55ºC (131ºF) and 60 days at 20ºC (68ºF).
☐	Composting	Using either the within-vessel, static aerated pile, or windrow composting methods, the temperature of the sewage sludge is raised to 40ºC (104ºF) or higher and remains at 40ºC (104ºF) or higher for 5 days. For 4 hours during the 5-day period, the temperature in the compost pile exceeds 55ºC (131º).
☐	Lime Stabilization	Sufficient lime is added to the sewage sludge to raise the pH of the sewage sludge to 12 for ≥2 hours of contact.

Class A Pathogen Requirements

**Note: Must meet the requirement for fecal coliform or Salmonella sp. <u>and</u> one of the alternatives. Check applicable alternative.*

Either the density of fecal coliform in the biosolids must be less than 1,000 MPN per gram total solids (dry weight basis), or the density of *Salmonella* sp. bacteria in the biosolids must be less than

3 MPN per 4 grams of total solids (dry weight basis). Sampling must consists of at least seven (7) discrete samples taken over a two week period, unless otherwise specified in the permit.

☐ Alternative 1: Thermally treated biosolids must meet one of four time-temperature regimes as outlined in 40 CFR §503.32(a)(3)(ii).
☐ Alternative 2: Biosolids must meet specific high pH-high temperature, and air-drying requirements as outlined in 40 CFR §503.32(a)(4)(ii).
☐ Alternative 3: Demonstrate that biosolids treated in other processes (that don't meet Alternatives 1 and 2) can reduce enteric viruses and viable helminth ova, and maintain operating conditions used to demonstrate pathogen reduction as outlined in 40 CFR §503.32(a)(5)(ii) and (iii).
☐ Alternative 4: Biosolids treated in unknown processes must be tested for pathogens-*Salmonella* sp. or fecal coliform bacteria, enteric viruses, and viable helminth ova-at the time the biosolids are used or disposed, or in certain situations, prepared for use or disposal as outlined in 40 CFR §503.32(a)(6)(i),(ii) and (iii).
☐ Alternative 5: Biosolids shall be treated in one of the Processes to Further Reduce Pathogens (PFRP) described in the table below.
☐ Alternative 6: Biosolids shall be treated in a process that is equivalent to a PFRP, as determined by the permitting authority.

Processes to Further Reduce Pathogens (PFRP) Listed in Appendix B of 40 CFR Part 503
**Note: Check applicable PFRP.*

☐	Composting	Using either the within-vessel composting method or the static aerated pile composting method, the temperature of sewage sludge is maintained at 55ºC (131ºF) or higher for 3 consecutive days. Using the windrow composting method, the temperature of the sewage sludge is maintained at 55ºC (131ºF) or higher for 15 consecutive days or longer. During the period when the compost is maintained at 55ºC (131ºF) or higher, there shall be a minimum of five turnings of the windrow.
☐	Heat Drying	Sewage sludge is dried by direct or indirect contact with hot gases to reduce the moisture content of the sewage sludge to 10% or lower. Either the temperature of the sewage sludge particles exceeds 80ºC (176ºF) or the wet bulb temperature of the gas in contact with the sewage sludge as the sewage sludge leaves the dryer exceeds 80ºC (176ºF).
☐	Heat Treatment	Liquid sewage sludge is heated to a temperature of 180ºC (356ºF) or higher for 30 minutes.
☐	Thermophilic Aerobic Digestion	Liquid sewage sludge is agitated with air or oxygen to maintain aerobic conditions and the mean cell residence time (i.e., the solids retention time) of the sewage sludge is 10 days at 55ºC (131ºF) to 60ºC (140ºF).
☐	Beta Ray Irradiation	Sewage sludge is irradiated with beta rays from an electron accelerator at dosages of at least 1.0 megarad at room temperature (ca. 20ºC [68ºF]).
☐	Gamma Ray Irradiation	Sewage sludge is irradiated with gamma rays from certain isotopes, such as Cobalt 60 and Cesium 137, at dosages of at least 1.0 megarad at room temperature (ca. 20ºC [68ºF]).
☐	Pasteurization	The temperature of the sewage sludge is maintained at 70ºC (158ºF) or higher for 30 minutes or longer.

Vector Attraction Reduction

Vector attraction reduction requirements of 40 CFR Part 503 are met through **<state option(s) from table below, how the treatment process achieves the option(s), and include supporting data within the biosolids management plan or as an appendix>**.

Vector Attraction Reduction Options

**Note: Must meet one of the following options. Check applicable option(s).*

40 CFR Part 503 Requirement		What is Required?	Most Appropriate For:
☐	Option 1 503.33(b)(1)	At least 38% reduction in volatile solids during sewage sludge treatment	Sewage sludge processed by: Anaerobic biological treatment Aerobic biological treatment
☐	Option 2 503.33(b)(2)	Less than 17% additional volatile solids loss during bench-scale anaerobic batch digestion of the sewage sludge for 40 additional days at 30ºC to 37ºC (86ºF to 99ºF)	Only for anaerobically digested sewage sludge that cannot meet the requirements of Option 1
☐	Option 3 503.33(b)(3)	Less than 15% additional volatile solids reduction during bench-scale aerobic batch digestion for 30 additional days at 20ºC (68ºF)	Only for aerobically digested liquid sewage sludge with 2% or less solids that cannot meet the requirements of Option 1 – e.g., sewage sludges treated in extended aeration plants. Sludges with 2% or greater solids must be diluted
☐	Option 4 503.33(b)(4)	SOUR at 20ºC (68ºF) is ≤ 1.5 mg oxygen/hr/g total sewage sludge solids	Liquid sewage sludges (2% or less solids) from aerobic processes run at temperatures between 10 to 30ºC (should not be used for composted sewage sludges)
☐	Option 5 503.33(b)(5)	Aerobic treatment of the sewage sludge for at least 14 days at over 40ºC (104ºF) with an average temperature of over 45ºC (113ºF)	Composted sewage sludge (For sewage sludges from other aerobic processes, it will likely be easier to meet option 3 or 4)
☐	Option 6 503.33(b)(6)	Addition of sufficient alkali to raise the pH to at least 12 at 25ºC (77ºF) and maintain a pH ≥ 12 for 2 hours and a pH ≥ 11.5 for 22 more hours	Alkali-treated sewage sludge (alkaline materials include lime, fly ash, kiln dust, and wood ash)
☐	Option 7 503.33(b)(7)	Percent solids ≥ 75% prior to mixing with other materials	Sewage sludges treated by an aerobic or anaerobic process (i.e., sewage sludges that do not contain unstabilized solids generated in primary wastewater treatment)
☐	Option 8 503.33(b)(8)	Percent solids ≥ 90% prior to mixing with other materials	Sewage sludges that contain unstabilized solids generated in primary wastewater treatment (e.g., heat-dried sewage sludges)
☐	Option 9 503.33(b)(9)	Sewage sludge is injected into soil so that no significant amount of sewage sludge is present on the land surface 1 hour after injection, except Class A sewage sludge which must be injected within 8 hours after the pathogen reduction process	Sewage sludge applied to the land or placed on a surface disposal site. Domestic septage applied to agricultural land, a forest, or a reclamation site, or placed on a surface disposal site
☐	Option 10 503.33(b)(10)	Sewage sludge is incorporated into the soil within 6 hours after application to land or placement on a surface disposal site, except Class A sewage sludge which must be applied to or placed on the land surface within 8 hours after the pathogen	Sewage sludge applied to the land or placed on a surface disposal site. Domestic septage applied to agricultural land, forest, or a reclamation site, or

		reduction process	placed on a surface disposal site

<Batch Processing/Alkaline Stabilization/Thermal Drying/Composting>

**Note: This section should describe any specific solids process (i.e., batch processing, alkaline stabilization, thermal drying, or composting) that is used at the wastewater treatment facility to achieve pathogen reduction and vector attraction reduction. The process should be described in detail and explain how operational conditions will ensure achievement of pathogen reduction and vector attraction reduction.*

BIOSOLIDS STORAGE

Treatment Facility

From the **<processing unit at treatment facility> <type of biosolids (i.e., liquid, dewatered)>** can be **<pumped/transferred>** into a truck for land application, or **<pumped/transported>** to **<describe storage facility (e.g., drying beds, lagoons)>**. The **<storage facility (or unit)>** is designed with a total **<area/ volume>** to accommodate for **<number of days or months>** of storage during **<state months>** until land application can commence. This is based on **<year>** production rates**. <Further pathogen reduction is achieved through <storage unit> prior to the biosolids being land applied.>**

Staging

The unloading and placement of biosolids in one area at a land application site may occur on a limited time basis. If staging of biosolids occurs, the requirements outlined in the site authorization letters for each site will be followed.

Field Storage

Field storage **<is/is not>** authorized by the Department at this time.
**Note: If field storage is authorized, include the following sentence:* Biosolids may be stored as required by the site specific authorization letter.
**Note: If field storage is authorized, the following must be submitted and will be included with the site specific authorization letter or this biosolids management plan: agricultural information, site specific information, and a field management plan. Refer to "Implementing Oregon's Biosolids Program Internal Management Directive", December 2005, for specific information that must be submitted.*

TRANSPORTATION

The **<permittee> <owns type of vehicle/contracts out>** to transport biosolids from the wastewater treatment facility to authorized land application sites. The **<type(s) of vehicle>** are operated by **<permittee's employees/contract employees>**. The **<permittee>** is able to handle the volume of biosolids produced through these transportation practices.

<Type of biosolids (e.g., liquid, dewatered, dried)> are loaded from **<processing unit at treatment facility>** into **<type of vehicle>** for land application. **<Discuss how biosolids are transferred to the vehicle, how the vehicle loading process occurs, and what measures are in place at the facility in case of a spill (e.g., impoundments, drains).>**

REMEDIAL PROCEDURES

All spills into waters of the state or spills on the ground surface that are likely to enter waters of the state will be reported immediately to Oregon Emergency Response System (OERS) at 1-800-452-0311 and the Department's regional biosolids specialist at **<phone number>**. All spills of **<number>** gallons or more on the ground surface will be reported to the Department's regional biosolids specialist within **<number>** hour(s) of the spill incident.

Spill During Transportation of Biosolids

The **<permittee>** is responsible for cleanup of any biosolids spills that occur while transporting to land application sites. If a spill occurs during the transport of biosolids between the wastewater treatment facility and the land application site, the **<permittee>** will:

- Contain the spill.
- Post the area and set up temporary fencing if there is a potential for public exposure.
- Remove spilled biosolids with a front end loader or shovel.
- Cover the area with dry lime if needed **<specify when according to quantity and location>**.
- Apply absorbent (e.g., sand) if needed **<specify when according to quantity and location>**.
- Transport spilled product to a Department authorized biosolids land application or disposal site.

Solids Treatment Process Failure or Modification

If a mechanical problem occurs with **<treatment component>** and replacement parts are not in stock at the treatment facility, an emergency parts order will be placed. During this period, **<discuss options to treatment processes to accommodate failure (e.g., divert waste activated sludge to another wastewater treatment facility, divert all sludge to a holding tank)>**.

If maintenance is needed on a treatment process component that will affect compliance with pathogen reduction or vector attraction reduction requirements, the **<permittee>** will notify the Department and get approval prior to the maintenance activity.

MONITORING AND REPORTING

Monitoring and Sampling Program

The **<permittee>** **<will develop/has developed>** and **<implement/implements>** a biosolids monitoring and sampling plan. Samples collected and analyzed will be representative of the biosolids to be land applied. Quality control measures and procedures will be implemented for microbiological tests to verify precision and accuracy. Sampling location(s) stated will demonstrate how vector attraction reduction option(s) **<option number>** **<is/are>** met. The plan includes:

- The sampling location (must be representative),
- How samples will be collected, preserved and transported, and
- The analytical method for each analysis.

All monitoring and reporting will be conducted in accordance with the **<permittee's>** **<NPDES/WPCF>** permit. The monitoring frequency is based on the amount of biosolids generated that is land applied, or marketed to be sold or given away. Based on 40 CFR §503.16, Table 1 and the amount of biosolids generated and used during **<year>**, the **<permittee>** is required to sample biosolids **<monthly/bimonthly/quarterly/annually>**.

Recordkeeping and Reporting Procedures

The **<permittee>** as the preparer and land applier of biosolids is required to maintain records to demonstrate that federal and state biosolids requirements are met. Records will be kept on file by the **<permittee>**, and will be available upon request by the Department. Monitoring and sampling records will be retained for a period no less than 5 years, unless otherwise required by the **<NPDES/WPCF>** permit or a site authorization letter. The minimum required records include the following information:

- Pollutant concentrations of each parameter stated in the permit,
- Pathogen requirements as stated in the permit for Class **<A/B>**,
- Description of how one of the vector attraction reduction requirements in 40 CFR §503.33(b)(1) through (8) are met,
- Description of how the management practices in 40 CFR §503.14 and site restrictions in 40 CFR §503.32(b)(5) are met for each biosolids land application site (*note: this is for Class B bulk biosolids*), and
- Certification that the information submitted is accurate to determine compliance with pathogen and vector attraction reduction requirements, and site restriction/management requirements.

Annual Reporting

A biosolids annual report is required to be submitted to the Department each year by February 19th or as required by the permit if bulk biosolids have been land applied, or biosolids derived products were sold or given away the previous year. The report will include information on biosolids handling activities and data (i.e., monitoring results, nutrient loading rates) from the previous calendar year. Some of the information required with the annual report includes:

- Daily site logs or records, including date, time, and quantity (gallon, pounds) of nitrogen/acre land applied.
- Map, including scale, showing the site and the land application location that coincides with the daily site application method (e.g., truck spreader bar, irrigation cannon).
- Signed copy of the certification statement (see next section on Certification Statement).

Certification Statement

The **<permittee>** is capable of meeting Class **<A/ B>** pathogen reduction and vector attraction reduction requirements. As required under 40 CFR §503.17, the **<permittee>** must retain a certification statement indicating whether compliance with pathogen reduction, vector attraction reduction, and certain site restrictions have been met. The certification statement must be retained for a period of five years, and must be submitted with the annual report that is due February 19th or as required by the permit. The **<permittee>** will retain the following certification statement and it will be signed by a principal executive officer or ranking elected official (**note: for a municipality, State, Federal, or other public agency)* or their duly authorized representative (e.g., individual or position having responsibility for the overall operation of the system, such as the position of plant manager, supervisor, superintendent or equivalent responsibility).

> **Note: The following certification is for the most common situation when Class B bulk biosolids meet Table 3 metals values and VAR is achieved at the wastewater treatment works, and is prepared and land applied by the permittee. For other situations including Class A biosolids, domestic septage, or when Table 2 Cumulative Pollutant Loading Rates are met, a different certification statement must be signed and retained. These statements are posted on the Department's web site at http://www.deq.state.or.us/wq/Biosolids/BioCerts.htm.*
>
> "I certify, under penalty of law, that the information that will be used to determine compliance with the Class B pathogen requirements in 40 CFR §503.32(b)**<insert either (2),(3), or (4)>**, the vector

attraction reduction requirement in 40 CFR §503.33(b)**<insert appropriate option (1) through (8)>**, and the site restrictions in 40 CFR §503.32(b)(5) for each site on which Class B sewage sludge was applied, was prepared under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate this information. I am aware that there are significant penalties for false certification, including the possibility of fine and imprisonment."

Signature_____Date_____

<Permittee> is also required as the land applier to certify that the management practices in 40 CFR §503.14 are being met. This certification includes that biosolids are being land applied at approved agronomic loading rates as specified in department issued site authorization letters.

"I certify, under penalty of law that the management practices in 40 CFR §503.14 have been met for each site on which bulk biosolids is applied. This determination has been made under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate the information used to determine that the management practices have been met. I am aware that there are significant penalties for false certification, including the possibility of fine and imprisonment."

Signature_____Date_____

BIOSOLIDS CHARACTERISTICS

Pollutant Characteristics

The following table is a representative biosolids analysis for pollutant characteristics. This data and all previous data indicate that pollutant concentrations for all regulated pollutants have been met.
**Note: If a facility is required to monitor more than once a year, all data for the year should be provided in this section.*

Parameter	Biosolids Analytical Result (mg/kg)	Sample Date	40 CFR §503.13(b)(3) Pollutant Concentration Limits (mg/kg)
Arsenic (As)			41
Cadmium (Cd)			39
Chromium (Cr)			-
Copper (Cu)			1500
Lead (Pb)			300
Mercury (Hg)			17
Molybdenum (Mo)			-
Nickel (Ni)			420
Selenium (Se)			100
Zinc (Zn)			2800

Nutrient Characteristics and Other Parameters

The following table is a representative biosolids analysis for nutrient characteristics and other parameters. **Note: If a facility is required to monitor more than once a year, all data for the year should be provided in this section.*

Parameter/measurement unit	Biosolids Analytical Result	Sample Date
Total solids, percent		
Volatile solids, percent		
TKN, percent		
NO_3-N, percent		
NH_4-N, percent		
Phosphorus (P), percent		
Potassium (K), percent		
pH, standard unit		

BIOSOLIDS UTILIZATION PROGRAM

<Percentage> of biosolids generated by **<permittee>** is beneficially used **<through land application/as a composted product>**. The following biosolids land application plan outlines agronomic application rate and site crops, where biosolids are land applied, site selection criteria for a new site, and site and crop management practices.

BIOSOLIDS LAND APPLICATION PLAN

Agronomic Application Rate and Site Crops

Class B biosolids are required to be land applied to a site at a rate that is equal to or less than the agronomic rate for the site. An agronomic rate is the whole biosolids application rate (dry weight basis) designed to provide the annual total amount of nitrogen needed by a crop and to minimize the amount of nitrogen passing below the root zone of the crop or vegetation to groundwater.

Biosolids application rates for the **<permittee>** sites were developed based on Oregon State University (OSU) Extension Service Fertilizer Guide: **<name of guide>**. The annual application rate for **<type of crop>** is **<number of pounds>** available nitrogen (N) per acre, unless the application site demonstrates additional nitrogen is required to match crop uptake rates. (**Note: If more than one type of crop is used at the same site, then state each type of crop and the application rate.*) The land application sites authorized for use can assimilate the total plant available nitrogen the biosolids provide on an annual basis. Specific site agronomic loading rates are stated in the Department issued site authorization letters.

Site Inventory of Existing and Potential Sites

The **<permittee>** currently land applies Class **<A/B>** biosolids to the Department authorized sites listed in the **<table below/Appendix letter>**. Surface application of biosolids is performed using **<describe equipment/vehicle>**. Site maps with the general location and size of existing authorized sites are included as Appendix **<state letter>** of this biosolids management plan. The **<permittee>** currently has **<total number>** acres that are authorized for land application. This is an adequate land base for current **<and future>** operations, based on current biosolids generation rates.

Biosolids Land Application Site Inventory
**Note: May be included as an Appendix*

Site Name/Identifier	Type of Crop/Acreage	lb. N/acre	lb. N/site	Time of year applied (month)	Harvest Cycle	Department Authorized?

Site Selection Criteria for a New Site

If necessary, the **<permittee>** will locate additional sites for land applying biosolids. Prior to using any site for land application, the **<permittee>** is required to receive a written site authorization letter from the Department. The following site conditions will be considered when determining the suitability of a site for land application:

- All sites will be located on **<agricultural/forest/reclamation>** land in **<name of county or more defined area>**.
- A site should be on a stable geologic formation not subject to flooding or excessive run-off from adjacent land.
- Minimum depth to permanent groundwater should be four feet **<and the minimum depth to temporary groundwater should be one foot at the time when application of liquid biosolids occurs>**.
- Topography should be suitable for normal agricultural operations. **<Liquid biosolids should not be land applied on bare soils when the slope exceeds 12 percent. / Dewatered or dried biosolids may be land applied on well vegetated slopes up to 30 percent>**.
- Soil should have a minimum rooting depth of 24 inches.

Public Notification

The **<permittee>** is required to notify the public of the proposed land application activity. Each year prior to land application of biosolids, the **<permittee>** should verify for those sites to be used for the year that the property owners who received prior notification have not changed. If a property owner has changed, notification of the land application activity should be made to the new property owner and documented.

Site Management Practices

Site access restrictions and setbacks will be followed as outlined in the Department's site authorization letters. The **<permittee>** will ensure that access is restricted by appropriate means as necessary, such as fencing or posting of signs at the land application site. Biosolids land application will not occur in those areas designated as buffer strips and will be achieved through accurate measurement of the buffer area prior to commencing land application.

Crop Management Practices

As listed in the Biosolids Land Application Site Inventory table on page **<number>**, biosolids are applied to **<type of crop(s)>**. Timing of application and the harvest cycle of the crop are also listed. Soil conditions must be favorable for application such that runoff, leaching, or soil compaction does not occur. The timing of land application will take into consideration tilling and irrigation practices that may occur on an authorized site.
**Note: If tilling or irrigation occurs, describe those practices.*

The overall management of nutrients at the land application sites takes into account the amount of biosolids land applied, the amount of commercial fertilizers used and the amount of residual nutrients in the soil. When additional sources of nitrogen (e.g., commercial fertilizer) are applied to a site, then the application of biosolids should be reduced to compensate for the additional nitrogen loading.

**Note: If soil sampling occurs, the following paragraph should be included.*
Prior to the initiation of biosolids application to a site, a representative soil sample is collected across the entire site, and analyzed by an independent commercial laboratory. Existing nitrogen levels in the soil profile are subtracted from the OSU Extension Service recommended nitrogen application rates for the crop and the biosolids application rate is adjusted. Soil testing is conducted at **<site locations>** on a **<state frequency>** basis. In the event of annual biosolids application to the same field for 3 consecutive years, annual sampling and testing of application site soils for nitrate and ammonia nitrogen will be conducted prior to biosolids application. Application rates must be adjusted to account for available nitrogen carried over from previous applications. If crop removal of nitrogen exceeds the calculated agronomic rate, additional nitrogen may be required to sustain crop production.