

State of Washington Department of Ecology
Northwest Regional Office

WATER COMPLIANCE INSPECTION REPORT

substitute for OMB No. 2040-0057 and EPA form 3560-3 (Rev. 9-94)
(last file update 12-95.)

Section A: National Data System Coding (i.e., PCS)

Transaction Code 1 N 2 5	NPDES # 3 WA-002958-1 & ST-7445 11	yr/mo/day 12 08/04/14 17	Inspection Type 18 S	Inspector 19 S	Fac Type 20 1
---	--	------------------------------------	--------------------------------	--------------------------	-------------------------

Remarks

Inspection work days 67 4 69	Facility Self-Monitoring Evaluation Rating 70 5	BI 71 N	QA 72 N	Reserved 73 _____ 74 _____ 75 _____ 80
--	---	-------------------	-------------------	---

Section B: Facility Data

Name and Location of Facility Inspected (For industrial users discharging to POTW, also include POTW name and NPDES permit number) KING COUNTY SOUTH WASTEWATER TREATMENT FACILITY & WATER RECLAMATION FACILITY 1200 Monster Road SW Renton, Washington 98055 King County	Entry Time/Date 9:30 AM 04/14/08	Permit Effective Date 10/01/04
	Exit Time / Date 3:00 PM 04/15/08	Permit Expiration Date 09/30/09

Name(s) of On-Site Representative(s)/Title(s)/Phone and Fax Number(s)

Rick Butler, Process Control Supervisor
206-684-2460
206-684-2448

Other Facility Data

http://kingcounty.gov
Ecology Inspectors:
4/14/08 – Mark Henley, Lori LeVander, Tonya Lane, Amy Jankowiak
4/15/08 – Mark Henley, Amy Jankowiak

Name, Address of Responsible Official/Title/Phone and Fax Number.

Mike Fischer, Manager East Section
1200 Monster Road SW
Renton, Washington 98055

Phone Number **206-684-2408** Fax **206-684-2448** Contacted? ☒ Yes ☐ No

Section C: Areas Evaluated During Inspection (Check only those areas evaluated)

<input checked="" type="checkbox"/> Permit	<input checked="" type="checkbox"/> Flow Measurement	<input checked="" type="checkbox"/> Operations&Maint.	<input type="checkbox"/> CSO/SSO (Sewer Overflow)
<input checked="" type="checkbox"/> Records/Reports	<input checked="" type="checkbox"/> Self-Monitoring Program	<input checked="" type="checkbox"/> Sludge Handling/Disposal	<input type="checkbox"/> Pollution Prevention
<input checked="" type="checkbox"/> Facility Site Review	<input type="checkbox"/> Compliance Schedules	<input type="checkbox"/> Pretreatment	<input type="checkbox"/> Multimedia
<input checked="" type="checkbox"/> Effluent/Receiving water	<input checked="" type="checkbox"/> Laboratory	<input type="checkbox"/> Storm Water	<input checked="" type="checkbox"/> Reuse

Section D: Summary of Findings/Comments

INTRODUCTION

A Class II inspection was conducted at the King County South Wastewater Treatment Plant (South Plant) on April 14-15, 2008. Mark Henley, Municipal Permit Manager, Lori LeVander, Industrial Unit Permit Manager, Amy Jankowiak, Municipal Compliance Specialist and Tonya Lane, Field Inspections Coordinator with the Department of Ecology conducted the inspection with assistance from Rick Butler, Process Supervisor, Curtis Steinke, Process Analyst II, Teresa Schoonejans, Chief Process Analyst and Carol Nelson, Process Analyst II with King County Wastewater Treatment Division. This was an announced inspection with two business days notice. A wastewater treatment plant inspection was conducted on April 14, 2008 and split sampling efforts, laboratory records review and a water reclamation facility inspection were conducted on April 15, 2008.

The purpose of this inspection was to fulfill the regional Class II inspection requirements by conducting a site inspection/tour, evaluating compliance with the permit requirements, and performing split sampling for laboratory accuracy verification. Previous inspections include a Class II inspection on June 24, 2003 of the WWTP and a Class I inspection of South Plant's Water reclamation Facility (WRF) on July 17, 2007.

Permit Status

South Plant is regulated by NPDES permit no. WA-002958-1, which was issued September 30, 2004, and expires on September 30, 2009. In addition, to the wastewater treatment facilities, South Plant has a water reclamation facility and is regulated separately under State Reclaimed Water Permit #ST-7445. The South Plant primarily serves a separated sanitary sewer system but does accept combined sewage from a small area of south Seattle. The current permit authorizes discharges from the South Plant to a deep marine outfall in Puget Sound and in emergency instances to the Green River.

The Department recognizes that the occasional short-term discharges of treated wastewater to the Green River are necessary for maintenance of the outfall diffuser.

COLLECTION AND TREATMENT PLANT SYSTEMS' OVERVIEW

South Plant is located on 94 acres of land in Renton and is a critical part of King County's regional system that treats wastewater from homes, businesses, and industries. In 1965, the original plant was constructed and had the capacity to treat 24 million gallons per day (MGD) of wastewater to secondary treatment levels using an activated sludge biological process. The third, and latest, expansion of the plant began in 1991 and was considered complete in 2000. This last upgrade brings the plant's secondary capacity to 144 MGD (maximum month flow).

Liquid Treatment Train

In general, the liquid treatment process includes screening, grit removal, primary clarification, biological treatment using activated sludge, secondary clarification, and disinfection. The disinfected effluent discharges to Puget Sound through a multi-port diffuser that is located about 10,000 feet offshore at a depth of about 600 feet below mean lower low water.

Solids Treatment & Handling

As for solids treatment, the primary and waste activated solids are co-thickened via dissolved air flotation units (DAFTs). The thickened sludge is blended, anaerobically digested, and dewatered by centrifuges. The plant produces Class B biosolids which are beneficially used as nutrient-rich organic soil amendment on agriculture and forest lands. The majority of the biosolids are land applied at Boulder Park in Douglass County while some are applied near Sunnyside, WA. Some of the biosolids are also applied to forest lands near Carnation, WA.

Resource Recovery

During the sludge digestion process, anaerobic bacteria produce methane and carbon dioxide. This gas is captured, separated, and cleaned and either sold to Puget Sound Energy or used on-site for heating purposes or as an energy source for the cogeneration facilities. The cogeneration and fuel cell produce electricity and heat for plant use.

Chlorinated secondary effluent is used on-site as a non-potable water source at various unit processes (i.e. clarifier sprays) and as feed water to the reclaimed water facility. The reclaimed water is used off-site for irrigation purposes as well as for industrial uses.

Plant Hydraulics

There are 19 County-owned pump stations that are tributary to South Plant. All of the County-owned pump stations have dedicated generators except for 1 pump station (Lakeland Hills). There are 44 pump stations total tributary to the South Plant including pump stations owned by separate local sewer agencies. South Plant serves a separate sanitary sewer system with the exception of a small tributary area that is combined. A portion of the flow from the Henderson CSO and MLK diversion structure combined systems go to South plant. Sewage enters South Plant at the southeast corner of the site via the south interceptor (60" diameter pipe) and eastside interceptor (96" diameter pipe). The flows from these two interceptors mix and flow into a 120" diameter pipe that runs under the chlorine contact chambers to a location near the southwestern portion of the property. At this location, the interurban interceptor discharges flows from the Allentown/Henderson collection area to the plant's influent line. Sewage in the south interceptor flows mostly by gravity. South Plant has a 24 hour septage receiving station which amounts to about 4% of the plant's overall influent solids percentage. Septage receiving includes random sampling and the process is videoed. Industrial flows are about 5-10% of the influent. Sea-Tac Airport sends deicer wastewater to South Plant as well.

At the headworks, there are 4 influent channels that convey raw sewage to eight mechanically-cleaned bar screens. Each influent channel serves 2 bar screens. Bar screens can be isolated for maintenance purposes via slide gates. Four of the bar screens have a 3/8" spacing, 2 bar screens have a 5/8" spacing, and 2 screens have a 3/4" spacing. After influent flows pass through the mechanical bar screens, raw sewage pumps lift the sewage about 40 feet to a division channel. From the division channel, the wastewater flows by gravity into the pre-aeration tanks where grit removal occurs. From the pre-aeration tanks, flow continues via gravity to the primary rectangular sedimentation tanks/clarifiers.

Flows up to 144 million gallons per day (MGD) receive secondary treatment via the activated sludge process but South Plant has accommodated, on rare occasions, flows in the secondary process above 200 MGD. South Plant is permitted to utilize flow blending to manage peak flow events above 144 MGD. On December 3-4, 2007, flow blending was initiated to

accommodate peak wet weather flows at South Plant. Split flows and flows receiving secondary treatment are disinfected separately. At the time of the inspection, no flows were being diverted around the secondary processes. Aeration tank effluent flows by gravity, via the mixed liquor channel, to the circular, secondary clarifiers. Secondary clarifier effluent flows by gravity to the chlorine disinfection channel.

Effluent can either flow by gravity or be pumped out to the outfall for discharge to Puget Sound. Tide levels, pressures, and plant flow rate dictate whether the effluent has to be pumped or whether it can flow by gravity to the marine outfall. For effluent flows above 40 MGD, effluent pumps must be used to convey effluent to the outfall. The effluent transfer line is 12 miles long and 8 feet in diameter. The outfall is about 10,000 feet off-shore from Duwamish head and 600 feet deep. The outfall consists of twin 64 inch diameter pipes with the diffuser sections on the final 500 ft section of each leg. Each diffuser has 168 sweep radius diffuser ports, each 14 inches long and 4 inches in diameter. There are a total of 336 diffuser ports with a total diffuser opening of 29.3 sq. feet. The diffusers are staggered side to side every 3 feet. Each diffuser port is made of a copper-nickel alloy to inhibit bio-fouling.

Flow Measurement

For NPDES permit reporting requirements, plant flow is measured via magnetic meters on the secondary clarifier effluent lines. Process water flows are subtracted out of the secondary clarifier flow rates for accurate reporting. South Plant has an effluent flow meter on the effluent transfer system (ETS) 96" diameter line but this sonic-type flow meter is unreliable and inaccurate, particularly during low flow periods when the effluent pipe is not flowing full. South Plant does not have a functional influent flow meter at this time that is able to accurately gauge influent flow. There is not a good location to monitor for influent due to significant side streams and the location of the interceptors. The permit currently requires flow monitoring on both influent and effluent.

Alarms/Back-up Power

Power to South Plant is provided by Puget Sound Energy via two utility power feeds from the Talbot and O'Brien substations. In addition, there is an emergency generator for essential services (e.g. lighting, alarms, and security). The emergency generator is not sufficient to power the influent pumps or other plant processes. Based on conversations with County staff, power outages at South Plant are very rare and voltage sags/drops do not seem to be a frequent occurrence or a problem. South Plant's cogeneration facility provides an alternative source of electricity for plant use. The cogeneration facility can produce up to 8 MW of power – almost 45% of plant electrical demand!

All critical plant operations and alarms are monitored and/or controlled from a central control room (photo 1) using a supervisory control and data acquisition (SCADA) system.

Staffing

At the time of the inspection, King County's Wastewater Treatment Division's East Section staff, including South Plant personnel, consisted of approximately 138 full-time employees. South Plant has 23–Class 4, 24–Class 3, 14–Class 2, and 9–Class 1 operators at South Plant. There are also 9 operator-in-training employees. South Plant is staffed 24 hours per day with 12-hour shifts. During the inspection, it was stated that some of the East Section staff will support the work at Brightwater.

RESULTS AND DISCUSSION

Similar to the inspection in June 2003, this inspection consisted of a plant tour and discussions about current plant operations and maintenance. Since this inspection was a Class II inspection, split samples were collected and analyzed. During the time of the inspection on April 14, 2008, plant flows ranged from an hourly minimum of 47 MGD to an hourly maximum of 101 MGD. The South Plant average daily flow for April 14, 2008, was 79 MGD. The plant tour followed the typical process flow sequence through the plant by beginning at the influent channels and influent bar screens (photo 2). There are 8 mechanically-cleaned bar screens (4@3/8", 2@5/8", and 2@7/8" bar spacing) and they can be operated in continuous, timed or differential level modes. For the majority of the flows, the 3/8" bar screens are utilized. The screens currently discharge screened material to a common sluice way which transports the screened material to a sump where three grinder pumps convey the sluiced screenings to Hycor screenings washers (photo 3). The washed screenings, at about 5-7% solids, are then conveyed to a JWC washer compactor where they are dewatered and compacted in preparation for disposal at a landfill. On average, about twice a week, a roll-off dumpster containing screenings is taken off site for proper disposal to either Cedar Hills landfill or to a Waste Management contract facility in Oregon. Ecology mentioned to County staff that recent biosolids rules require all screens to be 3/8" spacing. Wastewater passing through the screens gets conveyed to the raw sewage

pump station wet well. The raw sewage pump station includes six variable frequency drive pumps with a firm capacity of 400 MGD with the largest unit out of service. The raw sewage pumps lift the incoming flow approximately 40 feet to the elevation of the division channel. The influent samples are collected from the division channel. Influent samples are collected on a flow proportional basis (photo 4). From the division channel, influent flows by gravity to the aerated grit chambers (photo 5). Grit from the pre-aeration tanks are settled out and conveyed to cyclone separators. The grit then enters screw conveyors/classifiers for dewatering (photo 6). Dewatered grit from the conveyors is stored in dumpsters, and subsequently trucked off-site for proper disposal. During winter months, grit is hauled off site about three times per week. At the time of the inspection, one of the grit tanks was off-line and receiving cleaning to remove large amounts of rocks and grit (photo 7). Wastewater from the grit tanks flows by gravity to the primary clarifiers (photo 8).

South plant has a total of 12 primary clarifiers (north bank of 4 tanks and a south bank of 8 tanks) with a peak hydraulic capacity of 390 MGD. The north bank of primary clarifiers use return flights and tipping troughs to capture and remove scum, grease, and other floatable materials. The south bank of primary clarifiers use surface water sprays to move scum and grease to a helical screw located at the upstream end of the tank (photo 9). The return flights stay submerged on the south primaries. The primary clarifier effluent overflows via launders with submerged orifices. The launders have saw-tooth weirs on top to handle peak flows not accommodated by the submerged orifices. At the time of the inspection, some of the north primary clarifiers were off-line and empty (photo 10). It was also observed that a large amount of floatables were present in the north bank of primary clarifiers during the inspection (photo 8).

Primary effluent flows by gravity to the aeration basins (photo 11). There are 4 aeration basins equipped with fine bubble diffusers. Each aeration basin has a volume of 4.1 million gallons and contains 4 passes. When operating in a selector mode, the first zone of each basin is anaerobic (photo 12). Return activated sludge enters the bottom of each basin in the anaerobic selector zone. Dissolved oxygen levels and sludge age are measured and adjusted, as needed, to provide for a settleable sludge. On April 14, 2008, the mixed liquor suspended solids concentration and dissolved oxygen concentration in the aeration system averaged 2,960 mg/L and 2.5 mg/L, respectively. Aeration basin effluent flows by gravity from the aeration basins to the mixed liquor channel before distribution to the secondary clarifiers. The mixed liquor channel provides a long detention time resulting in low dissolved oxygen levels (photo 13). The low DO can adversely impact settleability in the secondary clarifiers. There are six secondary clarifier pods each consisting of four clarifiers for a total of 24 secondary clarifiers (photo 14). One of the pods is of the side-feed type while the other 5 pods are center feed type. Each pod has an effluent control center where flow and turbidity are monitored. The solids that are settled out in the secondary clarifiers are either pumped to the front end of the aeration tanks as return activated sludge or wasted via WAS pumps to the dissolved air flotation units for thickening. During the inspection, it was observed that one of the secondary clarifier pods was off-line and empty. In these four clarifiers, a large amount of algae was growing at the bottom of the clarifiers (photo 15). It was also observed that one of the gear/drive boxes was open and was leaking oil/lubrication (photo 16). On April 14, 2008, it was observed that the secondary clarifier effluent appeared to be turbid with rising floc particles (photo 17). The secondary clarifier effluent then flows to the chlorine contact chamber.

After the secondary treatment process, disinfection occurs in the chlorine contact chambers (photo 18). There are two channels for disinfection which are cleaned about once every two years. Since 2003, South plant has used sodium hypochlorite as its disinfectant. Sodium hypochlorite is added at two points in the chlorine contact channels. For the south chlorine contact channel, hypochlorite is added near pod 4. For the north channel, hypochlorite is added downstream of pod 1. As a back-up measure, sodium hypochlorite can be provided via gravity drip between pods 3 and 4 if the main chemical feed pumps become inoperable. Currently, a temporary disinfection system is in-place but a permanent system is slated to begin construction at the end of 2008. In addition to disinfection purposes, sodium hypochlorite is used, at times, to control odors and filamentous growth. Disinfected effluent flows to the effluent transfer station fore bay (photo 19) where it either flows by gravity during low flow periods or is pumped to the outfall via the effluent transfer pipeline. Photo 20 shows the effluent pump motor room.

South plant has a water reclamation facility which produces Class A water for reuse from a small portion of the plant's effluent flow. The chlorinated effluent water, referred to as C3 water, is used internally throughout the process in addition to feeding the water reclamation process. The Class A water treatment process includes coagulation and filtration. Specifically, a coagulant is added to the C3 water and mixed via an in-line static mixer. The coagulated water then flows through Parkson's DynaSand filters (photo 21). Typically, only one of the three filters is in operation. The filtered effluent is disinfected with hypochlorite through a series of three contact tanks. The control logic for the reuse facility is configured so that high turbidity or low total residual chlorine detected in the water will automatically valve off the non-specification water and re-direct it to the plant's headworks. Only water meeting the Class A requirements flows into the 500,000 gallon reuse

water storage tank for subsequent off-site distribution. During times when the RW facility can not meet its permit limits, potable water is supplied to external customers. On April 15, 2008, the reclaimed water plant was producing Class A water for internal and external purposes. Photos 22, 23, and 24 indicate the influent chlorine residual, effluent chlorine residual, and effluent turbidity measurements, respectively.

Primary clarifier sludge (PS) and waste activated sludge (WAS) from the secondary clarifiers is further processed into biosolids. The PS, WAS, and scum are pumped to the six dissolved air flotation tanks (DAFTs) for sludge thickening. Two of the DAFTs are 65 in diameter while 4 DAFTs are 55 feet in diameter. Inside the DAFTs, a mixture of sludge, polymer, and air form a thick layer of sludge that floats to the surface. The thickness of the floating sludge blanket is controlled by a scrapper arm which moves solids out of the DAFT to the thickened sludge blending tank. The water layer below the sludge blanket in the DAFT is pumped to the aeration tanks. The thin sludge layer that forms on the bottom of the DAFT is pumped to grit cyclones for de-gritting and sent back to the DAFTs for reprocessing. The thickened sludge blending tank (photo 25) contents are pumped to one of four anaerobic, mesophilic digesters (photo 26).

After digestion, the digested sludge is conveyed to the Digested Blend Storage tank. Polymer is added as a coagulant to the digested sludge and pumped from the blend tank to the dewatering centrifuges (photo 27). The biosolids are dewatered using centrifuges to an approximate solids percentage of 22-23% (photo 28). The digestion process reduces the volume of the sludge and generates methane gas which is cleaned and sold to PSE or used on-site as an energy source for the cogeneration facility. Currently, 6-8 trucks a day, haul biosolids at 22% solids to eastern Washington for land application (at Boulder Park or near Sunnyside) or to forest application sites. Photo 29 shows the biosolids loading area.

Records Review

As part of this inspection, a laboratory records review was conducted (photo 30). The facility had the required records and charts, and a copy of the current permit. The lab records were readily accessible, and a comparison of bench sheets at the facility and DMRs submitted to Ecology showed consistency. The laboratory is accredited by the Department of Ecology's Lab Accreditation Program (number M1466, expiration March 31, 2009).

Accredited parameters include: Total Alkalinity, Ammonia, BOD/CBOD, COD, Total Residual Chlorine, Dissolved Oxygen, Nitrate, TKN, Orthophosphate, pH, Phosphorus, Total Persulfate, Total Solids, TDS, TSS, TVS, Specific Conductance, Sulfate, Turbidity, Total Coli., and Fecal Coliform. The original O&M Manual was kept onsite and is updated as needed. The County is in the process of converting to a new, electronic O&M Manual system. At the time of the inspection, a request for flow calibration records was made. At the time of preparing this inspection report, the flow calibration records were not submitted by County staff.

Samplers

Influent and effluent flow samples are collected and analyzed for NPDES permit compliance purposes. The influent sampler is located near the division channel prior to the pre-aeration grit tanks. The effluent sampler is located at the effluent transfer fore bay where effluent TSS, BOD, and fecal coliform samples are collected (photo 31). On April 15, 2008, the temperature of the influent and effluent composite sampler refrigerators was observed to be 5°C and 6.5°C, respectively. The temperature of these refrigerators should be within the compliance range of 2-4°C.

Split Sampling & Analytical Results

On Tuesday, April 15, 2008, influent and effluent 24-hour composite samples (from the previous day) and grab samples were collected for independent laboratory analyses by both King County and the Department of Ecology. Disinfected reclaimed water samples for total coliform and total nitrogen (TKN plus nitrate and nitrite) were collected to evaluate reclaimed water compliance. Photos 32-33 shows Ecology staff collecting samples for comparative analyses and evaluation.

At the reclaimed water facility, Ecology collected an effluent sample from the sand filter to compare to the County's on-line turbidimeter (photos 24 and 34). The County's instrument was reading 0.723 NTU. Ecology's instrument reading was 1.55 NTU, approximately twice this value. Nonetheless, both values are less than the instantaneous maximum of 5 NTU.

In emails dated on May 2, 2008, King County reported their analytical results to Ecology. Ecology's Manchester lab analyzed for the following parameters: TSS, BOD₅, fecal coliform, and total oxidized nitrogen. Ecology contracted out to TestAmerica, Inc (Bothell, WA) labs for TKN and to Amtest (Redmond, WA) for total coliform. The following table includes the analytical results from the split sampling event.

PARAMETER	INFLUENT (KC Results)	INFLUENT (Ecology Results)	EFFLUENT (KC Results)	EFFLUENT (Ecology Results)
TSS	265 mg/L	245 mg/L	19 mg/L	14 mg/L
BOD ₅	227 mg/L	234 mg/L	14 mg/L	16 mg/L
FECAL COLIFORM (grab)	N/A	N/A	109/100 mL	700/100 mL Duplicate 680/100 mL
TOTAL COLIFORM (grab)	N/A	N/A	0 CFU/100 mL	<1 CFU/100 mL
TOTAL OXIDIZED NITROGEN	N/A	N/A	0.13 mg/L as N	0.12 mg/L as N
TKN as N	N/A	N/A	37.2 mg/L as N	27.4 mg/L as N

In general, the County's analytical results are close in value to Ecology's analytical results. However, there is a discrepancy regarding the fecal coliform results.


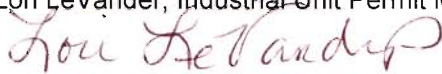

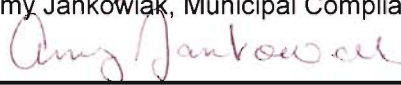
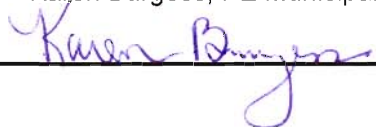
RECOMMENDATIONS AND CONCLUSIONS

- Recent revisions to the biosolids rules (WAC 173-308-205) require all biosolids to be screened with a maximum aperture of 3/8" by July 1, 2012. Screening at the headworks could satisfy the screenings requirement but the maximum aperture must be no larger than 3/8" bar spacing. Two of the four existing bar screens would not meet the biosolids screenings rule. In light of this requirement, continue to take proactive steps to ensure compliance with this rule.
- During the inspection, it was observed that the influent and effluent composite sampler refrigerators were not within the compliance temperature range of 2-4°C. Please take the necessary measures to ensure that the sample coolers/refrigerators are operated and maintained within the desired temperature range.
- At the Reuse Facility, please provide an alum feed pump to ensure mechanical redundancy.
- During the inspection, it was noted that the hydraulic system on the blend gates need maintenance. Ecology recommends that this work be accomplished during the dry summer months when flow rates are low.
- It was noted that the mixed liquor channel has a long detention time and can adversely affect settling in the downstream secondary clarifiers. Ecology recommends that this situation be further investigated and optimized.
- It was observed that one of the off-line, secondary clarifier gear boxes was open and there was a pool of oil surrounding the gear box. Cleanup this oil immediately. Consider providing a spill prevention/cleanup kit at all major unit processes.
- At the septage receiving station, it was observed large oil spots on the pavement (photo 37). At your bi-annual meeting with the septage haulers, Ecology would appreciate any help from the County in communicating best management practices (BMPs). BMPs could include the haulers having spill kits on their vehicles or maintaining scheduled inspections of their vehicles to prevent oil leaks from occurring.
- Maintain flow meter calibration records and provide when requested by Ecology staff.
- Please continue to have good communications with the Port of Seattle regarding de-icer discharges from Sea-Tac Airport.
- Please provide on-going, adequate training to all new staff with an emphasis on process upsets and emergency operating conditions at the plant. Ecology suggests on-going exercises or simulations to prepare staff for emergency and high flow wet weather operations, too.
- It appears that some of the East Section staff will support Brightwater operations. Please evaluate this impact on South Plant's operations and maintenance and ensure that South Plant has adequate staff to meet all existing and future needs.

In general, the plant appeared well maintained and operated during the inspection. Ecology appreciates the time and effort spent by County staff during this inspection. Contact Mark Henley, PE at 425-649-7103 regarding questions about this inspection report.

Attachments: Pictures

CC: Betsy Cooper, King County, NPDES Permit Coordinator
Rick Butler, King County South Plant, 1200 Monster Road SW, Renton, WA 98055
EPA, Region 10, Seattle
Central Files, WQ 6.1, King County, South Plant WWTP, WA-002958-1

Name(s) and Signatures of Inspector(s)	Agency/Office/Telephone	Date
Mark Henley, PE, Municipal Facility Manager 	WA Dept. of Ecology/NWRO/(425) 649-7103 3190 160th SE, Bellevue, WA 98008-5452	5/21/08
Lori LeVander, Industrial Unit Permit Manager 	WA Dept. of Ecology/NWRO/(425) 649-7039 3190 160th SE, Bellevue, WA 98008-5452	5/23/08
Tonya Lane, Field Inspection Coordinator 	WA Dept. of Ecology/NWRO/(425) 649-7050 3190 160th SE, Bellevue, WA 98008-5452	5/21/08
Amy Jankowiak, Municipal Compliance Specialist 	WA Dept. of Ecology/NWRO/(425) 649-7195 3190 160th SE, Bellevue, WA 98008-5452	5/22/08
Signature of Management Q A Reviewer	Agency/Office/Phone and Fax Numbers	Date
Karen Burgess, PE Municipal Unit Supervisor 	WA Dept. of Ecology/NWRO/(425) 649-7207 3190 160 th Ave. SE, Bellevue, WA 98008	5/21/08

ANNOUNCED Inspection

INSTRUCTIONS**Section A: National Data System Coding (i.e., PCS)**

Column 1: Transaction Code. Use N, C, or D for New Change or Delete. All inspections will be new unless there is an error in the data entered.

Columns 3-11: NPDES Permit No. Enter the facility's NPDES permit number. *(Use the Remarks columns to record State permit number, if necessary.)*

Columns 12-17: Inspection Date. Insert the date entry was made into the facility. Use the year/month/day format (e.g., 94/06/30 = June 30, 1994).

Column 18: Inspection Type. Use one of the codes listed below to describe the type of inspection:

A Performance Audit	L Enforcement Case Support	2 IU Sampling Inspection
B Compliance Biomonitoring	M Multimedia	3 IU Non-Sampling Inspection
C Compliance Evaluation (non-sampling)	P Pretreatment Compliance Inspection	4 IU Toxics Inspection
D Diagnostic	R Reconnaissance	5 IU Sampling Inspection with Pretreatment
E Corps of Engineers Inspection	S Compliance Sampling	6 IU Non-Sampling Inspection with pretreatment
F Pretreatment Follow-up	U IU Inspection with Pretreatment Audit	7 IU Toxics with Pretreatment
G Pretreatment Audit	X Toxics Inspection	
I Industrial User (IU) Inspection	Z Sludge	

Column 19: Inspector Code. Use one of the codes listed below to describe the *lead agency* in the inspection.

C - Contractor or Other Inspectors (<i>Specify in Remarks Columns</i>)	N - NEIC Inspectors
E - Corps of Engineers	R - EPA Regional Inspector
J - Joint EPA/State Inspectors - EPA Lead	S - State Inspector
	T - Joint State/EPA Inspectors - State Lead

Column 20: Facility Type. Use one of the codes below to describe the facility.

- 1 - Municipal. Publicly Owned Treatment Works (POTWs) with 1987 Standard Industrial Code (SIC) 4952.
- 2 - Industrial. Other than municipal, agricultural, and Federal facilities.
- 3 - Agricultural. Facilities classified with 1987 SIC 0111 to 0971.
- 4 - Federal. Facilities identified as Federal by the EPA Regional Office

Columns 21-66: Remarks. These columns are reserved for remarks at the discretion of the Region.

Columns 67-69: Inspection Work Days. Estimate the total work effort (to the nearest 0.1 work day), up to 99.9 days, that were used to complete the inspection and submit a QA reviewed report of findings. This estimate includes the accumulative effort of all participating inspectors; any effort for laboratory analyses, testing, and remote sensing; and the billed payroll time for travel and pre and post inspection preparation. This estimate does not require detailed documentation.

Column 70: Facility Evaluation Rating. Use information gathered during the inspection (regardless of inspection type) to evaluate the quality of the facility self-monitoring program. Grade the program using a scale of 1 to 5 with a score of 5 being used for very reliable self-monitoring programs, 3 being satisfactory, and 1 being used for very unreliable programs.

Column 71: Biomonitoring Information. Enter D for static testing. Enter F for flow through testing. Enter N for no biomonitoring.

Column 72: Quality Assurance Data Inspection. Enter Q if the inspection was conducted as follow-up on quality assurance sample results. Enter N otherwise.

Columns 73-80: These columns are reserved for regionally defined information.

Section B: Facility Data

This section is self-explanatory except for "Other Facility Data," which may include new information not in the permit or PCS (e.g., new outfalls, names of receiving waters, new ownership, and other updates to the record).

Section C: Areas Evaluated During Inspection

Check only those areas evaluated by marking the appropriate box. Use Section D and additional sheets as necessary. Support the findings, as necessary, in a brief narrative report. Use the headings given on the report form (e.g., Permit, Records/Reports) when discussing the areas evaluated during the inspection. The heading marked "Multimedia" may indicate medias such as CAA, RCRA, and TSCA. The heading marked "Other" may indicate activities such as SPCC, BMPs, and concerns that are not covered elsewhere.

Section D: Summary of Findings/Comments

Briefly summarize the inspection findings. This summary should abstract the pertinent inspection findings, not replace the narrative report. Reference a list of attachments, such as completed checklists taken from the NPDES Compliance Inspection Manuals and pretreatment guidance documents, including effluent data when sampling has been done. Use extra sheets as necessary.

LINKS AND INFORMATION:

"Informational Manual for Treatment Plant Operators"; February 2004; by the Department of Ecology
Publication Number 04-10-020:

<http://www.ecy.wa.gov/pubs/0410020.pdf>

The manual was prepared to help wastewater treatment plant operators complete and submit their Discharge Monitoring Reports (DMRs) and other annual reports to the Department of Ecology. The manual is available in hard copy. To request a copy, contact the Department of Ecology, Publications Distribution Center at P.O. Box 47600, Olympia, WA 98504-7600 or by Telephone: (360) 407-7472. Updates to the manual are included on the website version.

Ecology's Wastewater and Reuse website:

<http://www.ecy.wa.gov/programs/wq/wastewater/index.html>

Ecology's Operator Certification website:

http://www.ecy.wa.gov/programs/wq/wastewater/op_cert/index.html

Ecology's Laboratory Accreditation website:

http://www.ecy.wa.gov/programs/eap/labs/labs_main.html

Ecology's Biosolids website:

<http://www.ecy.wa.gov/programs/swfa/biosolids/>

Ecology's Operator Outreach: Carl Jones (360) 407-6431; cjon461@ecy.wa.gov

Ecology's Municipal Compliance Specialist (Northwest Regional Office): Amy Jankowiak (425) 649-7195;

ajan461@ecy.wa.gov

Ecology's Wastewater Operator Certification Coordinator: Poppy Carre (360) 407-6449; 1-800-633-6193 (within the state)

poca461@ecy.wa.gov

Ecology's Biosolids Coordinator (Northwest Regional Office)" Marietta Sharp (425) 649-7258 mars461@ecy.wa.gov

Reporting Spills/Overflows/Upsets/Bypasses/Loss of Disinfection IMMEDIATELY:

Ecology's 24-hour number: (425) 649-7000 to report a spill

Department of Health – Shellfish Program 24-hour number: (360) 236-3330

Photo #: 1

Description:

South Plant's Main Control Room

Date Taken:

04/14/08

Taken By:

Tonya Lane/Lori LeVander

Witness By:

Mark Henley



Photo #: 2

Description:

Influent Bar Screens

Date Taken:

04/14/08

Taken By:

Tonya Lane/Lori LeVander

Witness By:

Mark Henley



Photo #: 3

Description:

Screenings Dewatering (Hycor Units)

Date Taken:

04/14/08

Taken By:

Tonya Lane/Lori LeVander

Witness By:

Mark Henley



Photo #: 4

Description:
Influent Sampler

Date Taken:
04/15/08

Taken By:
Mark Henley

Witness By:
Amy Jankowiak

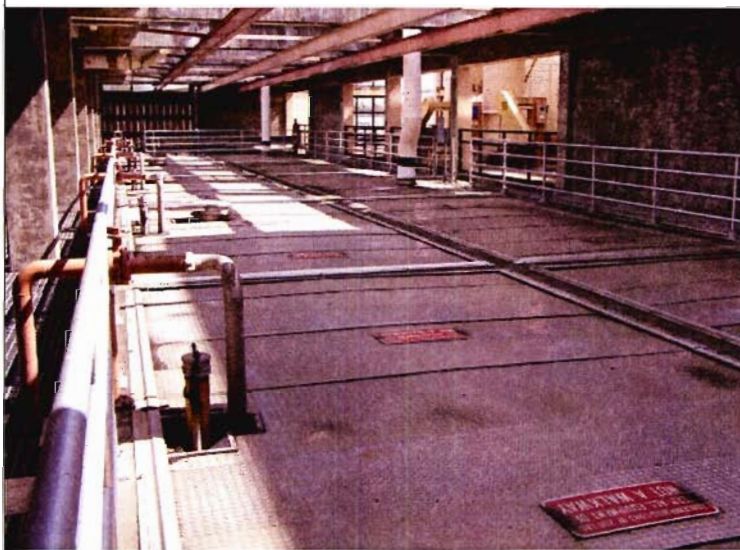
Photo #: 5

Description:
Aerated Grit Tanks

Date Taken:
04/14/08

Taken By:
Tonya Lane/Lori LeVander

Witness By:
Mark Henley

Photo #: 6

Description:
Grit Dewatering Room

Date Taken:
04/14/08

Taken By:
Tonya Lane/Lori LeVander

Witness By:
Mark Henley



Photo #: 7Description:

Pre-aeration Grit Tank. Out-of-service for cleaning. Note large amount of rock and gravel.

Date Taken:

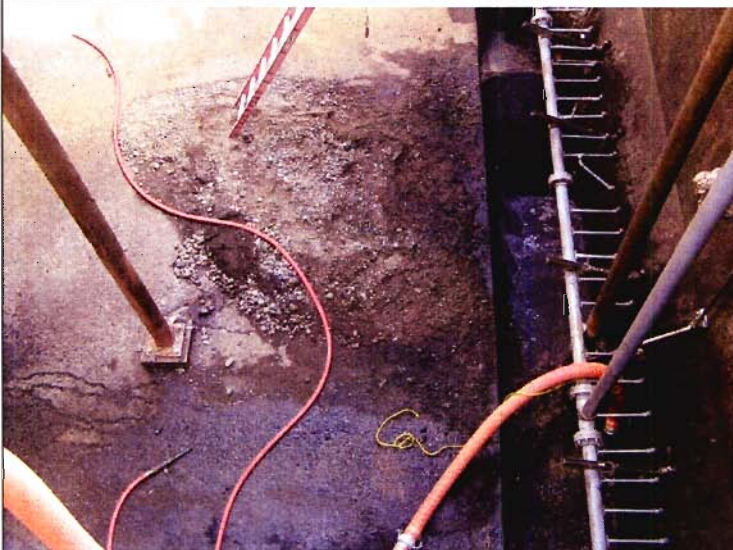
04/14/08

Taken By:

Tonya Lane/Lori LeVander

Witness By:

Mark Henley

Photo #: 8Description:

Primary Clarifier – North Bank

Date Taken:

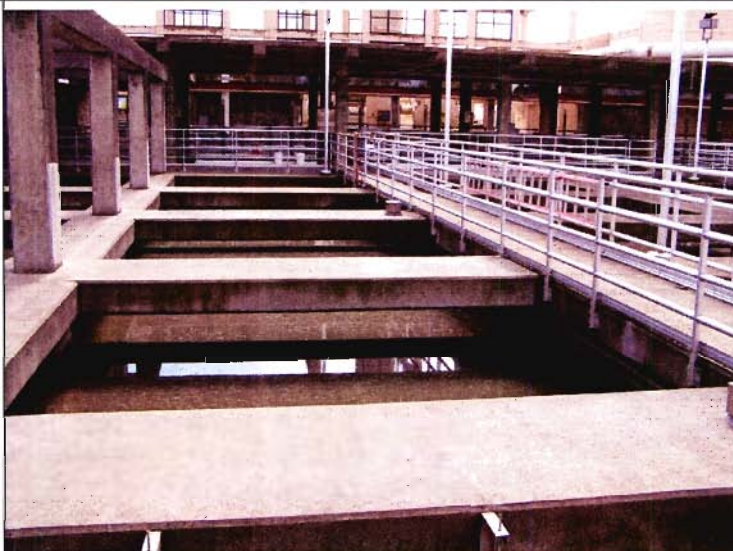
04/14/08

Taken By:

Tonya Lane/Lori LeVander

Witness By:

Mark Henley

Photo #: 9Description:

Primary Clarifier – South bank. Note: with sprays.

Date Taken:

04/14/08

Taken By:

Tonya Lane/Lori LeVander

Witness By:

Mark Henley



Photo #: 10

Description:

North Bank – Primary Clarifier. Off-line.

Date Taken:

04/14/08

Taken By:

Tonya Lane/Lori LeVander

Witness By:

Mark Henley



Photo #: 11

Description:

Aeration Basin (1st Pass of 4)

Date Taken:

04/14/08

Taken By:

Tonya Lane/Lori LeVander

Witness By:

Mark Henley



Photo #: 12

Description:

Anaerobic Selector Zone

Date Taken:

04/14/08

Taken By:

Tonya Lane/Lori LeVander

Witness By:

Mark Henley



Photo #: 13

Description:
Mixed Liquor Channel

Date Taken:
04/14/08

Taken By:
Tonya Lane/Lori LeVander

Witness By:
Mark Henley



Photo #: 14

Description:
Secondary Clarifier. Out of service.

Date Taken:
04/14/08

Taken By:
Tonya Lane/Lori LeVander

Witness By:
Mark Henley



Photo #: 15

Description:
Secondary Clarifier. Out-of-service. Note:
excessive algae growth.

Date Taken:
04/14/08

Taken By:
Tonya Lane/Lori LeVander

Witness By:
Mark Henley



Photo #: 16Description:

Secondary Clarifier drive mechanism – gear box. Note: leaking oil.

Date Taken:

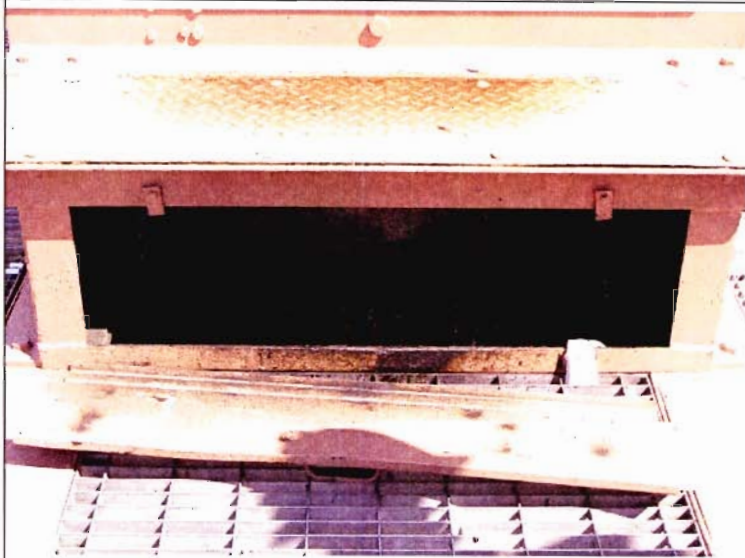
04/14/08

Taken By:

Tonya Lane/Lori LeVander

Witness By:

Mark Henley

Photo #: 17Description:

Lots of flocs in secondary clarifier.

Date Taken:

04/14/08

Taken By:

Tonya Lane/Lori LeVander

Witness By:

Mark Henley

Photo #: 18Description:

Chlorine contact channel.

Date Taken:

04/14/08

Taken By:

Tonya Lane/Lori LeVander

Witness By:

Mark Henley



Photo #: 19

Description:

Effluent Transfer Fore bay. Effluent Samplers in background.

Date Taken:

04/14/08

Taken By:

Tonya Lane/Lori LeVander

Witness By:

Mark Henley



Photo #: 20

Description:

Effluent Pump Motor Room

Date Taken:

04/14/08

Taken By:

Tonya Lane/Lori LeVander

Witness By:

Mark Henley



Photo #: 21

Description:

Sand filters @ Reuse Facility

Date Taken:

04/15/08

Taken By:

Mark Henley

Witness By:

Amy Jankowiak



Photo #: 22

Description:

Influent Chlorine Analyzer @ Reuse Facility. 4.07 mg/L

Date Taken:

04/15/08

Taken By:

Mark Henley

Witness By:

Amy Jankowiak



Photo #: 23

Description:

Effluent Chlorine Analyzer @ Reuse Facility. 3.00 mg/L

Date Taken:

04/15/08

Taken By:

Mark Henley

Witness By:

Amy Jankowiak



Photo #: 24

Description:

Turbidity level exiting Sand filters. 0.723 NTU

Date Taken:

04/15/08

Taken By:

Mark Henley

Witness By:

Amy Jankowiak



Photo #: 25

Description:

Thickened Sludge Blend Tank

Date Taken:

04/14/08

Taken By:

Tonya Lane/Lori LeVander

Witness By:

Mark Henley



Photo #: 26

Description:

Anaerobic, Mesophilic Digester

Date Taken:

04/14/08

Taken By:

Tonya Lane/Lori LeVander

Witness By:

Mark Henley

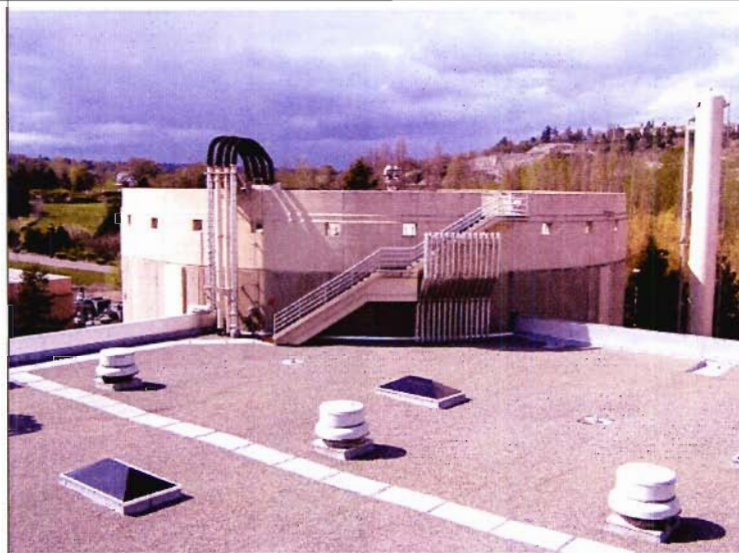


Photo #: 27

Description:

Dewatering Centrifuge

Date Taken:

04/14/08

Taken By:

Tonya Lane/Lori LeVander

Witness By:

Mark Henley

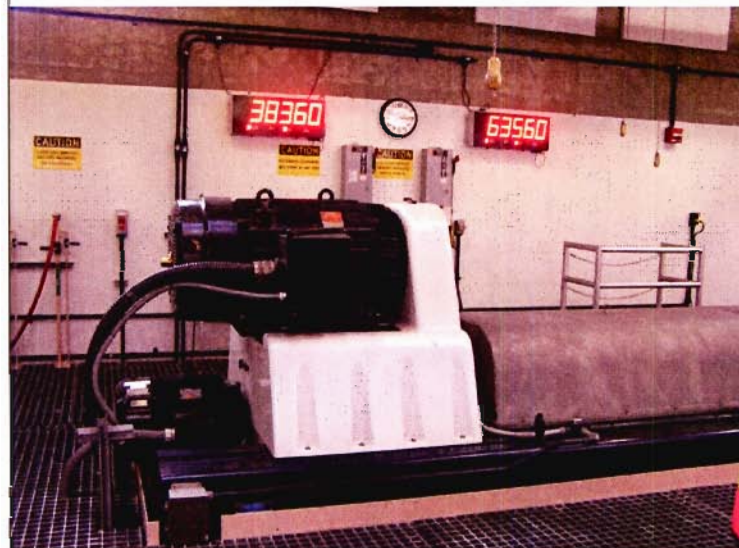


Photo #: 28

Description:
Biosolids Dewatered Cake.
Approximately 22% solids

Date Taken:
04/14/08

Taken By:
Lori LeVander

Witness By:
Mark Henley



Photo #: 29

Description:
Biosolids Truck Loading Area

Date Taken:
04/14/08

Taken By:
Tonya Lane/Lori LeVander

Witness By:
Mark Henley



Photo #: 30

Description:
Laboratory Bench Setup

Date Taken:
04/15/08

Taken By:
Mark Henley

Witness By:
Amy Jankowiak

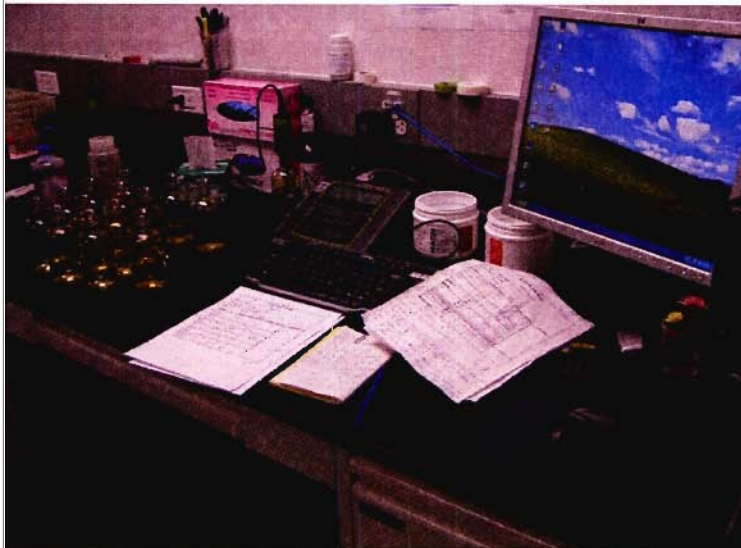


Photo #: 31

Description:
Effluent Sample

Date Taken:
04/15/08

Taken By:
Mark Henley

Witness By:
Amy Jankowiak



Photo #: 32

Description:
Split Sampling

Date Taken:
04/15/08

Taken By:
Mark Henley

Witness By:
Amy Jankowiak



Photo #: 33

Description:
Split Sampling

Date Taken:
04/15/08

Taken By:
Mark Henley

Witness By:
Amy Jankowiak



Photo #: 34

Description:

Turbidity Verification at Reuse Facility

Date Taken:

04/15/08

Taken By:

Mark Henley

Witness By:

Amy Jankowiak



Photo #: 35

Description:

Sampler (for peak flows bypassing secondary treatment)

Date Taken:

04/14/08

Taken By:

Tonya Lane/Lori LeVander

Witness By:

Mark Henley

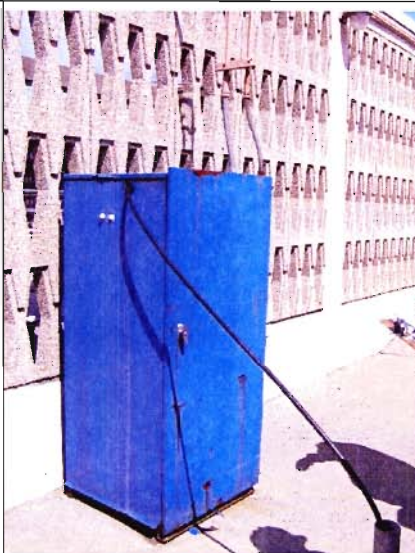


Photo #: 36

Description:

Septage Receiving Station

Date Taken:

04/14/08

Taken By:

Tonya Lane/Lori LeVander

Witness By:

Mark Henley



Photo #: 37

Description:

Oil spots from vehicles at Septage
Receiving Station

Date Taken:

04/14/08

Taken By:

Lori LeVander

Witness By:

Mark Henley

