MEMORANDUM October 11, 2012

TO: Bruce Olenick, Regional Administrator
Tom Hepworth, Engineering Manager, Pocatello Regional Office

FROM: Scott MacDonald, EIT, MBA, Associate Engineer

SUBJECT: **Staff Analysis for Draft Wastewater Reuse Permit I-104-03 Industrial Wastewater Reuse Permit for the J.R. Simplot Company Don Plant.**

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1 Purpose

The purpose of this memorandum is to satisfy the requirements of the State of Idaho Administrative Code IDAPA 58.01.17.400.05, "Recycled Water Rules," for issuing wastewater reuse permits (WRPs). This memorandum addresses draft permit I-104-03 for the industrial wastewater treatment and reuse system owned and operated by the J.R. Simplot Company Don Plant in Pocatello, Idaho. The facility's treatment and reuse system is currently permitted under the terms of permit LA-000104-02. The facility also applies wastewater to the hydraulic management units permitted under LA-000035-02; a permit issued to the City of Pocatello.

2 Process Description

The Simplot Don Plant is a fertilizer production facility located approximately 3 miles west of the City of Pocatello. The processing plant is located in Power County; all land application sites are located in Bannock County. The Simplot Don Plant uses phosphate ore to produce the following:

- Dry and liquid phosphate and nitrogen fertilizers
- Feed phosphates
- Purified phosphoric acid

Industrial process wastewater generated at the plant is applied to 1,544.2 acres on eleven hydraulic management units (HMUs), producing crops for the uptake of process water nutrients. The facility generates wastewater year round. The Simplot Don Plant applied 542 million

gallons (MG) of wastewater to its permitted management units during the 2009-2010 application season, which includes the supplemental irrigation water added from well #8 at the surge pond.

Three general locations receive wastewater from the Simplot Don Plant. Two areas are close to the plant, while the upper sites are located just north of Pocatello. The upper sites are the HMUs formerly used by the City of Pocatello for the application of municipal wastewater effluent under permit LA-000035.

Wastewater from the Simplot Don Plant is land applied only during the growing season, which is April 1 through October 31. During the non-growing season, wastewater is piped to the 300 MG impoundment pond adjacent to the upper sites. Site maps are included in Appendix A.

The facility is permitted to land apply industrial wastewater, consisting of a mixture of collected stormwater, non-contact cooling water, demineralizer regeneration water, ore silo decant water, and minor isolated plant clean-up discharges. The permit prohibits land application of any other sources of wastewater including gypsum stack decant water, extraction well water, or other waste streams not specifically identified in the permit. A flow diagram of the Simplot wastewater land application system is shown in Appendix A, Figure A-1.

3 Summary of Events

The permit history, inspection findings, annual report review information, and relevant permit information is presented in this section.

3.1 Permit History

The Idaho Department of Environmental Quality (DEQ) issued permit LA-000104-02 to the J.R. Simplot Company Don Plant on June 18, 2002. The permit provided for continued operation of the wastewater treatment and reuse system serving the Simplot Don Plant. The production facility is located west of Pocatello, Idaho in Power County.

The purpose of the draft permit is to renew LA-000104, which has an expiration date of June 17, 2007. The facility continues to operate under the terms of that permit. The facility also applies wastewater to seven HMUs permitted under LA-000035-02, issued to the City of Pocatello with an expiration date of May 7, 2007. With the inclusion of those HMUs under the new permit I-104-03, the permit issued to the City of Pocatello will be formally terminated.

A permit renewal application from the Simplot Don Plant was received on November 6, 2006, and largely serves as the basis for the terms and conditions contained in the draft permit. Following review of the application materials, and due to the complexity of combining two separate reuse permits, DEQ requested that Simplot submit additional information to further characterize the wastewater sources in the new permit.

As required by IDAPA 58.01.17.400.07.b, "Recycled Water Rules," the draft permit will be presented for a public comment period. After the comment period has closed, DEQ will provide written responses to all relevant comments received and prepare a final permit for the J.R. Simplot Company, Don Plant wastewater reuse facility.

Table 1 lists the history of events leading to the application for renewal of permit LA-000104.

Table 1. History of wastewater reuse permit LA-000035 and LA-000104.

Year	Permit	Comments
2006	LA-000104-03	Joint permit application submitted by J.R. Simplot Company to address the land application sites currently included in LA-000035-02 and LA-000104-02 (Simplot 2006a)
2005	LA-000035-02	Memo sent by Rick Huddleston to Tom Hepworth regarding modifications to the permit for J.R. Simplot Company assumption of responsibility for regulatory obligations currently assigned to City of Pocatello (DEQ 2005a)
2003	LA-000035-02	Modification of permit buffer zone requirements. Tiffany Floyd, DEQ, letter to Brent Hokanson, Superintendent, City of Pocatello Water Pollution Control Dept., August 11, 2003 (DEQ 2003).
2002	LA-000035-02	Permit renewal for City of Pocatello.
2002	LA-000104-02	Permit renewal for Simplot Don Plant.
1996	LA-000035-01	Permit renewal for City of Pocatello.
1996	LA-000104-01	Permit renewal for Simplot Don Plant.
1992	LA-000104	Initial issuance of permit for Simplot Don Plant.
1991	LA-000035	Initial issuance of permit for City of Pocatello.
1973	LA-000104	Studies initiated to determine how J.R. Simplot Company fertilizer complex can comply with zero discharge of nitrogen and phosphate laden effluent into the nearby Portneuf River. (Simplot 1982).

3.2 Inspection and Annual Report Review Findings

Relevant findings from facility inspections are presented in Table 2. Relevant findings from annual report reviews submitted by the facility are presented in Table 3. The facility currently submits two annual reports for wastewater application under the two separate reuse permits issued by the Idaho Department of Environmental Quality.

Table 2. Facility inspection history and relevant findings

Date	Permit	Findings
July 28, 2011	LA-000104-02	No violations observed. One pressure gauge needs to be replaced.
July 28, 2011	LA-000035-02	No violations observed.
June 11, 2009	LA-000104-02	No violations observed.
June 19, 2006	LA-000035-02	Request for additional information on Well 8, information on how sewage plant effluent is prevented from entering pipeline used for land-application.
Feb. 16, 2006	LA-000104-02	No violations observed.
Feb. 16, 2006	LA-000035-02	No violations observed.
May 17, 2005	LA-000035-02	No issues reported.

May 17, 2005	LA-000104-02	No violations observed.
May 27, 2004	LA-000104-02	All hardcopy records of laboratory analyses, required calibrations, and other documentation pertaining to permit operation and compliance should be located where they are readily accessible as needed. In the event Simplot assumes the City of Pocatello land treatment system, the facility will need to be prepared for the additional technical and regulatory effort required for permit modification. The facility is to be commended for organizing historical and current data into electronic format.
December 19, 2002	LA-000104-02	Composite wastewater sample taken incorrectly. IWR is not calculated for irrigation water applied to the grass crop grown for grazing. Staff is not thoroughly familiar with ground water sampling procedures. Potential exists for wastewater with a pH either <2 or >12.5 to be introduced into ponds.

Table 3. Relevant findings from annual report reviews

Report Year	**Permit**	**Findings**
2009-2010	LA-000104-02	Five monitoring wells show TDS levels above secondary constituent std.
2009-2010	LA-000035-02	One HMU not loaded, due to reduced wastewater production.
2008	LA-000104-02	Several management units appear to be hydraulically overloaded, but crop uptake of nitrogen appears to match crop uptake for most units.
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2007	LA-000104-02	Several management units appear to be hydraulically overloaded.
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2006	LA-000104-02	Several management units appear to be hydraulically overloaded.
2006	LA-000035-02	Several management units appear to be hydraulically overloaded.
2005	LA-000104-02	Ground water continues to show minor exceedances of secondary constituent standards for total dissolved solids (TDS) and sulfate; DEQ requested additional discussion of potential causes and impacts in future annual reports. Lab reports showing results from crop tissue analysis not included
2005	LA-000035-02	Permittee needs to proceed with the development of a comprehensive operations and maintenance plan that reflects the merger of LA-000104 and LA-000035

4 Discussion

This section presents relevant issues related to site conditions, along with historical and proposed management practices that are used as the basis for determining permit conditions. Discussion items include; operations, hydraulic management unit configuration, site soils, ground water, surface water, historic and proposed site loading, wastewater quality and flow, storage structures, site management, and compliance activities. A summary of this section is provided in 4.9.

4.1 Plan of Operation

A plan of operation has been submitted to DEQ (Simplot 2006b) and is assumed to be currently in use. This document is required to be updated or modified as operations and regulatory requirements change. The plan of operation must be made current within 12 months following issuance of the new permit.

4.2 Hydraulic Management Unit Configuration

The facility's land application sites include eleven HMUs shown in Table 4, with the common names listed according to recent land survey updates. The updated 2009 survey maps are included in Appendix A for reference. DEQ has updated the original LA-000035 management unit serial numbers to the new serial numbers listed in Table 4 for the new permit. MU-10408, Central Hale #2 has had 5.8 acres broken out as a separate, new management unit number.

Table 4. Simplot Don Plant hydraulic management units

Serial Number	Common Name	Acres
MU-10401	Swanson Ranch	112.4
MU-10402	BapCo / Carlson	73.1
MU-10403	Spanbauer Ranch	119.3
MU-10404	North Hale	129.8
MU-10405	Johnson Farms #1	151.7
MU-10406	Johnson Farms #2	135.0
MU-10407	Central Hale #1	120.8
MU-10408	Central Hale #2	72.6
MU-10409	South Hale	143.1
MU-10410	Rupp/Jensen	480.6
MU-10411	Central Hale Little	5.8
Total Irrigated Acres		1,544.2

4.3 Site Soils

The seven upper soil management units found north of Pocatello range from an elevation of 4,600 to 4,950 feet, while the elevations of the lower sites near the plant range from 4,410 feet to 4,460 feet. The upper sites have more sloping ground, greater elevation differences, and depth to ground water of over 150 feet. The lower sites are generally flat, rural farming ground. Recent monitoring well sampling data for the lower sites shows ground water depth between 7.5 feet and 50 feet below ground surface depending on location and seasonality.

The upper sites have slightly different soil characteristics than the lower soil management units. The permit application characterizes the general soil profiles as silt loam which is in agreement with the characterizations in the two existing permits.

- LA-000035-02, originally issued to the City of Pocatello, defines the upper soils as silt loam. The DEQ staff analysis indicated that the upper site soils are "loess derived and consisting of deep, well-drained silt loam with a blocky structure to at least 60 inches."
- LA-000104-02, issued to the J.R. Simplot Company indicates the soils as two types of silt loam. The DEQ staff analysis indicated that both of the lower soil unit types "…were formed from loess and generally overlie alluvial sediments." The staff analysis concluded, "A review of the Bannock County soil survey confirms soils information provided in the application."

Soil Monitoring

The permit requires annual soil monitoring for sodium adsorption ratio (SAR), percent hydrogen ion concentration (pH), nitrate-nitrogen (NO_3-N), ammonium-nitrogen (NH_4-N), percent organic matter (%OM), potassium (K), and plant-available phosphorus (P). The permittee also analyzed soil samples for boron (B), chloride (Cl^-), copper (Cu), manganese (Mn), sulfate (SO_4^{2-}), cation exchange capacity (CEC), and zinc (Zn). SAR trends are not increasing, but some values remain elevated for soil management units SU-003501, SU-003505, SU-003506, SU-003507, and SU-003509. Elevated SAR values appear independent of the type of crop grown. Values for other parameters have shown some seasonal variation, but no apparent increasing trends.

The 2011 facility inspection revealed that wastewater production and constituent loading on site soils is greatly reduced from previous years. DEQ expects to see reduced soil constituent concentration trends in the soil samples as a result of reduced wastewater loading.

4.4 Ground Water

A ground water study completed by HDR Engineering entitled, "Evaluation of Potential Migration of Wastewater Constituents Compliance Condition CA-035-05," (HDR 2005), has determined ground water to be greater than 150 feet below ground surface at the upper sites. Based on DEQ concurrence with results from the HDR report and ground water investigations conducted by the J.R. Simplot Company, monitoring wells will not be required at the upper sites at this time.

At the lower sites, the new permit will require ground water sampling three times annually, which is reduced from the current quarterly monitoring. Monitoring wells shown in Figure 1 are listed in the permit Section 5.2.1, as ground water monitoring points.

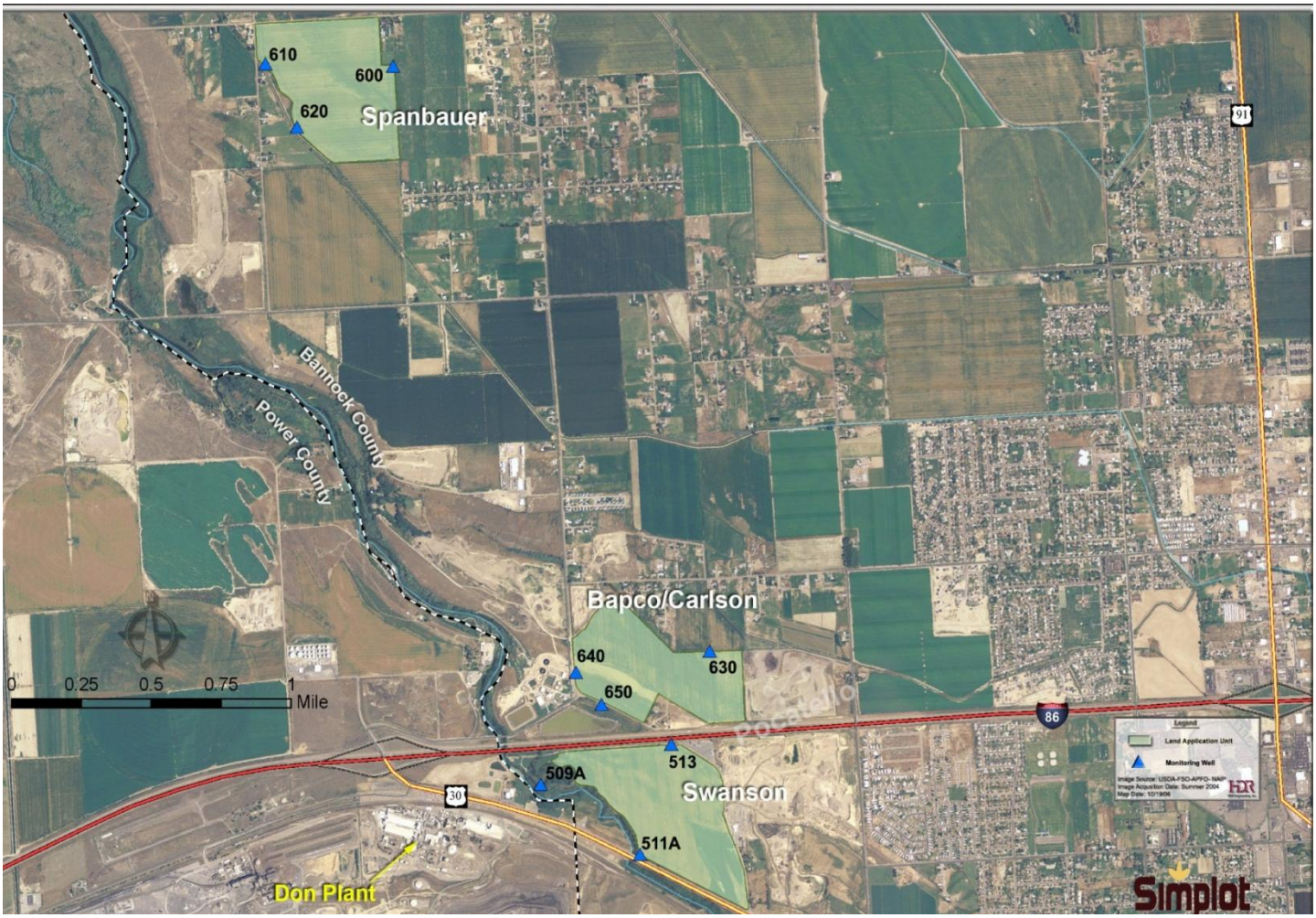


Figure 1. LA-000104 Ground water monitoring well locations

4.4.1 Ground Water Monitoring Data:

Review of annual report data for nitrate and fluoride (Figure 2 below) shows exceedances of the ground water standard for nitrate, but no increasing trend. Most nitrate values remain below the standard of 10 parts per million (ppm). Fluoride results remain well below the 4 ppm standard. Source data for Figures 2-4 comes from the 9 ground water monitoring wells sampled and reported in the annual reports listed in the reference section.

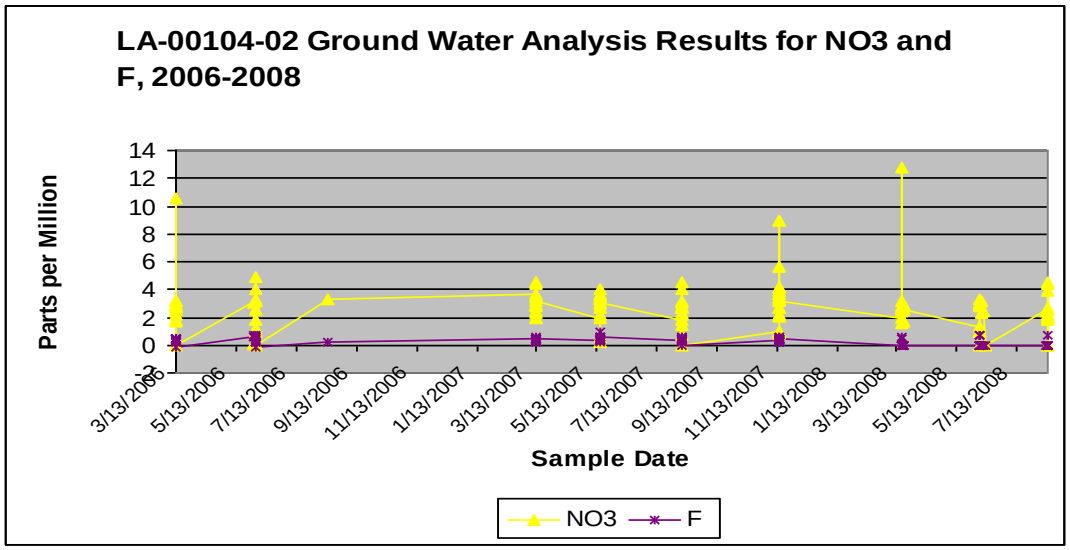


Figure 2. LA-000104-02 Ground water analysis results for nitrate and fluoride.

Sulfate results in Figure 3 show exceedances of the sulfate standard of 250 ppm, but the high point appears to be isolated to 2007. Chloride levels are well below the 250 ppm standard.

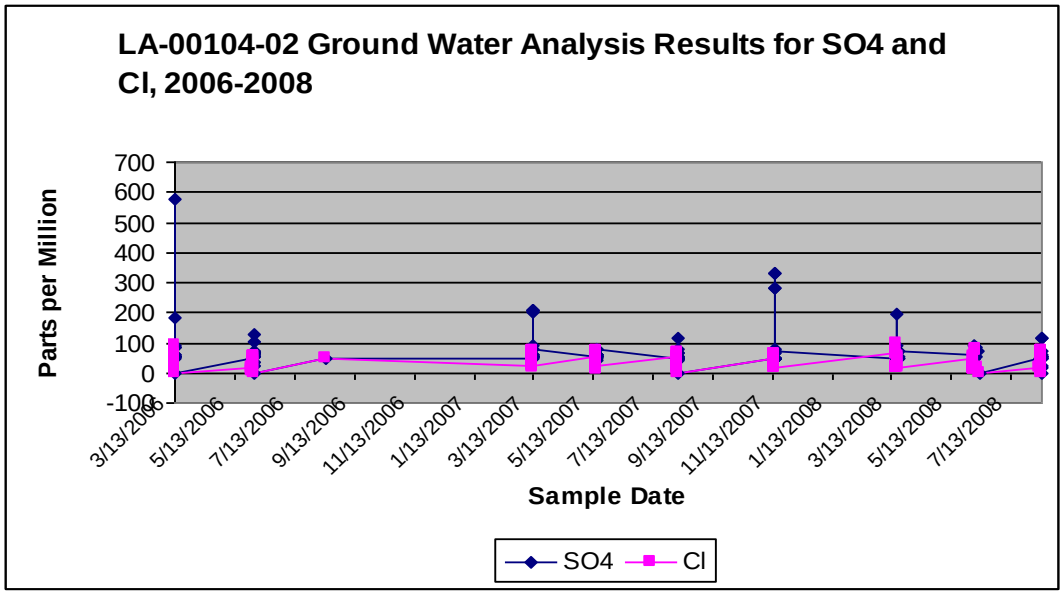


Figure 3. LA-000104-02 Ground water analysis results for sulfate and chloride.

Total dissolved solids (TDS) levels shown in Figure 4 frequently exceed the IDAPA 58.01.11 Ground Water Quality Rule standard of 500 mg/L, but there does not appear to be an increasing trend for TDS. In the new permit TDS loading limits will remain unchanged (see justification in section 4.6.4), but the Monitoring Well Statistics Plan will be required to help evaluate ways to lower monitoring well TDS concentrations.

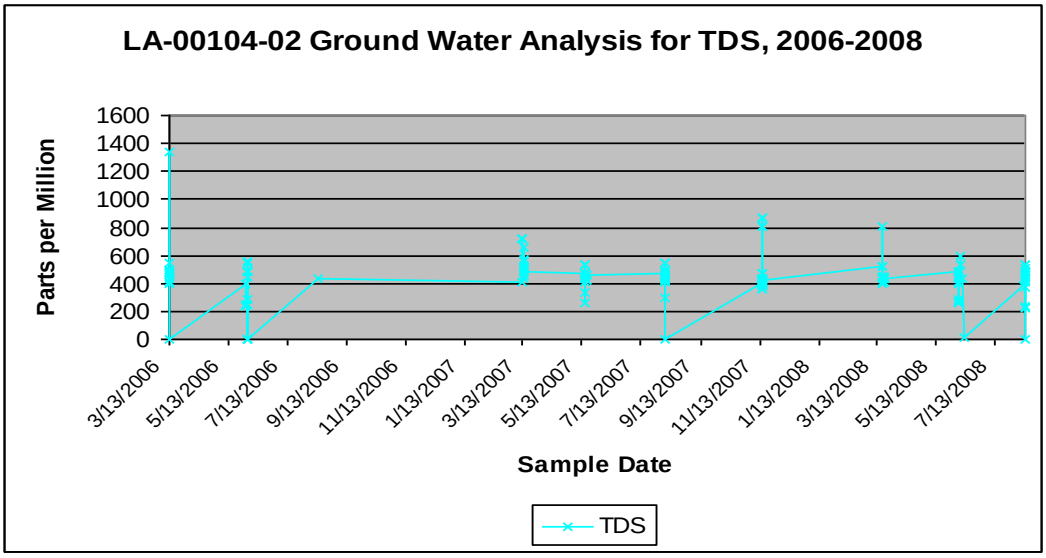


Figure 4. LA-000104-02 Ground water analysis results for total dissolved solids

4.5 Surface Water

Table 5 lists surface waters in proximity to the management unit areas.

Table 5. Surface waters near the land application management units

Surface Water Proximity	
Area	**Surface Water**
Swanson	Portneuf River (>100 feet from HMUs)
Spanbauer	Church Lateral (irrigation canal)
BapCo/Carlson	Havenor-Hayes (irrigation canal)
Upper Sites	Hiline Canal (>1/2 mile to the west)
Rupp-Jensen	Unnamed spring (> 100 feet from HMU)

To help protect surface waters from wastewater runoff, compliance activity CA-104-01 in the new permit will require the facility to submit a runoff management plan to ensure that wastewater applied to permitted HMUs is not allowed to flow to properties not owned by the facility or to nearby surface waters.

4.6 Historic and Proposed Site Loading

Crop irrigation requirements will determine the loading rates for individual hydraulic management units. The permit will limit growing season hydraulic loading to the crop-specific irrigation water requirement (IWR), in any combination of process water and supplemental water. Calculations require specific methodology to determine the crop IWR. The permittee is allowed to use either 30-year data or current climatic and agronomic information, but must apply the methodology consistently throughout the permit period.

4.6.1 Historic Flows and Proposed Hydraulic Loading Rate

Data from ETIdaho[1] was used to compare reported flows for 2006-2008 against the IWR for each management unit and each crop. The comparisons show hydraulic loading for most management units exceeded the IWR during this period. (MU-003510 was not used in 2006 and 2007.)

The Simplot Don Plant has responded to the excess hydraulic loading by reducing water usage within the plant. During a recent facility inspection, Simplot Don Plant personnel presented information showing that from August 2001 to 2011, the facility reduced wastewater production by 53 percent, and is continuing to find ways to further reduce water usage. The facility also reduced wastewater nitrogen content during that time.

Proposed loadings in the permit application state that 450 MG of wastewater will be land applied annually to 1,551.6 acres. Since the time the application was submitted in November 2006, the Simplot Don Plant has submitted updated land survey information for the upper sites, resulting in a slight decrease in overall acreage. Total acreage in the new permit is now listed as 1,544.2 acres. Wastewater application from recent annual reports show approximately 540 MG of wastewater was land applied, including the water added from well#8 at the surge pond.

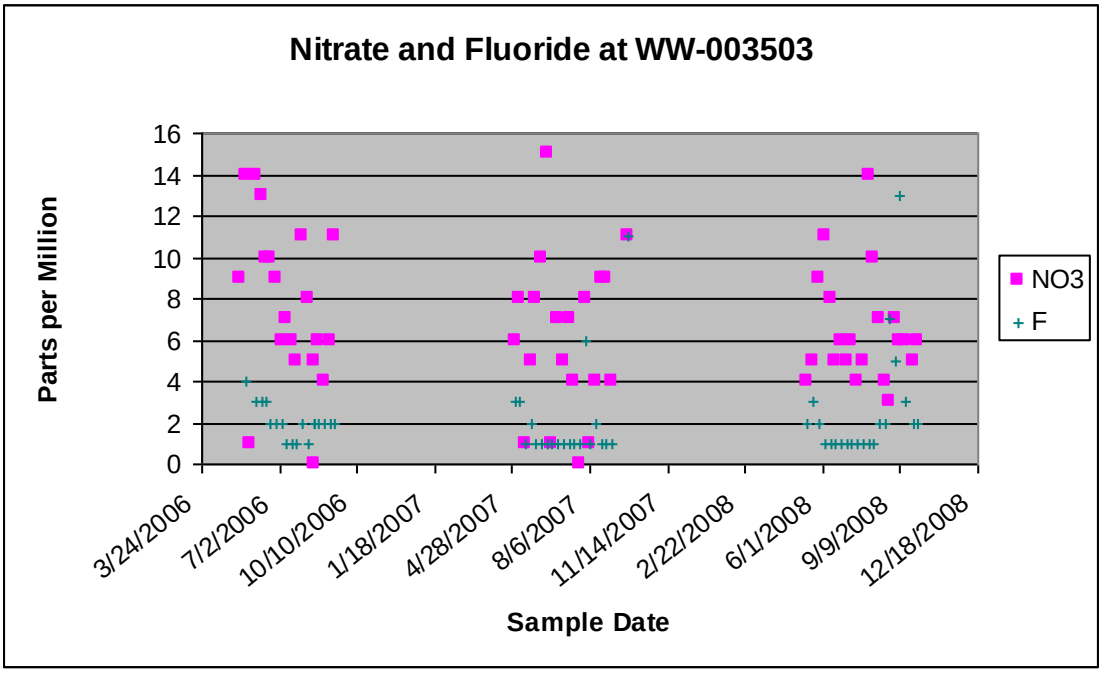
Land application of 450 MG annually equates to 10.68 inches per acre, if evenly distributed across 1544.2 acres. Application of 540 MG to the same acreage is equivalent to 12.9 inches per acre. In either case, generated wastewater quantities are not likely to exceed the IWR of the available acreage. Annual loadings are limited to the crop specific IWR, and IWR calculations are required to proactively plan for the most effective use of wastewater and supplemental irrigation water to ensure adequate crop growth and to maximize crop nutrient uptake.

4.6.2 Wastewater Quality and Sampling

The wastewater characteristics appear to be consistent from year to year. A comparison of key wastewater constituents including nitrate, fluoride, total dissolved solids, and sulfate since 2006 does not indicate substantial changes aside from elevated TDS at WW-0010402 in 2008; Figure 5 and Figure 6. Nitrogen content in the wastewater should decline as a result of water conservation efforts within the plant. The referenced sampling point WW-0035-03 in the

[1] (http://www.kimberly.uidaho.edu/ETIdaho/)

following figures is the impoundment pond booster pump sample valve. See Figure A-2 in Appendix A – Maps.



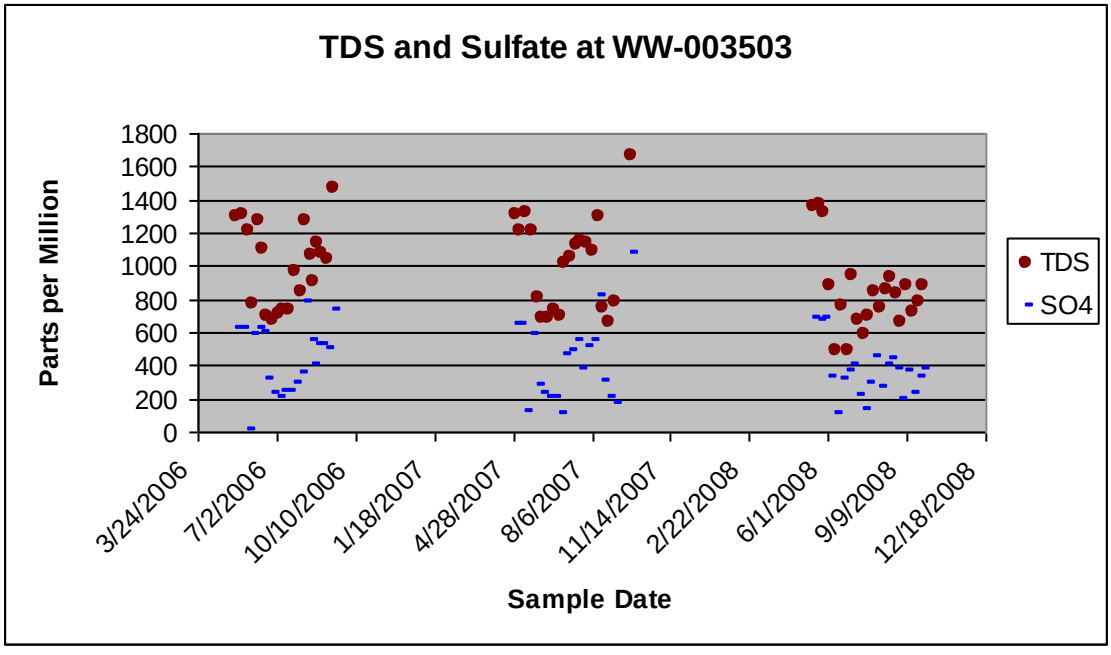


Figure 5. Wastewater nitrate, fluoride, TDS and sulfate at WW-003503 since 2006.

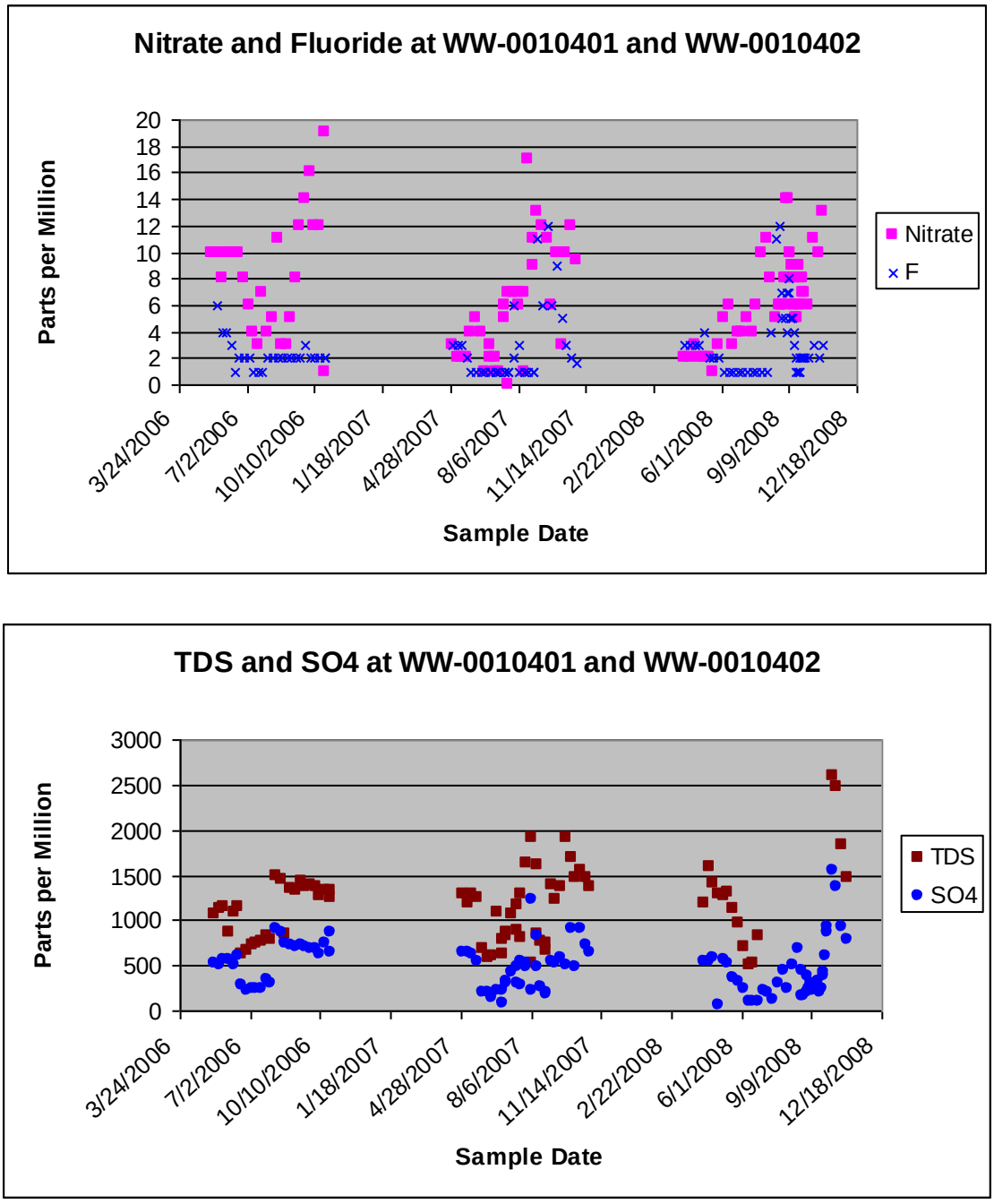


Figure 6. Wastewater nitrate, fluoride, TDS, and sulfate since 2006. WW-0010401 is the wastewater sample location at the surge lagoon, and WW-0010402 is the wastewater sample location at the Swanson pump tank overflow.

4.6.3 Nitrogen Loading

Comparison of nitrogen loading against crop uptake for each MU from 2006 to 2008 indicates that nitrogen loading exceeded crop uptake in 2006 and 2007. However, by 2008 the uptake of nitrogen appeared to match the application rate for all MUs with the exception of MU-003509.

Recent efforts to reduce water consumption in the plant, and efforts made to sweep up spills within the plant rather than wash dry fertilizer spills into the drains, have reduced both wastewater production and the nitrogen content of the wastewater. This reduced wastewater nitrogen concentration may require application of supplemental nitrogen on the HMUs. Simplot Don Plant applied supplemental fertilizer to the lower HMUs at 50 pounds per acre (lbs/ac), and 70 lbs/ac to the upper HMUs. MU-003510 received no supplemental fertilizer. Fertilizer is applied at the end of the growing season after the nitrogen uptake values are calculated; this timing method allows the facility to apply site specific quantities of fertilizer to avoid exceeding annual nitrogen application limits. The nitrogen loading limit listed in the permit is 150% of the median three-year crop nitrogen uptake.

4.6.4 TDS Loading

TDS loading for LA-000104-02 was limited to 5,000 lbs/ac on an annual basis. Analysis of the TDS loading since 2006 (Figure 7) shows that permit limits have generally been met, with the exception of excessive TDS loading to MU-003501 and MU-003505 in 2008, and MU-003507 in 2007. These three MUs appear to show an upward trend in TDS loading during the period. Recent annual report values show that TDS levels are below 3,580 lb/ac-year, with the exception of MU-003507 which is at 7,140 lb/ac-year.

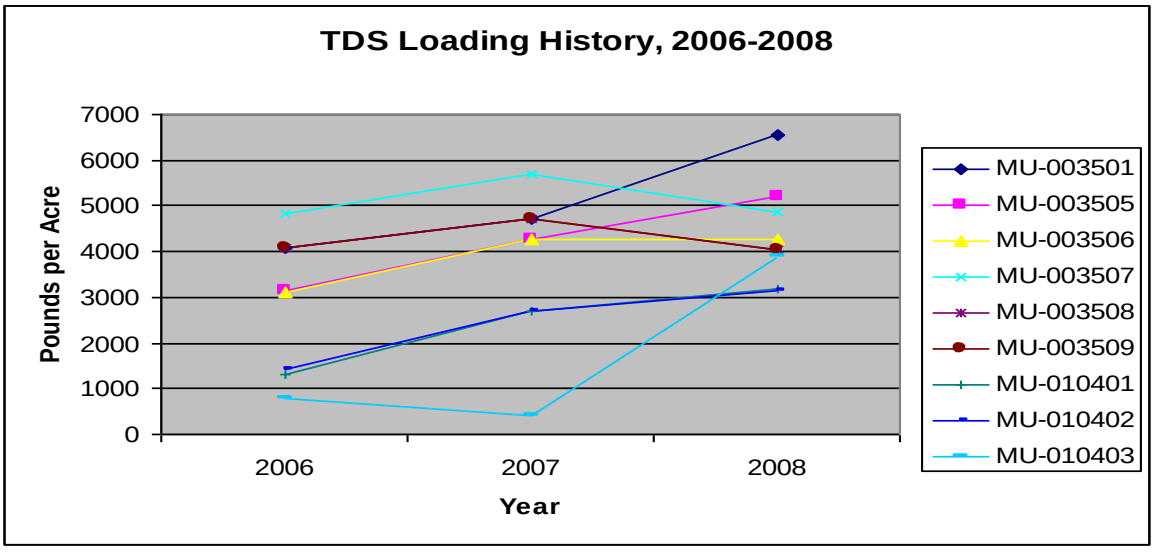


Figure 7. Total dissolved solids loading by management unit since 2006

The 2010 annual report lists five lower-site monitoring wells above the secondary constituent standard (SCS) for TDS in the quarterly samples. Annual wastewater production is being reduced and efforts are being made to bring monitoring well TDS levels at the lower sites down below the ground water SCS of 500 mg/L. The draft permit maintains TDS loading limits at 5,000 lbs/ac annually.

4.6.5 Hydraulic Loading, Hydraulic Flow, and Storage Structures

The 2009-2010 annual report shows a total of 418.7 MG of wastewater applied to the upper sites including SIW from well #8, over the 214 days of the growing season. No wastewater or SIW was applied to MU-003510. The lower sites received a total of 122.7 MG of wastewater, and 97.3 MG of SIW during the same period.

Wastewater collected from approved sources within the plant is piped beneath Highway 30 to the pond complex directly north of the plant. The pond complex consists of the east and west holding ponds, the solids settling pond, and the equalization pond.

All other sources of industrial wastewater including gypsum stack decant water and extraction well water are prohibited from being pumped to the ponds or land applied. Only specifically identified plant effluent streams listed in the permit renewal application and in the permit wastewater description are sent to the pond complex for land application.

Sanitary waste (sewage) from the plant is discharged to the City of Pocatello publically owned treatment works (POTW) or treated through individual on-site septic systems permitted by the Southeastern District Health Department.

Plant effluent flow is metered and sampled at station 7 prior to entering the holding ponds. Station 7 is the first of three active sampling points listed in the permit; it is used to measure effluent pH, and to collect effluent samples if needed. Wastewater flows through station 7 to the settling pond and then to the equalization pond. The land application system incorporates six wastewater storage structures listed in Table 6 below. The surge pond is clay lined; all other ponds are HDPE lined.

Table 6. Wastewater Storage Structures.

Name	Serial Number	Volume (Million Gallons)
West Holding Pond	LG-10401	1.15
East Holding Pond	LG-10402	1.15
Solids Settling Pond	LG-10403	0.2
Equalization Pond	LG-10404	2.69
Surge Pond	LG-10405	12
300 MG Impoundment	LG-10406	300

Wastewater can be pumped directly from the equalization pond to the BapCo/Carlson and Swanson sites, but only 12 percent of the 2009-2010 wastewater flow was applied to these sites. The BapCo/Carlson and Swanson sites can also receive wastewater from the surge pond, but it may also include SIW if it is added to the surge pond from well #8.

The majority of the wastewater is pumped from the equalization pond beneath Interstate 86, to the surge pond located between the interstate and the City of Pocatello POTW. Water is retained in the surge pond allowing any remaining solids to settle out. Fresh water from well #8 can be added at the surge pond as a supplemental irrigation water source for the upper sites. From the surge pond, water is pumped either to the Spanbauer site or through the seven mile, 24-inch pipeline to the 300 MG impoundment pond. There are four turbine pumps at the Transmission Pump Station as shown in Figure A-2 in Appendix A. There are two 300 horsepower (hp), one 200 hp, and one 150 hp pump that can pump up to 7,000 gallons per minute (gpm) to the impoundment pond. The upper sites only receive wastewater from the impoundment pond and supplemental irrigation water from well #8 that is mixed with the effluent if it is added at the surge pond.

A section of the 24-inch pipeline near the impound pond, extending to the west below Interstate 15, was replaced with HDPE pipe due to deterioration and intermittent leaks in the original concrete pipe. The remaining concrete pipe was inspected and found to be in suitable working condition.

Active wastewater sampling points are located throughout the system, including station 7, the surge pond outflow, and the impoundment pond outflow. Surface water and fresh water sources are also listed as active sampling points. The well #8 supplemental irrigation water source at the surge pond has been included in the new permit as an additional sampling point. Well #8 is the main SIW source for the upper sites. Fresh water from the Havenor lateral canal is used as supplemental irrigation water on the Swanson site. Supplemental water from the Portneuf River and the Havenor lateral canal is used for irrigation on the Swanson and BapCo/Carlson sites.

4.6.6 COD Loading

Neither the previous permit, nor the new permit will include requirements for monitoring wastewater for COD. Wastewater COD concentrations are below levels of regulatory concern.

4.6.7 Other Constituent Loading - Trace Element Management

The permit requires annual wastewater sampling at the sampling points listed in permit Section 5.1.1. Analysis of past sample results indicates that most concentrations are below established limits with the exception of gross alpha in 2007.

Supplemental permit application materials show two wells used to supply water to transport raw ore from the Smoky Canyon Mine in Caribou County to the Simplot Don Plant. GW-10 is an industrial source at the Conda Mine pump station used primarily to flush the pipeline. Water from GW-10 is stored in a pond referred to as Tailings Pond-1 or TP-1 in Table 7 below. The other well is a drinking water source at the Smoky Canyon Mine used as the primary ore transport water supply. As a drinking water source, drinking water constituent limits must be met and are not found to be of regulatory concern in relation to land application practices.

The two well sources in Caribou County and TP-1 have been extensively monitored for multiple constituents since 2001. Staff compared sampled constituents in the ore transport water with the constituents included in the current permit monitoring table. Five constituents were identified with intermittent values above established benchmarks in the well samples. The sample results are reported in two documents from Formation Environmental in 2009 and 2010 as listed in the reference section. Of these constituents, only thallium was not currently included in the list of sampled constituents in permit Section 5.1.1, and will be added to the permit monitoring requirements for both wastewater and ground water.

Once the ore transport water reaches the Simplot Don Plant, it is separated from the ore and sent to the decant silos. The majority of the decant water is used as make-up water in the facility processes, but some may be sent to land application. Staff reviewed the source water constituents from the two well sources, and compared those with the standards for constituent metals loading in the 40 CFR 503 rules for cumulative biosolids loading limits. For comparison purposes only, a maximum theoretical volume of 250 gpm was used to estimate mass loading, which assumes that the water is constantly flowing and that the total volume is sent to land application. This theoretical maximum would constitute 26 percent of an estimated 450 MG annual wastewater production. Since the decant flow is not constant, and the decant water does not constitute such a high percentage of the total volume, the estimate demonstrates that regardless of the flow from the decant silo, actual constituent loading will be of low regulatory concern for land application purposes. Table 7 shows that of the constituents specified, none are within three orders of magnitude of the continued loading limits provided for applications listed in 40 CFR 503, Table 2-1, listed in kilograms per hectare (Kg/Ha).

Table 7. Constituent comparison with 40 CFR 503 annual loading limits.

Constituent	Form	Location	KG per Ha	503 Rules Table 2-1 Pollutant Limits	Location	May-09 Result KG per Ha	Aug-09 Result KG per Ha	503 Rules Table 2-1 Pollutant Limits
Arsenic	Dissolved	GW10	0.006378	2	TP-1	0.00078	0.00312	2
	Total	GW10	0.005882	2	TP-1	0.00170	0.00213	2
Cadmium	Dissolved	GW10	0.000128	1.9	TP-1	0.00002	0.00006	1.9
	Total	GW10	0.000186	1.9	TP-1	0.00017	0.00019	1.9
Chromium	Dissolved	GW10	0.001843	150	TP-1	0.00071	0.00057	150
	Total	GW10	0.001276	150	TP-1	0.00099	0.00163	150
Copper	Dissolved	GW10	0.008363	75	TP-1	0.00276	0.00418	75
	Total	GW10	0.005245	75	TP-1	0.00276	0.00411	75
Lead	Dissolved	GW10	0.002764	15	TP-1	0.00276	0.00156	15
	Total	GW10	0.005741	15	TP-1	0.00276	0.00156	15
Mercury	Dissolved	GW10	4.54E-05	0.85	TP-1	0.00004	0.00004	0.85
	Total	GW10	5.67E-05	0.85	TP-1	0.00004	0.00004	0.85
Molybdenum	Dissolved	GW10	0.008576	-	TP-1	0.01318	0.00858	-
	Total	GW10	0.005032	-	TP-1	0.01864	0.01694	-
Nickel	Dissolved	GW10	0.01297	21	TP-1	0.00610	0.00135	21
	Total	GW10	0.00404	21	TP-1	0.00610	0.00425	21
Selenium	Dissolved	GW10	0.005882	5	TP-1	0.00170	0.00106	5
	Total	GW10	0.005953	5	TP-1	0.00142	0.00227	5
Zinc	Dissolved	GW10	0.211199	140	TP-1	0.00135	0.00206	140
	Total	GW10	0.184976	140	TP-1	0.00269	0.00319	140

4.7 Site Management and Related Permit Recommendations

4.7.1 Buffer Zones

Buffer zones for I-104-03 reflect the standard industrial buffer zone distances listed in Table 8. The previous buffer distances for the upper sites in LA-000035 are no longer applicable, because municipal effluent is not permitted to be land applied.

Feature of Interest	Buffer Zone (feet)
Public Water Supplies	1,000
Private Water Supplies	500
Dwellings	300
Public access areas	50
Natural surface water bodies	100
Man-made surface waters	50

(a) Buffer zones may be reduced by employing spray mitigation measures in a Buffer Zone Plan approved by DEQ including methods approved in writing for:

- Establishment of an effective physical barrier,
- Utilization of non-spray irrigation (drag tubes or equivalent),
- Managing irrigation systems in a manner that would prevent any spray drift towards the feature of interest, or
- Run-off and/or over-spray controls.

(b) The buffer zones may be reduced only if the proposal is supported with engineering control measures to limit over-spray onto indicated features of interest.

Table 8. I-104-03 Buffer Zones.

4.7.2 Crop Management

The crop management section of the plan of operation indicates that winter wheat has been the primary crop grown on the land application sites. The 2009-2010 annual report indicates two management units were planted with spring wheat, and two sites were planted with alfalfa. The new permit will require an update to the plan of operation, which will include an updated agricultural management plan to show the varieties of crops rotated in during the permit period.

The Simplot Don Plant has an approved grazing management plan for fall clean-up of field stubble following the final harvest.

4.7.3 Nuisance Plan

The new permit will not include a compliance activity requirement for submittal of a nuisance odor management plan. The effluent composition is not known to produce nuisance odors.

4.8 Compliance Schedule for Required Activities – Permit Section 3

The six compliance activities from permit LA-000104-02 are complete and submittal requirements have been met. All seepage testing requirements have been met for the previous permit. The next permit cycle will include requirements for the next round of seepage testing. Compliance activities in permit LA-000035 are also complete. The following discussion focuses on the compliance activity (CA) requirements of permit I-104-03.

CA-104-01 requires submittal of an updated plan of operation within one year of permit issuance to include a runoff management plan, an updated quality assurance project plan, an agricultural management plan, a site instrumentation plan, a monitoring well statistics plan, a buffer zone plan, and a grazing management plan. The permittee may submit all plans required in CA-104-01 as individual documents or as sub-parts incorporated into a comprehensive, system-wide plan of operation. Individual management plans will be reviewed and approved separately.

4.8.1 Permit Limits and Conditions – Permit Section 4

The J.R. Simplot Company Don Plant wastewater reuse facilities constitute an industrial process water land application system. Current standards for the industrial process wastewater reuse system are incorporated into the draft permit. No sewage effluent from either the plant area or the previously permitted City of Pocatello POTW may be sent to the surge pond or the land application system. Likewise, no municipal effluent is permitted to be land applied to any of the hydraulic management units, so any previous classifications associated with municipal application criteria are no longer relevant.

The previous permit specified standard buffer zone criteria for all HMUs including: 1) 300 feet to inhabited dwellings, 2) 50 feet to areas of public access, 3) 100 feet to natural surface water bodies, and 4) 50 feet to man-made surface water bodies. The new permit also includes the standard recommendations for buffer zones of 1,000 feet to public water supply wells, and 500 feet to private water supply wells. Operating plan reviewers will ensure that the buffer zone plan and updated maps reflect recommended distances.

4.8.2 Monitoring and Reporting – Permit Sections 5 and 6

The permit requires the facility to monitor the volume of wastewater and supplemental irrigation water applied on the land application sites on a daily basis, wastewater composite sampling and reporting is required on a monthly basis when effluent is being applied to the sites.

Wastewater monitoring parameters from the previous permit have been carried over relatively unchanged into the draft permit.

The facility will conduct ground water monitoring three times annually, and soil monitoring twice per year; similar to the previous permit. The facility is also required to calibrate flow measuring equipment for wastewater and supplemental irrigation water as required by the manufacturer. Other monitoring requirements listed in Section 6 of the permit include calculating monthly irrigation water requirement for each crop, annual hydraulic loading rates, annual nutrient loading rates, crop yield, and crop nutrient uptake.

The permittee is required to submit an annual report that includes: 1) all monitoring conducted under the terms of the permit, 2) the status of compliance activities required by the permit, and 3) an interpretive discussion of the monitoring data with particular respect to any potential environmental impacts. The annual report is due by March 31 of each year, and will address operations conducted from November 1 through October 31 of the preceding years.

4.9 Section 4 Summary

Loading Rate Related Recommendations

Based on the proposed loading rates and constituent loadings, DEQ recommends the following:

- The permittee is required to calculate crop specific annual water requirements and to monitor wastewater application to avoid exceeding crop IWR or hydraulic loading rates.
- Nitrogen loading is limited to 150 percent of crop uptake on all HMUs.
- TDS loading limit remains at 5,000 lbs/ac annually.

In addition, DEQ recommends that buffer zone requirements for the facility are updated in the facility maps and applicable management plans to reflect the distances listed in permit Section 4.4.

5 RECOMMENDATION FOR ISSUANCE OF PERMIT

Based on review of applicable state rules, staff recommends that DEQ issue draft permit I-104-03 for a public review and comment period. The draft permit contains effluent quality requirements for the wastewater treatment system, and terms and conditions required for operating the reuse system. Monitoring and reporting requirements to evaluate system performance and to determine permit compliance have been specified, and compliance activities have been incorporated into Section 3 of the permit.

6 References

DEQ (Idaho Department of Environmental Quality). 2005a. Memorandum from Rick Huddleston to Tom Hepworth. Regarding Modifications to #LA-000035-City of Pocatello. August 17.

DEQ (Idaho Department of Environmental Quality). 2003. Letter from Tiffany Floyd to Brent Hokanson, Superintendent, Pocatello City Water Pollution Control Department, Regarding Wastewater-Land Application Permit Program #LA-000035-02; Permit Modification. August 11.

implot. (J.R. Simplot Company). 1982. R.B. Gimlin, P.E. Wastewater Disposal by Land Irrigation—A Joint Municipal-Industrial Project at Pocatello, Idaho. November.

Simplot. (J.R. Simplot Company). 2006a. Wastewater Land Application Permit Application Package. October 19.

Simplot. (J.R. Simplot Company). 2006b. Wastewater Land Application Plan of Operation for Permit No. LA-0000104-02R. October 19.

HDR, Inc. 2005. Evaluation of Potential Migration of Wastewater Constituents Compliance Condition CA-035-05. Work Plan submitted by HDR, Inc. October 17, 2005.

Formation Environmental 2009 and 2010. Conda/Woodall Mountain Mine RI/FS Ground water Data Gap Analysis, J.R. Simplot Company, March 15, 2011; and 2009 Data Summary Report, Conda/ Woodall Mine, December 9, 2010.

Appendix A: Maps

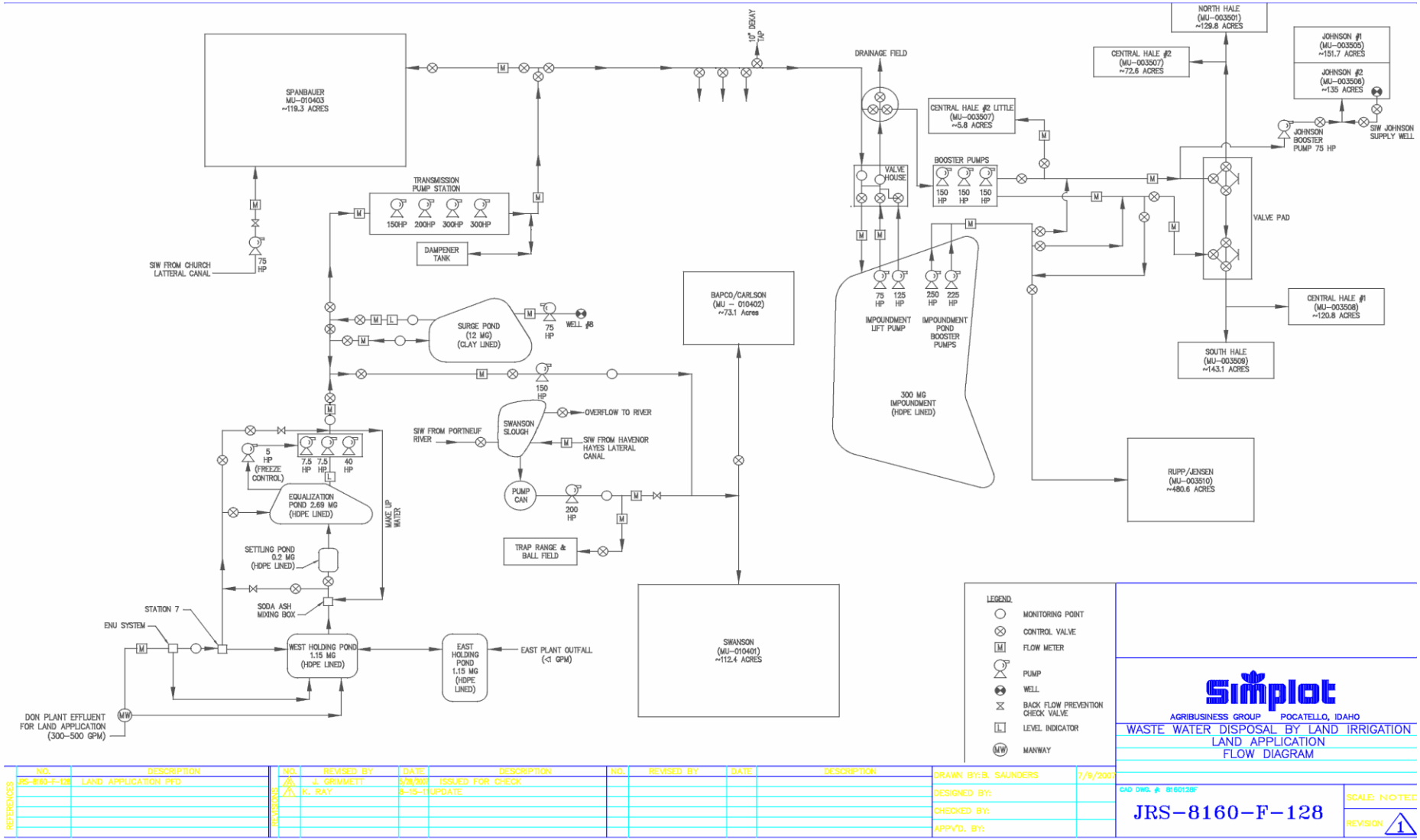


Figure A-1. Don Plant Land Application Flow Diagram (Simplot 2006b).

Figure A-2. Don Plant location map and management unit locations.

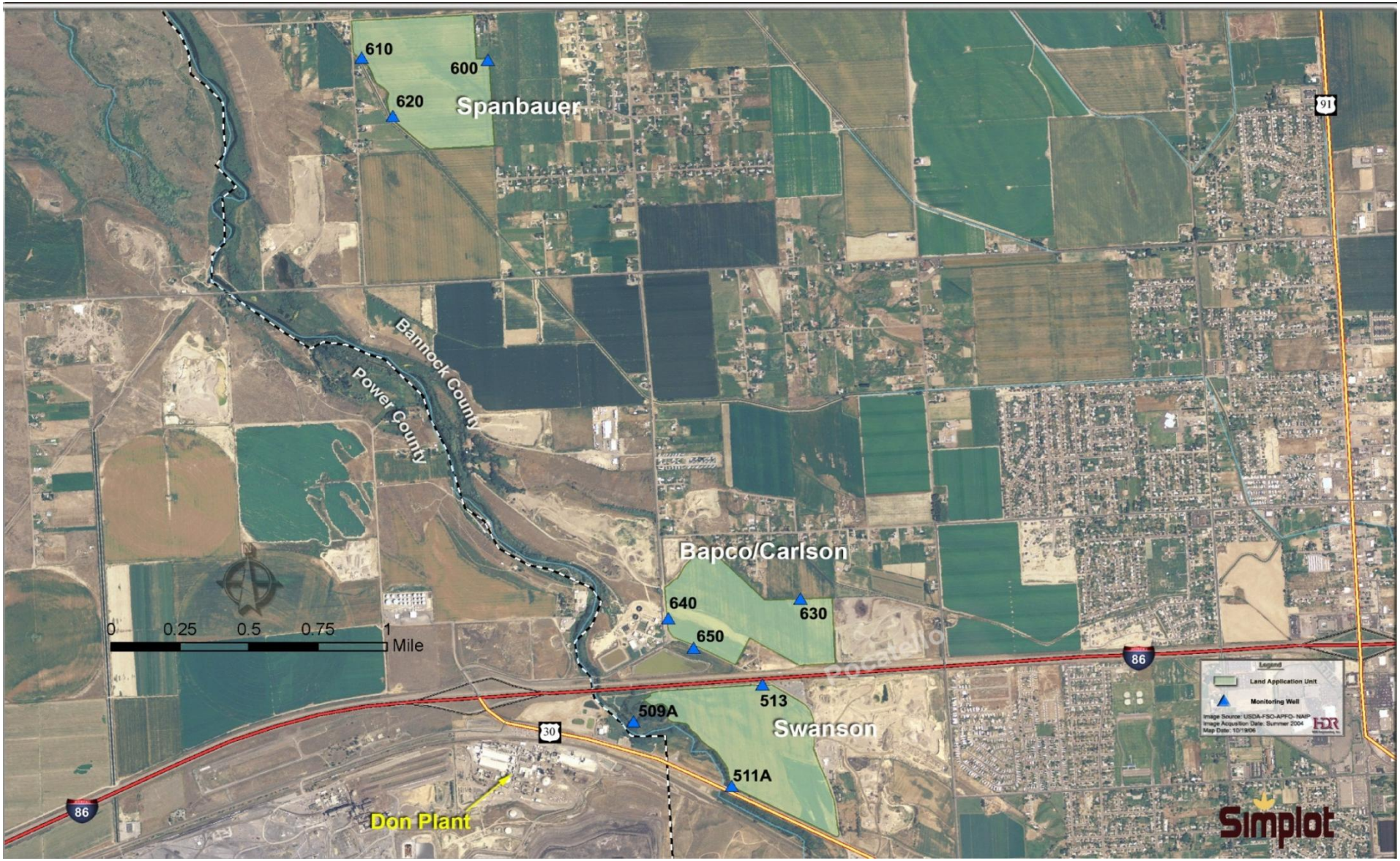


Figure A-3. Don Plant monitoring well locations

Bapco

Date: Aug 19, 2009
Field Name: Bapco; 09
Location: Power Co., Idaho, U.S.
Farm Name: Simplot Lower
Client Name: Bart
Total Acres: 73.1
Farmable Acres: 73.1
Field Boundary Start Location:
Latitude: 42.91482320
Longitude: -112.51508340

STUKENHOLTZ LABORATORY

Simplot Lower; 09

Swanson

Date: Aug 31, 2009
Field Name: Swanson; 09
Location: Power Co., Idaho, U.S.
Farm Name: Simplot Lower
Client Name: Bart
Total Acres: 112.4
Farmable Acres: 109.62
Field Boundary Start Location:
Latitude: 42.90970680
Longitude: -112.50580180

STUKENHOLTZ LABORATORY INC

Simplot Lower; 09

Spanbauer

Date: Aug 19, 2009
Field Name: Spanbauer; 09
Location: Power Co., Idaho, U.S.
Farm Name: Simplot Lower
Client Name: Bart
Total Acres: 119.3
Farmable Acres: 117.3
Field Boundary Start Location:
Latitude: 42.94942862
Longitude: -112.52788684

STUKENHOLTZ LABORATORY INC

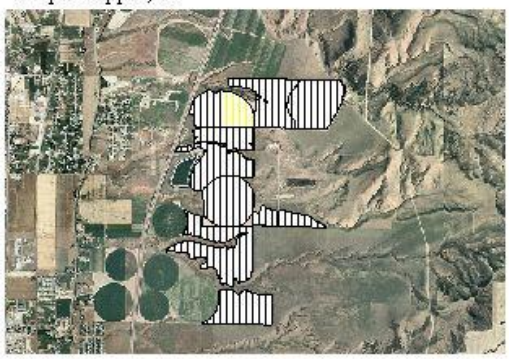
Simplot Lower; 09

North Hale East

Date: Aug 19, 2009
Field Name: North Hale East; 09
Location: Bannock Co., Idaho, U.S.
Farm Name: Simplot Upper
Client Name: Bart
Total Acres: 68.4
Field Boundary Start Location:
Latitude: 42.95707500
Longitude: -112.42402000

STUKENHOLTZ LABORATORY

Simplot Upper; 09

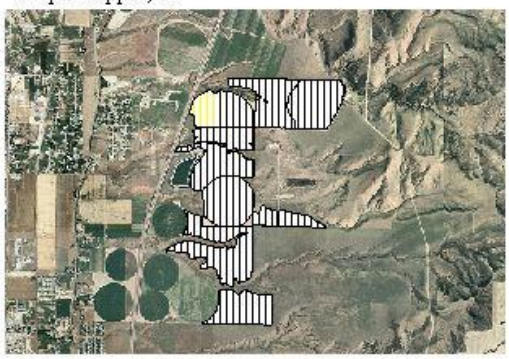


North Hale West

Date: Aug 19, 2009
Field Name: North Hale West; 09
Location: Bannock Co., Idaho, U.S.
Farm Name: Simplot Upper
Client Name: Bart
Total Acres: 61.4
Field Boundary Start Location:
Latitude: 42.95701000
Longitude: -112.42399340

STUKENHOLTZ LABORATORY INC.

Simplot Upper; 09

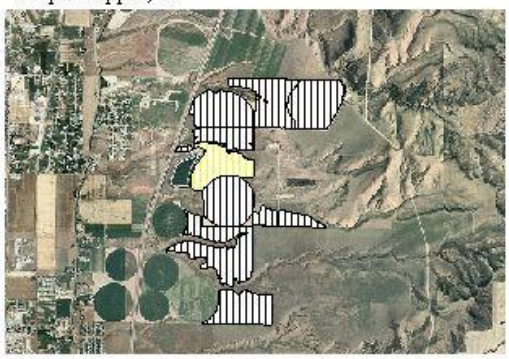


Central Hale 1

Date: Aug 19, 2009
Field Name: Central Hale 1; 09
Location: Bannock Co., Idaho, U.S.
Farm Name: Simplot Upper
Client Name: Bart
Total Acres: 120.8
Field Boundary Start Location:
Latitude: 42.94740000
Longitude: -112.42740680

STUKENHOLTZ LABORATORY INC.

Simplot Upper, 09

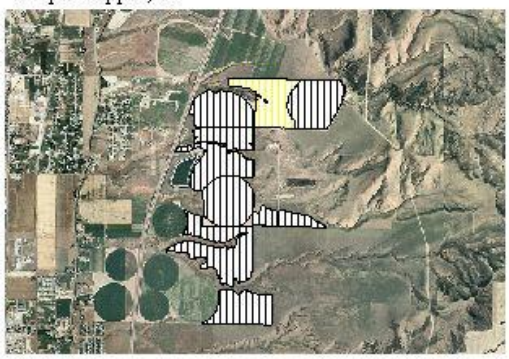


Central Hale 2

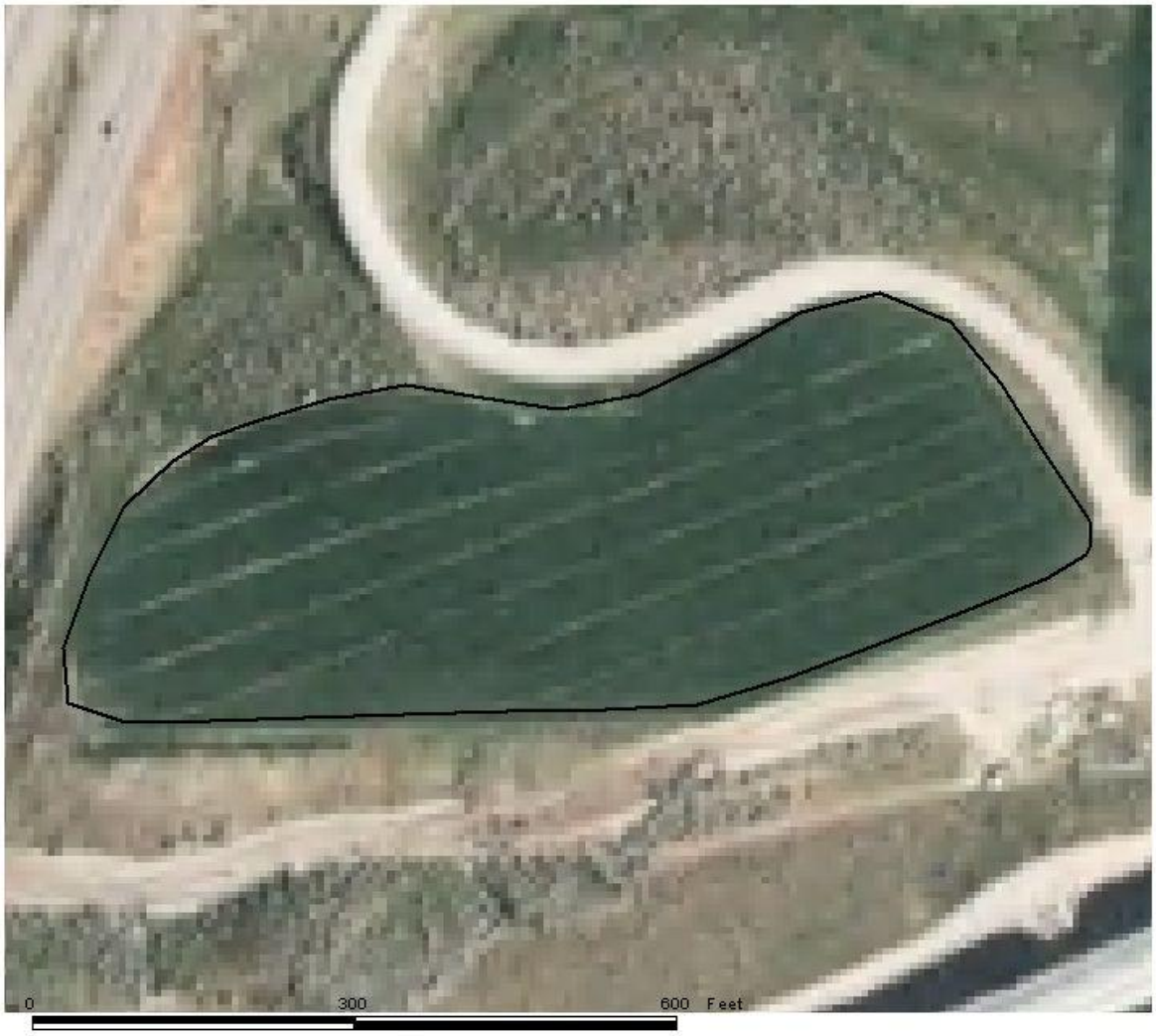
Date: Aug 19, 2009
Field Name: Central Hale 2; 09
Location: Bannock Co., Idaho, U.S.
Farm Name: Simplot Upper
Client Name: Bart
Total Acres: 72.6
Farmable Acres: 72.3
Field Boundary Start Location:
Latitude: 42.95669362
Longitude: -112.42561502

STUKENHOLTZ LABORATORY

Simplot Upper, 09



Central Hale Little



Date: Aug 19, 2009
Field Name: Central Hale Little; 09
Location: Bannock Co., Idaho, U.S.
Farm Name: Simplot Upper
Client Name: Bart
Total Acres: 5.80
Field Boundary Start Location:
Latitude: 42.95346488
Longitude: -112.42940005

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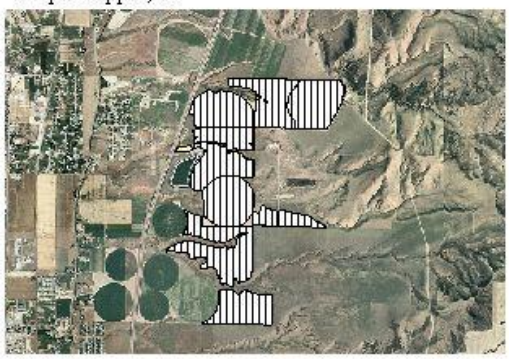
Simplot Upper, 09

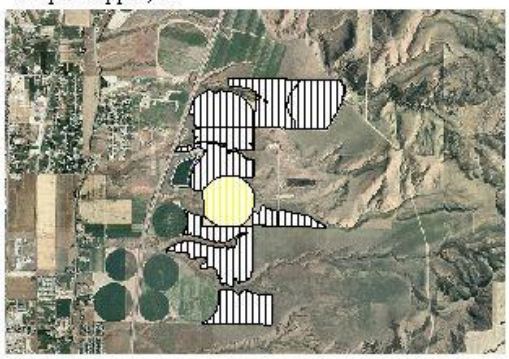


South Hale

Date: Aug 19, 2009
Field Name: South Hale; 09
Location: Bannock Co., Idaho, U.S.
Farm Name: Simplot Upper
Client Name: Bart
Total Acres: 143.1
Field Boundary Start Location:
Latitude: 42.94739840
Longitude: -112.42734840

STUKENHOLTZ LABORATORY INC.

Simplot Upper; 09

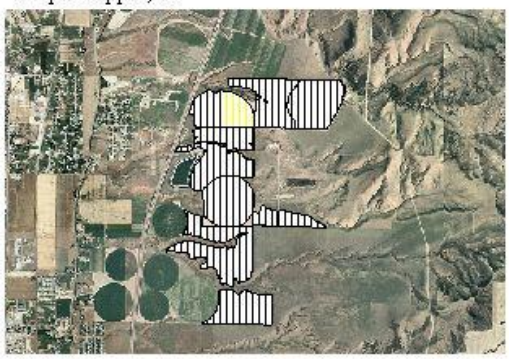


Johnson 1

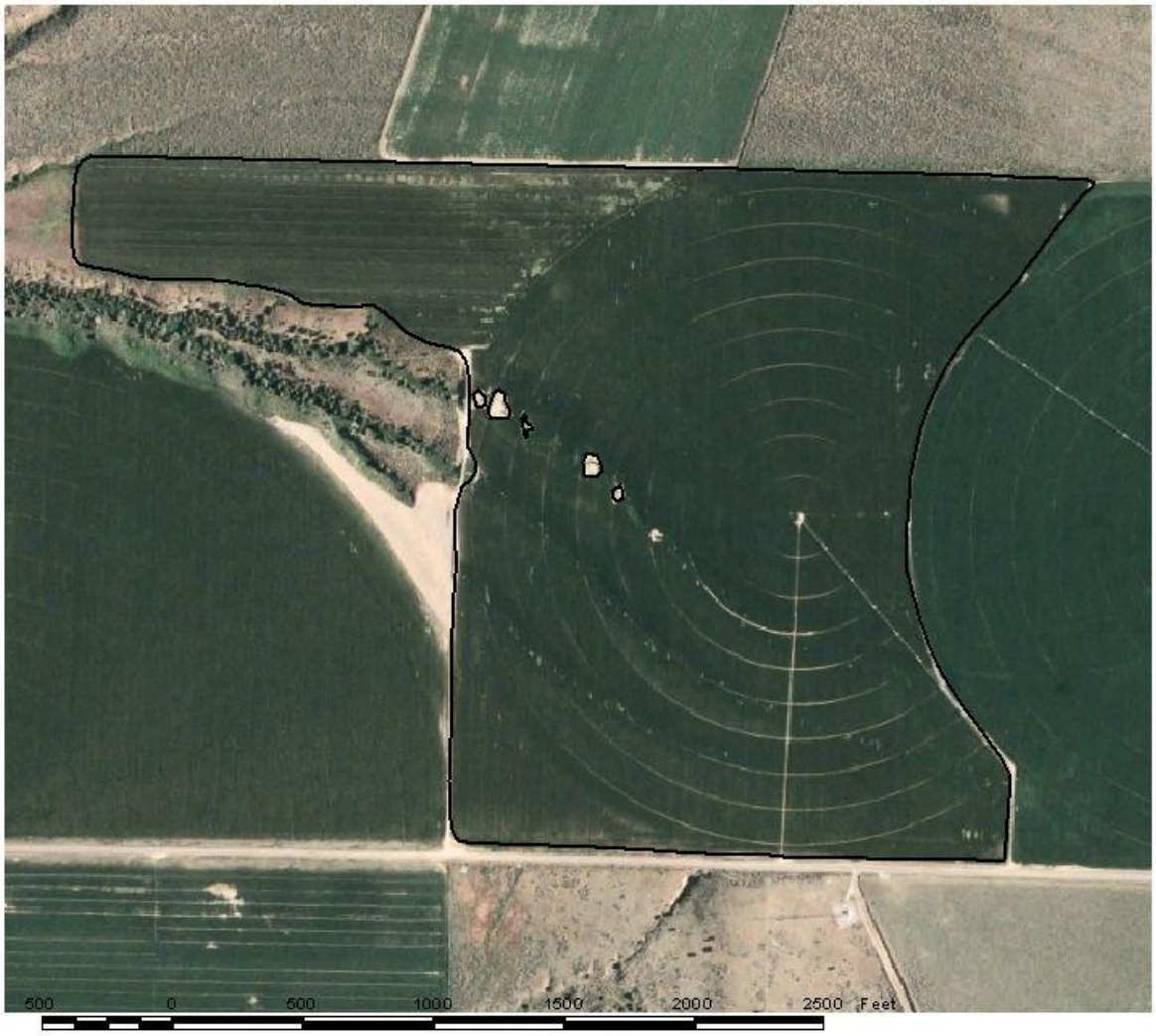
Date: Aug 19, 2009
Field Name: Johnson 1; 09
Location: Bannock Co., Idaho, U.S.
Farm Name: Simplot Upper
Client Name: Bart
Total Acres: 151.7
Field Boundary Start Location:
Latitude: 42.95677000
Longitude: -112.40882500

STUKENHOLTZ LABORATORY

Simplot Upper, 09



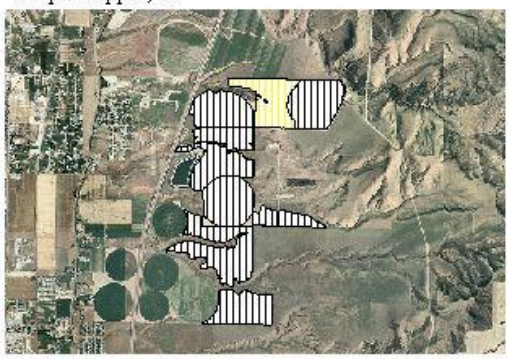
Johnson 2



Date: Aug 19, 2009
Field Name: Johnson 2; 09
Location: Bannock Co., Idaho, U.S.
Farm Name: Simplot Upper
Client Name: Bart
Total Acres: 135.0
Farmable Acres: 134.7
Field Boundary Start Location:
Latitude: 42.95692160
Longitude: -112.41693340

STUKENHOLTZ LABORATORY

Simplot Upper; 09



Rupp Jensen

Date: Oct 27, 2009
Field Name: Rupp Jensen; 09
Location: Bannock Co., Idaho, U.S.
Farm Name: Simplot Upper
Client Name: Bart
Total Acres: 480.6
Field Boundary Start Location:
Latitude: 42.93223902
Longitude: -112.43506441

STUKENHOLTZ LABORATORY INC.

Simplot Upper; 09