WEYERHAESUER COMPANY – Pine Hill, AL

Ambient TRS Study – Phase II

April 2002

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Ambient TRS Study – Phase II
Pine Hill, Alabama
April 2002

Executive Summary

Overview

This report documents the results and findings of the second phase of an investigation to identify sources of TRS emissions that have a ground level impact on Weyerhaeuser's Pine Hill, Alabama pulp and paper complex. Phase I of the TRS ambient study focused on establishing baseline conditions prior to implementation and start-up of the MACT related projects. This first phase measurements were conducted on February 6-14, 2001.

The objective of Phase II is to quantify the reductions in TRS emissions resulting from the implementation of the MACT program. Phase II measurements were conducted from November 29 through December 9, 2001.

Results

- Implementation of MACT program has removed approximately 80 lb/hr of TRS from entering the wastewater treatment system. This accounts for approximately 11 % of the total ground level TRS emissions from the mill. This TRS would presumably be stripped to the atmosphere at the ASB if left in the system.
- The TRS emission rate changed between Phase I and Phase II at the following major TRS emission sources:

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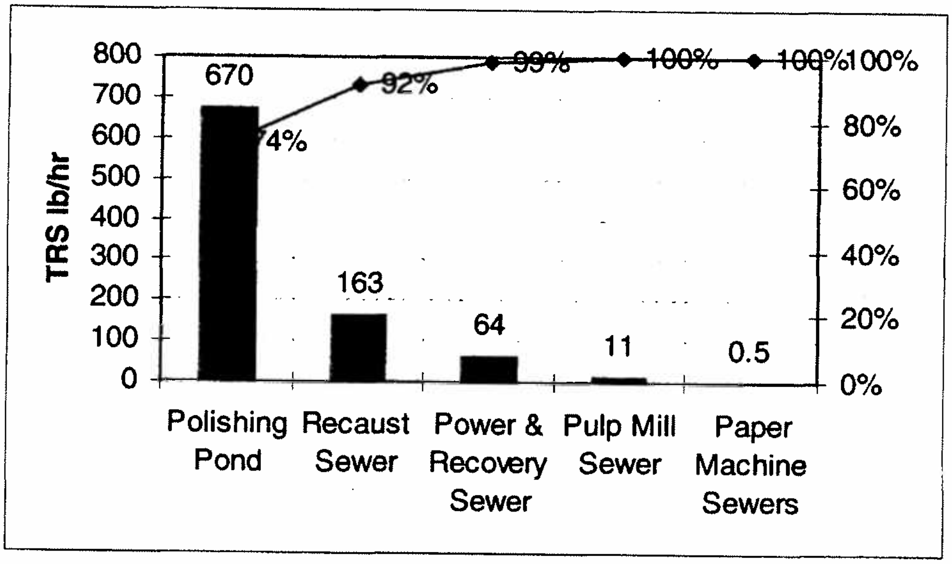
TRS Emission Source	Type of Sample Taken	TRS Emission Rate(lb/hr)		Percent Change from Phase I to Phase II
		Phase I average (range)	*Phase II* average (range)	
Polishing Pond	Air	540 (30-2300)	488 (10-2644)	- 10%
ASB	Air	270 (one sample)	not estimated	na
ASB	Effluent	113 (5-359)	195 (102-282)	+ 72%
Polishing Pond Inlet	Air	41 (one sample)	19 (10-33)	- 54%
Pulp Mill	Air	23 (17-32)	not estimated	na
Step Aerator	Air	17 (one sample)	8 (one sample)	- 53%
Primary Clarifier	Air	7 (5-12)	not estimated	na
Primary Clarifier	Effluent	no sample taken	3 (one sample)	na
Total		**741**	**713**	**- 4%**

- The figure below shows the amount of TRS coming from the various sources, including generation in the polishing pond. The polishing pond is the major contributor of TRS.



Conclusions

1. The MACT program resulted in a modest reduction of 80 lb/hr of TRS in the wastewater system. The mill continues to process over 700 lb/hr through the wastewater system.

2. The two most significant sources of ground level TRS emissions include the following:
   - *Polishing pond*
   - *ASB*

3. The major contributors of TRS to the wastewater treatment system include:
   - Sulfides in the recaust sewer.
   - Sulfide generation in the polishing pond due to anaerobic biological activity.
   - Note: Sulfide generation or oxidation in the ASB was not quantified during this phase of the study.

Recommendations

1. Develop means of reducing H_2S generation in the polishing pond. This may include adding aeration capacity at the wastewater treatment system. (Note: Additional control of the H_2S generation in other areas of the wastewater treatment system, e.g. ASB, primary clarifier, etc. may be required to address a total mill TRS reduction program).

2. Reduce and control the amount of TRS and high pH containing material going to the recaust sewer.

3. Evaluate effect of implementing items 1 and 2 above. This may involve documenting reduced ambient TRS impacts with the ENSR met station, and/or measuring the TRS emission reduction from the major sources using the air dispersion model approach.

1.0 Introduction and Background

1.1 *Overview*

The Weyerhaeuser Pine Hill, Alabama pulp and paper facility recently implemented a program to comply with the mandated Maximum Achievable Control Technology (MACT) regulation. The MACT regulation requires the collection and destruction of regulated hazardous air pollutants (HAP).

MACT technology includes collection, separation, and incineration of methanol from various process areas. Total reduced sulfur (TRS) compounds are coincidentally collected, treated, and destroyed along with the methanol. Compliance with the MACT regulation is expected to reduce TRS emissions and lower ambient TRS concentrations throughout the mill.

Two major capital projects were undertaken as part of the MACT program. The following are the two newly installed systems:

- *Condensate steam stripper system* – This system collects foul condensate from selected pulp mill process areas. The condensate is stripped with steam to remove the HAP. The HAP are sent to the noncondensible gas (NCG) thermal oxidizer for destruction.
- *Noncondensible gas thermal oxidizer* – The NCG thermal oxidizer destroys the HAP from the condensate stripper and other NCG streams from the pulp mill.

Because the MACT projects are expected to measurably reduce TRS emissions, the Pine Hill facility commissioned a study to quantify the reduction. Prior to startup of the MACT projects, an initial study was conducted to identify where ground level TRS compound were released in the mill and estimate ground level TRS emission rates prior to implementation of MACT. This first phase included onsite testing during February 6-14, 2001. The results of this study were published in an internal Weyerhaeuser report tilted "*Weyerhaeuser Co. – Pine Hill, Al. Ambient TRS Study – February 2001*".

After the startup of the MACT equipment, Phase II of the study was conducted to document the reduction of TRS emissions. Phase II was conducted nine months later, during November 29th through December 9th, 2001.

This report documents the results of Phase II of the TRS study conducted at the Weyerhaeuser Pine Hill facility.

1.2 *Study Objectives*

The primary objective of Phase II is to document the decrease in TRS emissions resulting from the implementation of the MACT program. As part of this documentation, the primary goals include the following:

- Compare the TRS mass emission rates between Phase I and Phase II to quantify the reductions.
- Quantify the reduction in TRS emissions from the major sources.
- Identify key opportunities that will assist in minimizing or eliminating ground level TRS emissions.

2.0 Methodology

2.1 *Overview*

Changes in emissions before and after MACT were assessed by two methods: estimating emissions from ground level sources by back modeling of ambient TRS concentrations measured downwind of pertinent unit operations, and measuring TRS compounds in sewers that have the potential to be stripped during waste water treatment operations.

Back modeling techniques - Ambient TRS concentrations at the Pine Hill facility were monitored using a mobile air sampling station. The mobile station was strategically positioned to allow direct TRS measurements from the suspected various TRS emission sources. The mobile station recorded pertinent meteorological data at each sampling location.

The TRS concentration information was used in an EPA approved air dispersion model to calculate the emission rate from each source. The emission rates were then compared between Phase I and Phase II to determine whether a change occurred as a result of the MACT program.

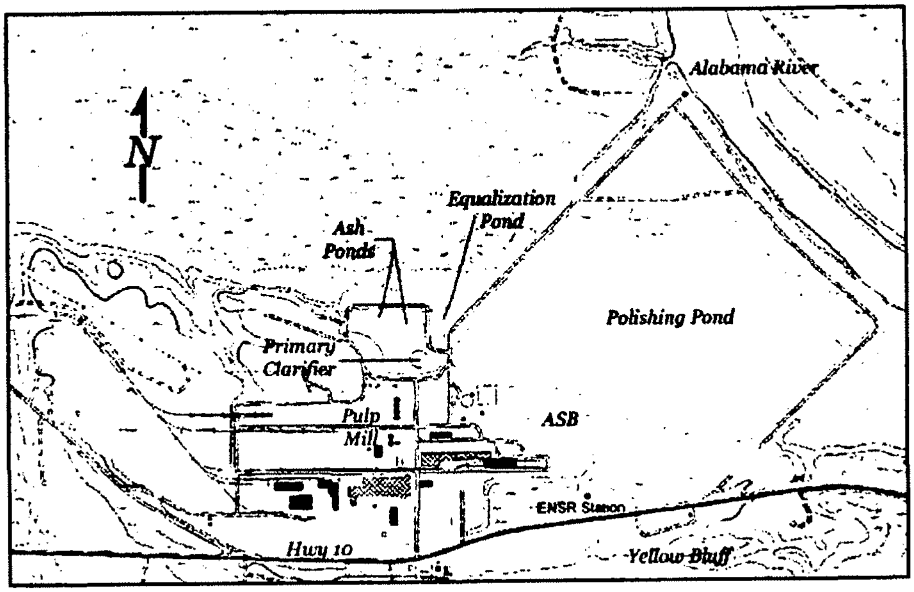
Wastewater TRS measurements - Wastewater from selected sewers were collected daily for analysis of TRS components to identify sources of reduced sulfur compounds being released from the effluent treatment systems. The samples were analyzed for: hydrogen sulfide (H_2S), methyl mercaptan (MeSH), dimethyl sulfide (DMS) and dimethyl disulfide (DMDS). Flow data was obtained for the corresponding streams from the mill and used to calculate mass flow of TRS compounds.

2.2 *Air Monitoring Methodology*

2.2.1 Pine Hill Facility Overview

An overview of the Weyerhaeuser Pine Hill pulp and paper facility is shown in Figure 2-1. In addition, Figure 2-1 also shows the primary areas of interest for the TRS study.

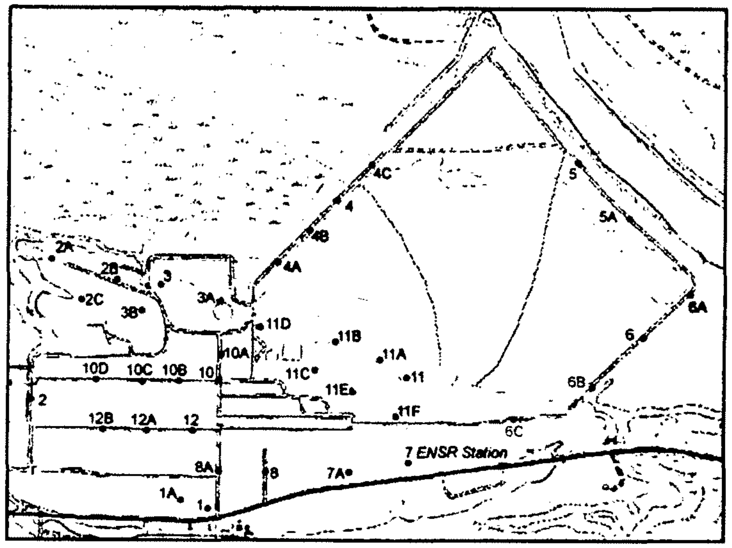
Figure 2-1. Pine Hill Pulp and Paper Facility



2.2.2 Mobile Air Monitoring Station

A mobile air monitoring station was used to collect ambient air data for the TRS study. The mobile station consisted of a two-person vehicle traveling throughout the mill collecting air data at selected sites. The data was collected on a routine schedule, normally in the early morning. The team collected air data at 38 selected locations. Figure 2-2 shows the 38 different sites. The locations of these sites were mapped to +/- 10 feet using a global positioning system (GPS) instrument.

Figure 2-2. Mobile Station Test Site Locations



The 38 sampling sites were chosen to represent a cross-section of the TRS emissions from the entire facility. At each sampling site the following information was collected:

- *Wind direction*
- *Wind speed*
- *H_2S concentration*
- *Atmospheric stability class information (obtained from ENSR station)*

The 38 locations were sampled nine different times over the eleven-day test period between November 29th and December 9th, 2001. In addition to the nine routine sampling sets, additional air data was collected during the following periods:

- *During the interior polishing pond liquid sampling test period* - air monitoring data was collected along the perimeter of the polishing pond.
- *During high wind periods* - data was collected at multiple inline locations (aligned with the source) to validate the dispersion model parameters.
- *During favorable wind periods* – data was collected along the mill's fenceline (these locations were typically along the mill's southern fenceline).

2.3 *Air Dispersion Model*

TRS mass emission rates can be estimated using the TRS concentration data and an ambient air dispersion model. The EPA approved SCREEN1 Dispersion Model was used to estimate the mass emission rates. The SCREEN1 model normally uses mass emission rates, associated physical information (source area, terrain type) and climatic data inputs (release height, wind speed, solar radiation level) to calculate ground level concentrations. For this study, the ground level concentrations from the mobile monitoring station were used to back-calculate the predicted mass rate from each emission source.

The model's input parameters have been tuned by matching model predictions with measured TRS concentrations at various locations downwind of the source. Also, only TRS data that was obtained during the appropriate climatic stability class were modeled. Stability class categories are used to describe the level of air turbulence. The most widely used category is the Pasquill Stability Classes A, B, C, D, E and F. Class A denotes the most unstable or most turbulent conditions, and Class F denotes the most stable or least turbulent conditions. Climatic conditions with a Class C and D was considered to be a stable atmospheric condition. The criteria for a Class C stability rating includes the following:

- *Stable air flow*, with minimal vertical mixing of the air
- *Steady winds*, with a minimum of around 5 mph
- *Steady wind direction*

Using the appropriate stability class ensures that TRS mixing from other sources is minimized. Therefore, only TRS emissions from the selected source are accounted for in the estimate.

2.3.1 Precision and Accuracy of the Air Dispersion Model Approach

The use of the SCREEN1 air dispersion model to estimate TRS emission rates from area sources includes several assumptions. For example, the SCREEN1 model is not suited to area sources where changes in the model configuration, such as assumed plume widths, can result in a factor of 2 or 3 difference. However, calibration of the model using multiple point readings will greatly reduce the uncertainty in the modeled results. These reading are taken at different distances from the source along the same downwind line.

Therefore, the results provided in this report should be viewed as relative values, mainly for comparison purposes, and not necessarily absolute numbers. Where possible, results are shown as averages with the ranges of readings.

2.4 *Wastewater Testing Methodology*

2.4.1 Daily Wastewater Samples

During both phases of the TRS study, grab wastewater samples were taken daily at selected locations throughout the mill. Phase II collected samples at the following twelve locations:

- *Pulp mill sewer*
- *Power & recovery sewer*
- *Recaust area sewer*
- *No. 1 paper machine sewer*
- *No. 2 paper machine sewer*
- *Ash pond overflow*
- *Primary clarifier inlet*
- *Primary clarifier outlet*
- *Inlet to ASB*
- *Discharge from ASB*
- *Discharge of the step aerator*
- *Discharge of the polishing pond*

The daily samples were tested for the following constituents:

- Total sulfide (as H_2S)
- Methyl mercaptan (MeSH)
- Dimethyl sulfide (DMS)
- Dimethyl disulfide (DMDS)

3.0 TRS Source Identification

3.1 *Overview*

TRS emission sources were identified using the wind direction data from the mobile air station. By using the wind direction, TRS sources upwind of the mobile station can be readily identified.

3.2 *Source Identification Using the Mobile Station*

One of the major benefits of using a mobile station is its ability to directly identify the TRS sources during most atmospheric conditions. This is because the mobile station can place itself in a downwind position next to the suspected TRS source. Therefore, any TRS detected can be attributed to the suspected source if the other atmospheric conditions are suitable, e.g. appropriate wind stability class.

The mobile station was found to work extremely well in identifying the emission sources. Only in cases where wind turbulence around a structure or building became a factor, at low wind speeds, and winds from variable directions did source identification prove more difficult. For example, several sampling sites were located in and around the pulp digester and washing area. Although wind directions and H_2S readings identified the pulp mill area, specific TRS point sources could not be identified. This was due to the buildings in this area, which would mix and channel the wind. Consequently, precise point source identification around the pulp mill area was not often possible.

3.3 *Major TRS Emission Sources*

Sources contributing to in-mill ground level ambient TRS were identified by measuring H_2S concentrations wind speed and wind direction at selected locations throughout the facility. Mill maps with the raw data can be found in Appendix A and Appendix B.

During Phase II, the sources with the highest downwind TRS concentrations during stable atmospheric conditions are shown in Table 3-1. Note that the concentrations for each source are affected by multiple variables including wind speed, atmospheric stability (vertical mixing and consistency of wind direction), terrain and structures, and distance between the source and measurement point.

Table 3-1 Major Ground Level TRS Emission Sources

Emission Source	Average TRS Concentration (measured as ppb H_2S)	Median TRS Concentration (measured as ppb H_2S)	Number of Measurements
Step Aerator	1222	1583	3
Polishing Pond	726	529	66
ASB	376	169	32
Primary Clarifier Area	97	22	8
Ash Pond	33	24	5
Pulp Mill Area	13	13	2
Recaustisizing Area	10	10	2
Equalization Basin Area	7	7	1

Note that these TRS measurements were taken during normal operation. Abnormal conditions, e.g. spills, startups, shutdowns, etc. would likely cause higher readings at the localized affected area.

4.0 TRS Emission Quantification

4.1 *Overview*

During Phase II, ambient TRS concentrations were measured from selected sample site locations. The concentration values were used in the EPA approved SCREEN1 air dispersion model to estimate the TRS emission rates from the various emission sources.

Although numerous TRS concentration measurements were taken over the eleven-day Phase II period, only a limited number could be used in the SCREEN1 model. Due to unacceptable climatic conditions, i.e. non-Class C or D atmospheric stability ratings or unfavorable wind directions, most of the measurements could not be used.

4.2 *Primary Clarifier TRS Emissions*

Unfavorable climatic conditions existed during the study period such that no valid TRS data could be collected from the primary clarifier area. Unfavorable climatic conditions could include situations such as incorrect wind direction, or inadequate wind stability class rating. Therefore, no TRS concentration data was available to estimate the TRS emission rates with the dispersion model.

4.3 *ASB TRS Emissions*

Unfavorable climatic conditions existed during the study period such that no valid TRS data could be collected from the ASB. Therefore, no TRS concentration data was available to estimate the TRS emission rates with the dispersion model.

4.4 *Pulp Mill TRS Emissions*

Unfavorable climatic conditions existed during the study period such that no valid TRS data could be collected from the pulp mill area. Therefore, no TRS concentration data was available to estimate the TRS emission rates with the dispersion model.

4.5 *Polishing Pond TRS Emissions*

TRS concentration measurements were taken from selected locations around the polishing pond. These measurements were used in the air dispersion model to predict the emission rates.

Similar to Phase I, three sections of the Pond were modeled separately. The modeled areas were designated as A, B and C. These areas are shown in Figure 4-1.

Figure 4-1. Polishing Pond Modeled Areas

Area C represents the inlet to the polishing pond. Area B is the northeast corner of the pond. Due to the internal curtain arrangement in the pond the effluent accumulates in this corner prior to entering the main pond area. Area A represents the main polishing pond region. The pond discharges near the lower east end of the pond into the Alabama River.

4.5.1 Polishing Pond - Modeling Results

Table 4-1 shows the air dispersion results for the three polishing pond areas. TRS emissions from Area A ranged from 123 to 2264 lb/hr, with an average of 621 lb/hr. Area C, the polishing pond inlet, ranged 10 to 33 lb/hr and averaged 19 lb/hr. No TRS emission rates were estimated for Area B due to unsuitable climatic data.

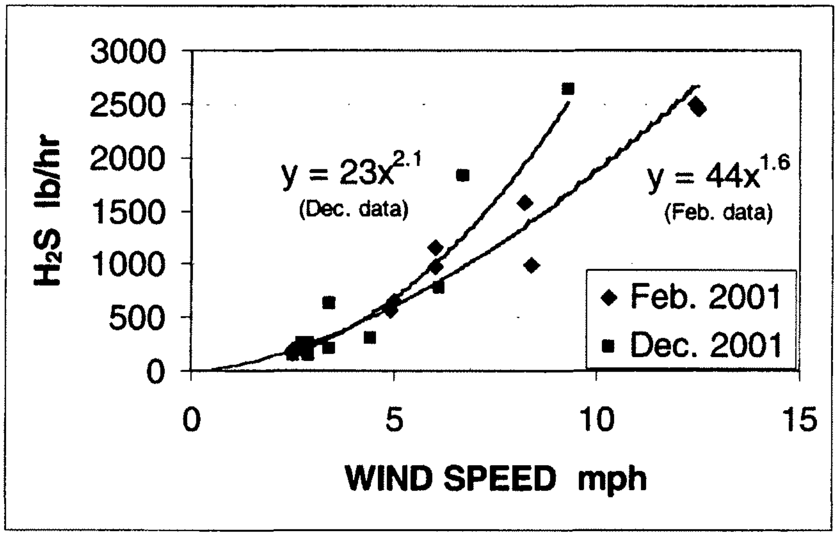
Table 4-1. Polishing Pond Modeling Results

Date	Time	Sample Location	Wind speed (mph)	Stability Class	Distance from source (ft)	Modeled Width (ft)	Measured H_2S (ppb)	Estimated H_2S Emissions (lb/hr)
Area A (East pond area)								
11/30	6:23	6	2.9	D	1660	2500	1438	248
11/30	15:48	6	2.5	D	1660	2500	843	123
11/30	6:26	6-2	2.7	D	1660	2500	1473	234
11/30	6:30	6a	2.9	D	1660	2500	850	147
11/30	15:41	6b	2.9	D	1660	2500	1190	206
11/30	6:18	6d	3.4	D	1660	2500	1027	204
12/8	13:50	6b	6.7	C	1660	2500	2400	1837
12/8	13:55	6e	9.3	C	1660	2500	2467	2644
12/8	13:25	6b	3.4	C	1660	2500	1640	628
Area B (West pond area) No estimates made because Area B could not be isolated during Phase II								
Area C (Inlet area of pond)								
12/9	10:12	11h	11.1	C	390	300	630	33
12/9	10:25	11i	3.8	C	390	300	670	16
12/9	12:23	11a	7.0	C	390	300	490	16
12/9	10:28	11j	4.0	C	390	300	513	10

4.5.2 Polishing Pond - TRS Emission Dependence on Wind Speed

As previously discovered in Phase I, TRS emission rates from the polishing pond are significantly affected by wind speed above the pond. This relationship is shown in Figure 4-2.

Figure 4-2. Polishing Pond Emission Rate as a Function of Wind Speed



As Figure 4-2 clearly shows the higher the wind speed the greater the emission rate. It shows that the TRS emission rate exponentially increases as a function of the wind speed.

The Phase II (December 2001) relationship shown in Figure 4-2 was used to estimate the average emission rate from the polishing pond. Note that if only the ambient TRS measurements were used with this relationship, the results would over estimate the emission rates because the ambient measurements were taken only on windy days (>5 mph). Therefore, the results would only represent the results on the right side of the relationship curve.

Therefore, to provide a more representative overall TRS emission rate, the TRS emissions equation ($y = 23x^{2.1}$) was used with the ENSR station wind speed data for the entire month of December. The average TRS emission rate was calculated to be approximately 517 lb/hr. This value is consistent with the 488 lb/hr estimated with the modeling results for the polishing pond.

5.0 Wastewater Studies

5.1 *Overview*

Samples of wastewater from various process areas entering and leaving the wastewater treatment system were collected and analyzed for TRS compounds. The purpose of the sampling was to identify sources of TRS entering the wastewater treatment system and points of potential loss from the wastewater treatment system. The methods used, data collected and data reduction are contained in the Appendix.

5.2 *Process Sewer TRS Constituents*

The TRS entering the sewer is made up of mostly sulfides, with smaller amounts of methyl mercaptan, methyl disulfide, and dimethyl disulfide. Table 5-1 shows the composition of TRS in the sewers entering the effluent treatment system.

Table 5-1. TRS Constituents in Sewers

Process Sewer	Average TRS (lb/hr as H_2S)	H_2S (%)	MESH (%)	DMS (%)	DMDS (%)
Recaust Sewer[1]	163	89	10	1	0
Power and Recovery Sewer	64	66	11	2	21
Pulp Mill Sewer	11	96	2	1	1
#2 Paper Machine Sewer	0.5	42	16	0	42
#1 Paper Machine Sewer	Unknown[2]	na	na	na	na
Average		**73**	**10**	**1**	**16**

[1] The recaust sewer delivers approximately 575 lb/hr TRS to the ash pond. Most the TRS is oxidized in the ash pond, whereby only 163 lb/hr enters the ASB.

[2] no wastewater flow rate measured for #1 PM sewer.

5.3 *Major TRS Contributors*

As previously shown in Table 3-1, the wastewater treatment system can emit elevated levels of TRS to the atmosphere. This TRS is introduced into the wastewater system by two means. As shown in Table 5-1, substantial amounts of TRS are brought in through the process sewers. The other means of TRS entering the wastewater system is H_2S generation in the polishing pond. Note that H_2S generation in the ASB can also occur. However, during this study the H_2S generation rate from the ASB was not quantified.

Table 5-2 shows the quantity of TRS generated in the polishing pond. This value is added to the estimated amount of TRS emitted to the atmosphere to predict the total H_2S generation rate in the pond.

Table 5-2 TRS Generation in the Polishing Pond

Polishing Pond Location	Average TRS (lb/hr as H_2S)
Polishing Pond Inlet	32
Polishing Pond Outlet	214
TRS Increase in the Liquid	**182**
TRS Emitted to the Atmosphere	**488**
Total TRS Generated	**670**

H_2S is generated when sulfate and thiosulfite in the wastewater is reduced to sulfide. The generation rate is believed to be dependent upon several factors such as the oxygen level in the wastewater, BOD concentration, etc.

All of the TRS found in the wastewater treatment system is either introduced by the process sewers or generated in the polishing pond. Figure 5-1 shows the relative amounts of TRS that can be expected from the process sewers and polishing pond generation.

Figure 5-1. Sources of TRS to the Wastewater Treatment System

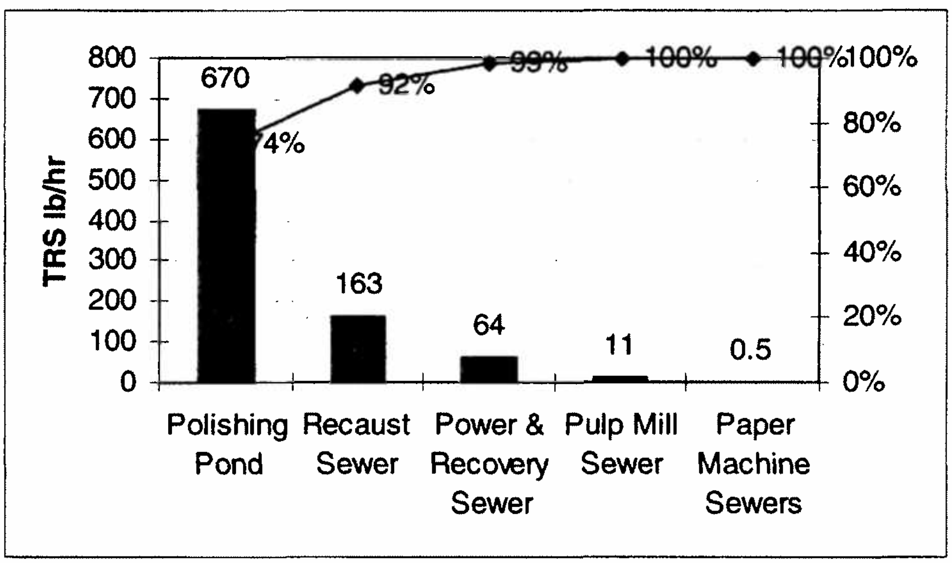


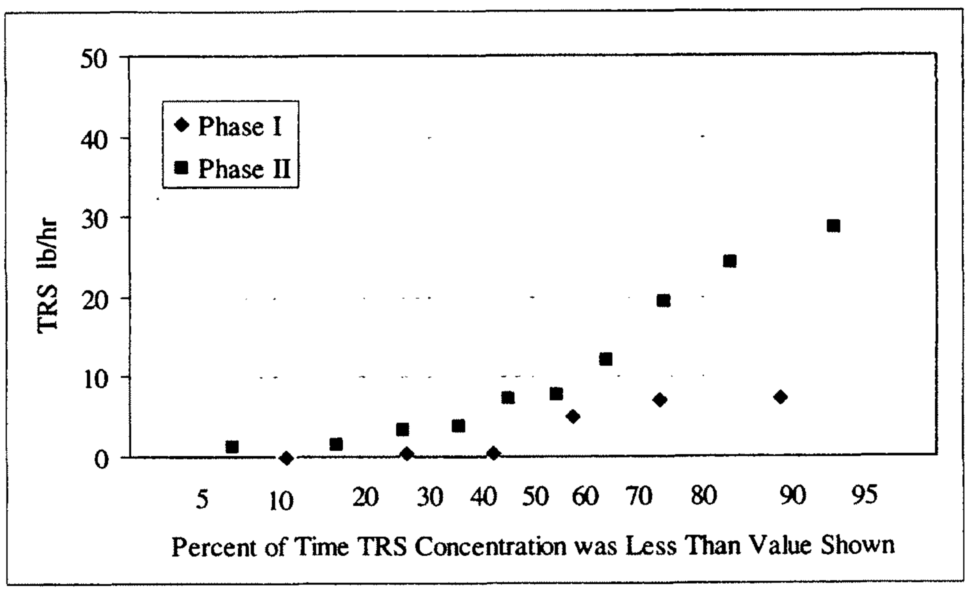
Figure 5-1 shows that 51% of the TRS in the wastewater treatment system is generated in the polishing pond. The recaust sewer contributes another 43%. The remaining 6% of the TRS is attributed to the other process sewers, e.g. power & recovery, pulp mill and the two paper machine sewers.

As previously mentioned, H_2S generation in the ASB may occur. Operating conditions at the ASB, such as soluble BOD content, pH and DO concentration, will influence the generation rate. However, this study did not quantify the H_2S generation rate at the ASB.

5.4 *Process Sewers - TRS Mass Flows*

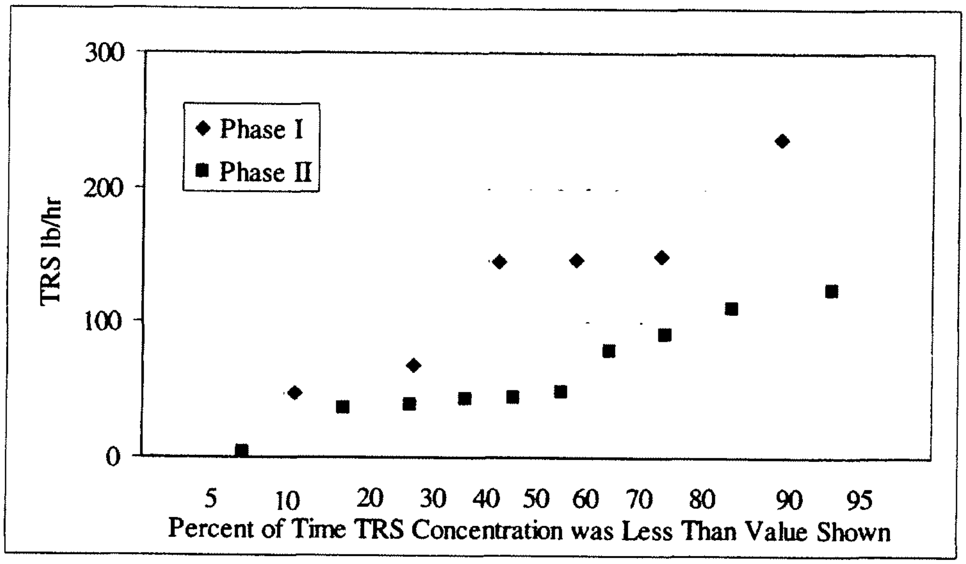
The TRS mass flow in the pulp mill, power and recovery, and recaust sewers were measured during both Phase I and Phase II. A comparison between the two phases are summarized Figures 5-2 through 5-4 for the different sewers.

Figure 5-2. Pulp Mill Sewer - TRS Mass Flow



The pulp mill sewer showed an increase in the TRS mass flow from Phase I to Phase II. The data showed that there was an increase of around 5 lb/hr during average operating periods, and as much as 2 to 3 times higher during abnormally high TRS mass flow episodes.

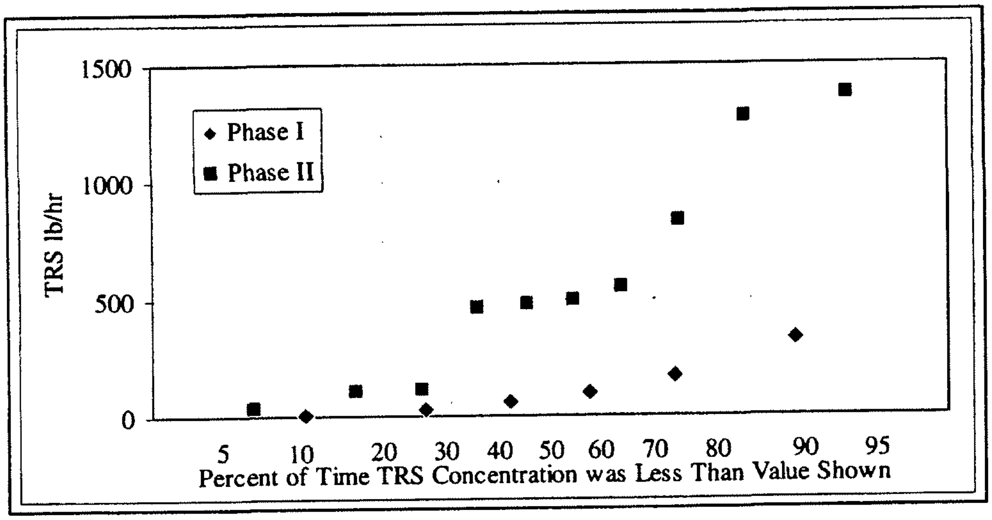
Figure 5-3. Power & Recovery Sewer - TRS Mass Flow



The power and recovery process sewer experienced a decrease in the TRS mass flow from Phase I and Phase II. As Figure 5-3 shows, there is an overall decrease of approximately 70-80 lb/hr of TRS in the sewer.

It is estimated that virtually all of this reduction can be attributed to the installation of the condensate steam stripper system. The stripper system processes selected contaminated condensate streams from the pulp mill area. As will be discussed later, an evaluation of the steam stripper system will show a reduction of approximately 80 lb/hr of TRS. Prior to the steam stripper, this TRS would have entered the power and recovery sewer and eventually entered the wastewater treatment system.

Figure 5-4. Recaust Sewer - TRS Mass Flow

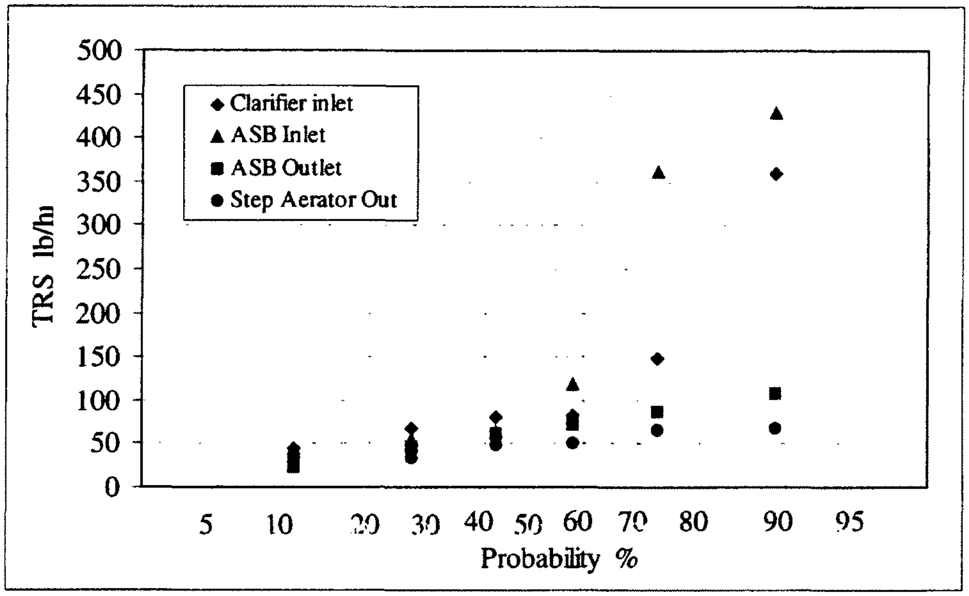


As Figure 5-4 shows, the recaust sewer showed an increase in the TRS mass flow between Phase I to Phase II. The recaust sewer experiences very significant releases of TRS containing material during average operating periods, and exceptionally high releases during high release periods. The recaust sewer is the main contributor of TRS to the effluent treatment system from the process sewers.

5.5 *Wastewater Treatment System - TRS Mass Flows*

The TRS mass flows were also measured at various points in the wastewater treatment system. Figures 5-5 and 5-6 show the TRS mass flow measurements during Phase I and Phase II respectively.

Figure 5-5. Phase I - Wastewater Treatment System TRS Mass Flow



Most of the sulfide compounds entering the ASB will be stripped to the atmosphere by the aeration system. Therefore, the difference in the mass of the sulfide entering and leaving the ASB provides a close approximation of the TRS emissions from the ASB.

However, the sulfide differential across the ASB does not fully account for the H_2S generation that maybe occurring in the ASB. TRS generation in the ASB is a function of various operational conditions, such as soluble BOD content, pH, and DO concentration. Therefore, the TRS air emissions from the ASB include the TRS introduced by the process sewers and the generated TRS.

However, the TRS generation rate in the ASB was not quantified during this study. Therefore, the estimated TRS emissions from the ASB, using only the TRS water data, may underestimate the air emission rates.

Figure 5-6. Phase II - Wastewater Treatment System TRS Mass Flow

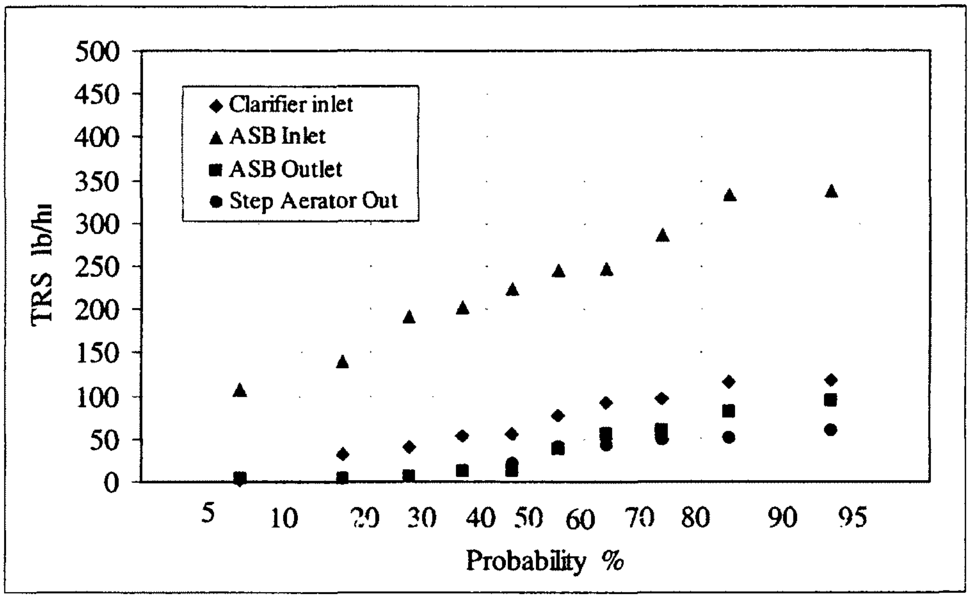


Figure 5-6 also shows large losses of TRS between the ASB inlet and outlet. Similar to Phase I, this reduction is attributed to TRS losses to the atmosphere caused by the aeration system. Therefore, most of the difference in the TRS levels at the ASB inlet versus outlet is attributed to atmospheric losses.

The TRS in the ASB influent increased around 80 lb/hr in the Phase II study. The reason for the higher TRS mass flow is due to the greater amount of TRS entering from the recaust sewer. The TRS mass flow levels from the recaust sewer increased on average over 350 lb/hr during Phase II, as compared to Phase I. Although approximately 72% of this TRS appears to been oxidized in the ash pond, because the total mass flow was larger during Phase II, this resulted in an increase of TRS to the ASB.

6.0 TRS Source Reduction and Evaluation

6.1 *Overview*

The implementation of the MACT program at the Pine Hill facility is expected to reduce the overall TRS emissions from the mill. Phase I of the TRS study established baseline ambient TRS mill concentrations prior to the MACT program. The objective of Phase II is to document the TRS reductions after implementation of the MACT program.

Although Phase II measured a reduction in the overall ambient TRS concentration at the Pine Hill facility, only a portion of this could be attributed to the MACT program. As will be discussed in the following sections, there are several other key factors that have a significant impact on the ambient TRS concentrations at the mill.

6.2 *Phase I and Phase II TRS Comparison*

TRS emission rates for Phase I and Phase II were estimated using the air dispersion model approach, and effluent liquid tests. These emissions rates, along with the percent change before and after the MACT program, are shown in Table 6-1.

Table 6-1. Phase I and II TRS Emission Rate Comparison

TRS Emission Source	Type of Sample Taken	TRS Emission Rate(lb/hr)		Percent Change from Phase I to Phase II
		Phase I average (range)	***Phase II*** average (range)	
Polishing Pond	Air	540 (30-2300)	488 (10-2644)	- 10%
ASB	Air	270 (one sample)	not estimated[1]	na
ASB	Effluent	113 (5-359)	195 (102-282)	+ 72%
Polishing Pond Inlet	Air	41 (one sample)	19 (10-33)	- 54%
Pulp Mill	Air	23 (17-32)	not estimated[1]	na
Step Aerator	Air	17 (one sample)	8 (one sample)	- 53%
Primary Clarifier	Air	7 (5-12)	not estimated[1]	na
Primary Clarifier	Effluent	no sample taken	3 (one sample)	na
Total		**741**	**713**	**- 4%**

[1] not estimated – No TRS emission rate was calculated due to unsuitable climatic conditions, inadequate wind stability class rating, or possible TRS emission mixing from other sources.

A description of the TRS emissions from the major sources shown in Table 6-1 is provided below:

Polishing Pond – During Phase I the polishing pond was found to be the largest TRS emission source. It emitted an average of 540 lb/hr (with a range of 30 to 2300 lb/hr) during Phase I. During Phase II the emission rate was estimated to be 488 lb/hr (range of 10-2644 lb/hr). This represented an average 10 % decrease in mass emissions between the two phases.

The polishing pond continuously receives large quantities of sulfur compounds (e.g. sulfide, thiosulfite, and sulfate) from the process sewers. These sulfur compounds can convert to H_2S and be released to the atmosphere. Some of the key factors that influence TRS releases from the polishing pond include:

- pH of the wastewater
- Wind speed above the wastewater
- Dissolved oxygen (DO) concentration
- Biological oxygen demand (BOD) content
- Total sulfur based material concentration

And as previously shown, TRS generation in the pond is significant. The 488 lb/hr only represents the airborne portion of the TRS. A total of approximately 670 lb/hr is being generated in the pond.

ASB – During Phase I, the TRS emissions from the ASB were estimated to be around 270 lb/hr. The SCREEN1 dispersion model was used with the ambient air data to make this estimate. During Phase II, unsuitable wind conditions did not allow acceptable ambient air results for the use of the SCREEN1 model.

However, TRS tests were performed on the wastewater entering the ASB during both Phases. The influent tests showed 113 lb/hr of TRS for Phase I and 195 lb/hr for Phase II. This represented a 72% increase. Much of this increase was due to the increase in TRS from the recaust sewer between Phase I and Phase II.

Polishing Pond Inlet – The polishing pond inlet is the region located at the southwest end of the polishing pond, at the inlet piping to the polishing pond from the ASB. TRS measurements were taken at the locations shown in Figure 2-2 as test sites 11, 11a and 11b.

A comparison between Phase I and Phase II showed a 54 % decrease in the TRS emission rate, from 41 lb/hr to 19 lb/hr.

Pulp Mill – During Phase I, the TRS emission rate from the pulp mill was estimated to be 23 lb/hr. Unfortunately, no suitable TRS measurements were taken during Phase II. Either unacceptable climatic conditions, inadequate wind stability class rating, or TRS emission interference from other sources prevented taking suitable TRS measurements from the pulp mill area.

As a consequence no Phase I and Phase II TRS emission rate comparison was conducted.

Primary Clarifier – Phase I of the TRS study estimated the emission rate from the primary clarifier to be approximately 7 lb/hr. Again, no suitable ambient air data was available to conduct a SCREEN1 model estimate.

However, as a relative comparison, a wastewater test for TRS was conducted on the effluent. It showed 3 lb/hr TRS for Phase II.

6.3 Implementation of the MACT Program

The Pine Hill facility installed a condensate steam stripper system and NCG thermal oxidizer to comply with the MACT regulation. The primary purpose of this new equipment is to remove and destroy HAP (including TRS) that is contained in the pulp mill foul condensate.

The foul condensate is collected from selected processes throughout the pulp mill and stored in the steam stripper feed tank. The condensate is fed at an average rate of 400 gallons per minute (gpm) to the stripper distillation column. Virtually all of the TRS is removed from the condensate by the steam stripper.

The Pine Hill stripper feed condensate has an average concentration of 401 ppm TRS. Table 6-2 compares this concentration to condensate located at other Weyerhaeuser facilities.

Table 6-2. Stripper Feed TRS Concentration Comparison

Facility	*TRS Compounds*				*Total TRS (ppm)*
	H_2S (ppm)	*MeSH (ppm)*	*DMS (ppm)*	*DMDS (ppm)*	
Pine Hill	***198***	***170***	***21***	***12***	***401***
Columbus, MS	130	39	265	139	573
New Bern, NC	61	99	132	503	795
Valliant, OK	460	215	47	183	905
Plymouth, NC	214	258	348	271	1091
Average (not including Pine Hill)	**216**	**153**	**198**	**274**	**841**

H_2S = hydrogen sulfide
MeSH = methyl mercaptan
DMS = dimethyl sulfide
DMDS = dimethyl disulfide

As Table 6-2 shows, the TRS concentration in the Pine Hill stripper feed is less than half the average concentration of the other four Weyerhaeuser facilities. The data also shows that the Pine Hill condensate contains considerably less dimethyl sulfide (DMS) and dimethyl disulfide (DMDS) than the other facilities. The primary reason for this difference is because the Pine Hill stripper system does not receive the underflow from the turpentine decanter. Typical decanter underflow contains high concentrations of DMS and DMDS. It is expected that if the decanter underflow was sent to the stripper feed tank, the total TRS concentration would be closer to the average TRS concentration found at other Weyerhaeuser mills.

Before the condensate steam stripper was installed, the stripper condensate would have entered the power and recovery sewer, and eventually ended up at the wastewater treatment system. As a result, much of the TRS contained in the condensate could be emitted to the atmosphere from either the process sewer or wastewater treatment system.

With an average concentration of 401 ppm and a flow rate of 400 gpm, the stripper condensate contains approximately 80 lb/hr of TRS. Note that this is comparable to the 70 lb/hr estimated from the TRS mass flow measurements from the power and recovery sewer evaluation.

7.0 Conclusions

Based on the Phase I and Phase II ambient TRS study results, the following conclusions have been developed:

1. The MACT program resulted in a modest reduction of 80 lb/hr of TRS in the wastewater system. The mill continues to process over 700 lb/hr through the wastewater system.

2. The two most significant sources of ground level TRS emissions include the following:
   - *Polishing pond*
   - *ASB*

3. The major contributors of TRS to the wastewater treatment system include:
   - Sulfides in the recaust sewer.
   - Sulfide generation in the polishing pond due to anaerobic biological activity.
   - Note: Sulfide generation or oxidation in the ASB was not quantified during this phase of the study.

8.0 Recommendations

1. Develop means of reducing H_2S generation in the polishing pond. This may include adding aeration capacity at the wastewater treatment system. (Note: Additional control of the H_2S generation in other areas of the wastewater treatment system, e.g. ASB, primary clarifier, etc. may be required to address a total mill TRS reduction program).

2. Reduce and control the amount of TRS and high pH containing material going to the recaust sewer.

3. Evaluate effect of implementing items 1 and 2 above. This may involve documenting reduced ambient TRS impacts with the ENSR met station, and/or measuring the TRS emission reduction from the major sources using the air dispersion model approach.

Appendix

H_2S Measurements
Field Data
Emission Models
ENSR Weather Summary
Phase II Process Sewer Flow Data
Wastewater Lab Test Results

PINE HILL TRS STUDY - PHASE II

H_2S Measurements

Pine Hill - Ambient H_2S Odor Study Data — November / December 2001 Tests

Site ID #	2001.4 Test Period Date	Time	Jerome - ambient measurements H_2S ppb			AVG	Wind (360°) direction	mph	Air Temp °F	Weather Conditions and Comments - Observations
6C	30-Nov	6:04	10	9	9	9	210	1.4	51	slight mill odor
6B	30-Nov	6:13	260	500	340	367	40 S	0.2		ASB
6B-2	30-Nov	6:18	1100	1400	580	1027	320	3.4		From inlet PP
6B-3	30-Nov	6:20	1400	1100	1006	1169	330	1.8		
6	30-Nov	6:23	1500	1114	1700	1438	330	2.9		
6-2	30-Nov	6:26	1400	1118	1900	1473	320	2.7		
6A	30-Nov	6:30	580	570	1400	850	320	2.9		
5A	30-Nov	6:34	510	420	660	528	210	2.7		4th reading - 520 ppb
5	30-Nov	6:40	68	50	32	50	215	1.7		
4C	30-Nov	6:45	3	3	3	3	--	0.0		
4	30-Nov	6:51	3	3	3	3	-- S	0.4		Road - mid pt
4B	30-Nov	6:55	3	3	3	3	--	0.0		
4A	30-Nov	6:58	3	3	3	3	0	1.9		
3C	30-Nov	7:01	120	260	190	190	45	3.9		Clar - strong
11D	30-Nov	7:03	52	48	450	183	330	4.5		Clar
11C	30-Nov	7:08	11	9	9	10	330	3.0		Kiln - upwind
11B	30-Nov	7:11	54	23	27	35	350	5.7		
11A	30-Nov	7:13	19	9	10	13	340	7.7		
11	30-Nov	7:16	2000	2400	400	1600	340	2.4		Riffler
11F	30-Nov	7:21	17	21	54	31	330	1.4		Across all ASB
11E	30-Nov	7:25	46	30	30	35	320	1.9		Inlet ASB
3	30-Nov	7:40	12	12	3	9	215	3.8		
3A	30-Nov	7:43	3	6	8	6	240	3.6		
8B	30-Nov	7:47	3	3	6	4	330	5.1		
10A	30-Nov	7:50	3	3	3	3	330	5.1		
10	30-Nov	7:53	3	3	3	3	355	6.9		
10B	30-Nov	7:55	3	3	3	3	330	5.3		
10C	30-Nov	7:57	3	4	4	4	325	4.4		
10D	30-Nov	7:59	3	3	3	3	325	3.2		
12	30-Nov	8:01	3	3	3	3	220	1.6		
8	30-Nov	8:20	3	3	3	3	280	6.1		
8A	30-Nov	8:22	3	3	3	3	260	10.1		
7A	30-Nov	8:27	3	3	3	3	200	1.7		
7	30-Nov	8:31	2	2	2	2	270	5.1		ENSR
1A	30-Nov	8:40	2	2	2	2	200	5.3		
2	30-Nov	8:44	2	2	2	2	260	3.4		
2A	30-Nov	8:47	3	3	3	3	240	6.4		
2B	30-Nov	8:49	3	5	6	5	280	8.4		
2C	30-Nov	8:52	3	6	6	5	270	2.8		

WEATHER : 11/30/01 - 1/2

Cloudy, cool and windy with winds from the NW mostly light and variable. Occasional wind gusts in a sraight line on a short-term basis.

D class to 08:00, then C

Mostly, groundlevel winds swirling quite a bit making

GLADNEY-WY032319

Pine Hill - Ambient H_2S Odor Study Data — November / December 2001 Tests

Site ID #	Date (2001.4 Test Period)	Time	Jerome - ambient measurements H_2S ppb			AVG	Wind (360°) direction	mph	Air Temp °F	Weather Conditions and Comments - Observations
7	30-Nov	15:13	22	5	7	11	300	1.6	65	Winds twitchy
11E	30-Nov	15:17	120	55	54	76	350	1.2		
11C	30-Nov	15:20	6	14	54	25	320	2.7		Winds SW to N
11B	30-Nov	15:23	7	5	6	6	0	2.5		No odor
11A	30-Nov	15:26	11	60	50	40	320	1.4		Very slight PP
11	30-Nov	15:29	160	29	56	82	20	2.0		Strong organic odor, not H2S
11F	30-Nov	15:32	120	23	22	55	320	4.0		Strong organic odor, not H2S
6C	30-Nov	15:35	72	68	68	69	270	0.5		Dead Air
6B	30-Nov	15:38	580	520	680	593	300	0.4		PP odor
6B-1	30-Nov	15:41	670	1400	1500	1190	320	2.9		PP odor
6	30-Nov	15:44	1900	1200	1300	1467	350	5.1		strong PP odor
6-1	30-Nov	15:46	660	1400	660	907	340	2.3		strong PP odor
6	30-Nov	15:48	1500	460	570	843	320	2.5		strong PP odor
5A	30-Nov	15:51	4	3	5	4	--	0.0		
5	30-Nov	15:53	4	4	3	4	340	1.9		
4C	30-Nov	15:56	3	3	3	3	330	0.1		
4	30-Nov	15:58	3	3	3	3	340	0.6		
4B	30-Nov	16:01	3	3	3	3	10	0.9		
4A	30-Nov	16:04	23	20	120	54	350	0.2		
11D	30-Nov	16:05	107	150	54	104	0	2.0		Clar on + off ENE
11E	30-Nov	16:08	16	58	47	40	330	2.1		Clarifier -winds direct from clarifier but vapor plume going West due to wind swirl in bowl
3A	30-Nov	16:12	8	9	4	7	40	3.0		
3	30-Nov	16:14	100	140	5	82	350	1.8		Stinky ash pond
2B	30-Nov	16:18	3	3	2	3	0	1.3		
2A	30-Nov	16:20	3	2	3	3	0	2.1		
2C	30-Nov	16:23	8	5	7	7	340	1		Cross BL storage
2	30-Nov	16:26	3	3	3	3	10	0.7		
1	30-Nov	16:30	3	3	3	3	320	2.7		
12	30-Nov	16:34	18	28	27	24	70	2.8		Main stacks all N
10B	30-Nov	16:40	8	8	8	8	90 S	0.1		
10C	30-Nov	16:42	5	15	4	8	270	1.2		Oily smell
10D	30-Nov	16:43	4	4	3	4	--	0.0		
10	30-Nov	16:45	18	29	15	21	10	1.0		Clar odor
10A	30-Nov	16:47	11	2	5	6	340	1.0		slight clar
8	30-Nov	16:55	4	4	4	4	45	2.3		
8A	30-Nov	17:00	15	15	10	13	340	2.2		
8B	30-Nov	17:10	8	4	4	5	0	1.9		Thru mill
7C	30-Nov	17:11	56	230	200	162	0	1.3		

WEATHER : 11/30/01 - 2/2

Sunny and mild with very light, variable winds mostly from the NW then turning predominently N / NE after 16:20
C class, then D class after 17:00

groundlevel winds very light, swirling and from variable

Pine Hill - Ambient H_2S Odor Study Data — November / December 2001 Tests

Site	2001.4 Test Period		Jerome - ambient measurements				Wind (360°)		Air Temp	Weather Conditions and
ID #	Date	Time	H_2S ppb			AVG	direction	mph	°F	Comments - Observations
6C	1-Dec	5:46	300	330	330	320	320	0.2	39	Odor present but non-directional
6B	1-Dec	5:50	350	410	420	393	--	0.0		
6	1-Dec	5:52	460	550	540	517	--	0.0		
6A	1-Dec	5:57	350	350	310	337	--	0.0		
5A	1-Dec	6:00	14	12	28	18	--	0.0		
5	1-Dec	6:03	1	1	1	1	40	0.2		
4C	1-Dec	6:07	1	1	1	1	200	0.0		
4	1-Dec	6:09	0	0	0	0	--	0.0		
4B	1-Dec	6:12	1	1	1	1	350	1.1		
4A	1-Dec	6:14	1	1	1	1	--	1.0		
11D	1-Dec	6:19	180	110	26	105	60	0.2		
11E	1-Dec	6:25	240	140	19	133	--	0.0		
11F	1-Dec	6:28	130	230	190	183	320	0.2		
11	1-Dec	6:30	250	240	190	227	280	0.5		
11A	1-Dec	6:34	72	77	110	86	--	0.0		
11B	1-Dec	6:36	52	57	49	53	320	0.5		
11C	1-Dec	6:39	21	35	48	35	320	0.1		
7	1-Dec	6:44	15	14	12	14	240	0.6		
7A	1-Dec	6:51	8	10	10	9	--	0.0		
12	1-Dec	6:56	3	3	3	3	260	1.4		
12A	1-Dec	6:59	3	3	3	3	260	1.4		
12B	1-Dec	7:00	7	7	2	5	220	0.5		
2	1-Dec	7:04	2	2	1	2	--	0.0		
2C	1-Dec	7:07	2	2	2	2	300	1.2		
2A	1-Dec	7:10	3	0	0	1	340	1.2		
2B	1-Dec	7:13	3	0	0	1	350	0.3		
3	1-Dec	7:15	11	2	11	8	0	2.0		
3A	1-Dec	7:19	3	3	28	11	10	2.4		
3B	1-Dec	7:23	21	14	14	16	340	1.0		
10A	1-Dec	7:26	140	128	50	106	345	1.3		Clarifier
10	1-Dec	7:28	170	120	140	143	20	2.0		No mill odor
10B	1-Dec	7:31	8	8	8	8	--	0.0		
10C	1-Dec	7:34	6	3	3	4	300	2.0		
10D	1-Dec	7:36	4	4	3	4	60	0.9		
1	1-Dec	7:41	11	12	12	12	--	0.0		
8	1-Dec	8:24	180	140	170	163	30	1.0		ASB/PP
8A	1-Dec	8:27	140	50	190	127	60	0.5		PP

WEATHER : 12/01/01 - 1/1

Cold and foggy with no ground level winds at most locations.

Non-directional swirling when short term light wind gusts arise

D class, turning C after 7:00 - 7:30

GLADNEY-WY032321

Pine Hill - Ambient H_2S Odor Study Data — November / December 2001 Tests

Site ID #	2001.4 Test Period Date	Time	Jerome - ambient measurements H_2S ppb			AVG	Wind (360°) direction	mph	Air Temp °F	Weather Conditions and Comments - Observations
7	2-Dec	5:33	155	260	310	242	50	0.1	45	ENSR
6C	2-Dec	5:37	300	230	190	240	--	0.0		
6B	2-Dec	5:40	190	510	56	252	--	0.0		Dead air along trees
6	2-Dec	5:45	170	52	52	91	--	0.0		Dead calm
6A	2-Dec	5:50	950	510	780	747	320	0.5		Breeze - moves odor
5A	2-Dec	5:56	9	4	4	6	10	0.2		
5	2-Dec	5:58	4	4	2	3	320	0.2		
4C	2-Dec	6:02	0	0	0	0	--	0.0		
4	2-Dec	6:04	0	0	2	1	20	0.6		
4B	2-Dec	6:08	2	2	2	2	0	0.1		
4A	2-Dec	6:10	340	210	240	263	350	0.1		H2S smell
4D	2-Dec	6:15	110	350	550	337	290	0.9		Clar
11D	2-Dec	6:17	43	43	32	39	270	0.1		Mill
11B	2-Dec	6:23	110	98	140	116	--	0.0		
11A	2-Dec	6:25	110	83	100	98	350	0.5		Old outfall
11	2-Dec	6:27	170	110	150	143	320	0.9		Riffler
11F	2-Dec	6:32	140	140	130	137	10	3.4		Across ASB
11G	2-Dec	6:35	40	200	222	154	340	2.3		
11C	2-Dec	6:38	200	230	250	227	280	1.2		
10	2-Dec	6:42	14	12	12	13	10	2.6		Clar
10A	2-Dec	6:45	8	9	9	9	0	3.8		
10E	2-Dec	6:48	150	130	44	108	0	2.4		Clar Direct 10E/10F
10F	2-Dec	6:51	21	53	52	42	350	1.2		Further down
3B	2-Dec	6:54	58	52	50	53	320	0.6		
3	2-Dec	7:00	3	3	5	4	350	1.7		Ash pond outfall
2B	2-Dec	7:02	2	2	3	2	280	0.5		
2A	2-Dec	7:06	3	2	4	3	300	0.7		
2C	2-Dec	7:08	4	0	2	2	270	0.6		
2	2-Dec	7:11	2	2	2	2	--	0.0		
12B	2-Dec	7:15	2	2	2	2	260	2.5		
12A	2-Dec	7:17	2	2	2	2	260	3.2		
12	2-Dec	7:19	2	6	7	5	250	0.1		
12C	2-Dec	7:23	14	16	11	14	0	0.8		
10D	2-Dec	7:24	2	1	1	1	310	1.5		
10C	2-Dec	7:26	1	1	2	1	270	3.4		
10B	2-Dec	7:29	2	2	3	2	270	1.3		
1	2-Dec	7:35	2	2	3	2	230	1.8		
8	2-Dec	7:40	3	3	3	3	250	2		
8A	2-Dec	7:42	1	1		1	300	1.0		

WEATHER : 12/02/01 - 1/1

Cool and calm, with predominently very light and variable winds from Northerly direction when measureable.
D class to 7:00 - 7:30
inversion early
Mostly dead, calm air. When a short-term breeze arises it is gusty and variable in direction.

Pine Hill - Ambient H_2S Odor Study Data

November / December 2001 Tests

Site ID #	2001.4 Test Period Date	Time	Jerome - ambient measurements H_2S ppb			AVG	Wind (360°) direction	mph	Air Temp °F	Weather Conditions and Comments - Observations
7	3-Dec	6:03	65	60	75	67	--	0.0	43	
6C	3-Dec	6:06	73	--	--	73	--	0.0		Truck ex
6B	3-Dec	6:13	110	111	140	120	--	0.0		
6	3-Dec	6:15	150	160	160	157	--	0.0		Vapor sitting over PP, not moving off
6A	3-Dec	6:18	47	57	64	56	--	0.0		
5A	3-Dec	6:21	150	140	140	143	350	0.3		
5	3-Dec	6:24	34	31	16	27	--	0.0		
4C	3-Dec	6:32	0	0	0	0	--	0.0		
4	3-Dec	6:34	1	1	0	1	--	0.0		
4B	3-Dec	6:37	0	0	0	0	280	0.1		
4A	3-Dec	6:40	0	0	0	0	--	0.0		
11D	3-Dec	6:48	150	106	180	145	--	0.0		
11B	3-Dec	6:53	111	110	75	99	--	0.0		
11A	3-Dec	6:56	560	420	480	487	--	0.0		Stinks like PP
11	3-Dec	6:59	730	720	750	733	--	0.0		
11F	3-Dec	7:03	6	6	9	7	--	0.0		
11E	3-Dec	7:06	720	760	730	737	320	1.1		Stinky ASB
11C	3-Dec	7:08	590	490	540	540	280	2.4		
7A	3-Dec	7:12	12	10	7	10	320	0.3		
8A	3-Dec	7:33	3	3	2	3	--	0.0		Drove down highway 10 minimal odor
8	3-Dec	7:35	3	5	5	4	140	1.0		
12A	3-Dec	7:40	3	3	2	3	--	0.0		
10	3-Dec	7:42	2	2	6	3	--	0.0		
3A	3-Dec	7:55	12	4	8	8	--	0.0		
7	3-Dec	8:04	5	4	5	5	--	0.0		End - no wind
4B	3-Dec	11:39	200	--	--	200	25	2.5	74	gust across pp
4Ba	3-Dec	11:33	130	--	--	130	25	2.9		gust across pp
4A	3-Dec	11:44	150	--	--	150	25	3.0		gust across pp
No measureable wind at remaining sample points										

WEATHER : 12/03/01 - 1/2

Cool and calm with almost no ground level winds at all

considerable odor in some in-mill locations but non-directional
D class until 7:00 - 7:30
inversion early

WEATHER : 12/03/01 - 2/2

PolishPond water Sparge Trial Round 1
Very sunny and warm after cooler AM, with very calm afternoon winds after dead air all day. Some occasional, variable gusts now, few and far between
C class stability

5

Pine Hill - Ambient H_2S Odor Study Data — November / December 2001 Tests

Site	2001.4 Test Period		Jerome - ambient measurements				Wind (360°)		Air Temp	Weather Conditions and
ID #	Date	Time	H_2S ppb			AVG	direction	mph	°F	Comments - Observations
7	4-Dec	14:05	6	6	6	6	100	4.1	75	Strong solar rad
6C	4-Dec	14:10	110	150	120	127	90	1.5		
6B	4-Dec	14:11	11	8	8	9	105	2.5		
6D	4-Dec	14:18	580	530	170	427	10	1.8		PP odor
6	4-Dec	14:21	110	5	2	39	180	0.5		wind variable + twitchy
6A	4-Dec	14:23	118	510	200	276	350	1.1		wind variable + twitchy
5A	4-Dec	14:27	8	8	8	8	30	0.5		
5	4-Dec	14:31	8	8	8	8	50	0.6		
4C	4-Dec	14:35	67	4	4	25	90	3.0		
4	4-Dec	14:39	270	220	130	207	95	4.3		Funky wind + stink
4B	4-Dec	14:42	510	270	180	320	80	4.1		Funkadelic
4D	4-Dec	14:46	520	540	210	423	90	3.5		Ditto - Wind steadier
4A	4-Dec	14:50	1008	1200	540	916	95	6.1		Weaker sun now
4E	4-Dec	14:57	520	540	410	490	100	4.4		
11D	4-Dec	15:00	190	170	140	167	90	3.9		
11G	4-Dec	15:10	120	150	500	257	70	3.6		ASB + PP
11H	4-Dec	15:15	1300	2700	1700	1900	75	4.1		Across ASB incl R
11I	4-Dec	15:20	430	260	300	330	75	5.3		11i @ corner of store room
11J	4-Dec	15:23	290	500	520	437	75	2.3		Mid of Str room
11K	4-Dec	15:26	270	280	210	253	80	5.2		11K end of Str room
11L	4-Dec	15:29	170	120	120	137	80	2.1		11L near PH sewer
11B	4-Dec	15:36	520	500	570	530	80	3.6		Pol pond
11A	4-Dec	15:41	270	570	540	460	85	2.8		
11	4-Dec	15:45	250	110	147	169	100	3.3		
11M	4-Dec	15:50	560	490	400	483	85	2.9		
11F	4-Dec	15:54	12	12	8	11	95	2.4		Low road data 1600 - 1615
11N	4-Dec	16:09	210	510	530	417	65	5.7		PP
4F	4-Dec	16:20	530	670	670	623	95	3.3		All PP from east along ash pond outer road - distant PP read
4G	4-Dec	16:23	1300	1400	1490	1397	95	4.9		All PP from east along ash pond outer road - distant PP read
4H	4-Dec	16:30	1200	1100	500	933	85	1.9		All PP from east along ash pond outer road - distant PP read
2	4-Dec	16:38	17	9	9	12	80	3.7		
9	6-Dec	11:28	1800	320	940	1020	220	3.7	76	16R0456425-3537826
9a	6-Dec	11:39	500	200	880	527	210	1.2		16R0456373-3537874
8	6-Dec	11:53	780	950	500	743	220	1.8		"
7	6-Dec	12:08	540	580	1400	840	280	2.1		0456335-353795
6	6-Dec	12:29	560	650	1100	770	180	4.0		0456034-3538227
6a	6-Dec	12:34	880	410	320	537	190	2.5		0455934-3538370
6b	6-Dec	12:53	200	140	810	383	140	1.5		0455784-3536548
5	6-Dec	13:15	1100	750	860	983	140	1.9		0455426-3538198
4	6-Dec	13:38	420	200	510	377	180	1.5		0455451-3538232
3	6-Dec	14:01	350	300	460	370	200	2.5		0455229-3538008
2	6-Dec	14:08	350	410	830	530	190	1.9		0455134-3537911
1	6-Dec	14:12	110	420	850	460	200	1.4	80	"

WEATHER : 12/04/01 - 1/1

Very clear, warm day with a steady breeze and a full winter sun.
inversion early
C class, turning D / inversion after 17:00

Strong solar radiation
winds predominently from Easterly direction

WEATHER : 12/06/01 - 1/1

Pond Study and Sparge tests second round
Sunny, clear, very warm, with light winds with occasional gusts
C class, turning D 16:30-17:00

wind direction mostly from S/SW

Pine Hill - Ambient H_2S Odor Study Data — November / December 2001 Tests

Site ID #	2001.4 Test Period Date	Time	Jerome - ambient measurements H_2S ppb			AVG	Wind (360°) direction	mph	Air Temp °F	Weather Conditions and Comments - Observations
7	8-Dec	13:11	12	60	20	31	280	7.0	74	paper mach+pm smell
7a	8-Dec	13:14	400	340	210	317	270	7.7		ASB isolatated
7b	8-Dec	13:18	730	670	440	613	300	6.9		ASB further up road
7c	8-Dec	13:20	2100	1270	1300	1557	280	7.9		ASB -edge
6c	8-Dec	13:22	260	220	520	333	270	3.9		
6b	8-Dec	13:25	520	2600	1800	1640	300	3.4		PP - off inlet area
6d	8-Dec	13:50	3200	1200	2800	2400	310	6.7		Nasty
6	8-Dec	13:32	2800	1500	2300	2200	360	7.0		Nasty
6e	8-Dec	13:35	2200	2400	2800	2467	330	9.3		Nasty
6a	8-Dec	13:37	1800	1700	630	1377	350	6.0		Not as bad
5a	8-Dec	13:43	6	7	7	7	20	2.7		Fresh as a daisy
5	8-Dec	13:45	6	6	5	6	320	2.5		
4c	8-Dec	13:48	4	5	5	5	300	2.3		
4	8-Dec	13:52	5	5	5	5	810	1.5		
4b	8-Dec	13:55	4	5	4	4	300	0.3		
4a	8-Dec	13:57	4	4	4	4	270	2.5		smells clean
4D	8-Dec	13:59	60	54	130	81	310	3.6		Ash P
4E	8-Dec	14:03	120	160	120	133	350	5.3		Ash P - more +
4F	8-Dec	14:04	140	150	120	137	330	8.2		Clar direct
11D	8-Dec	14:07	70	23	53	49	330	3.2		clar - on edge
11G	8-Dec	14:11	16	10	12	13	320	2.9		clar - on edge at times
11C	8-Dec	14:16	6	6	6	6	280	5.2		straight clar/mill
11B	8-Dec	14:18	52	14	15	27	340	4.0		good clar smell on + off
11A	8-Dec	14:22	520	550	520	530	360	8.4		right over outfall
11H	8-Dec	14:26	540	620	570	577	350	2.1		pp
11	8-Dec	14:28	1400	2000	1200	1533	320	3.9		Riff
11I	8-Dec	14:30	580	610	200	463	10	3.2		pp
3A	8-Dec	15:21	6	16	50	24	260	5.2		full sun again - low angle
3	8-Dec	15:24	2	3		3	270	4.2		
2B	8-Dec	15:27	4	4		4	290	2.9		blk liq smell
2A	8-Dec	15:30	4	4		4	280	4.0		
2C	8-Dec	15:33	3	3		3	260	3.4		
2	8-Dec	15:35	3	4		4	260	1.1		
10D	8-Dec	15:38	4	4		4	270	3.7		
10	8-Dec	15:40	6	6		6	300	9.8		
10A	8-Dec	15:42	7	8	7	7	320	6.2		
10E	8-Dec	15:44	16	16	13	15	300	3.8		
10F	8-Dec	15:47	8	2		5	300	0.8		
8B	8-Dec	16:21	52	6	5	21	280	1.9		

WEATHER : 12/08/01 - 1/1

Fairly stable climate - Mostly cloudy, windy day, warm, with good gusts of steady direction and speed
C class, close to D, inversion early

Wind from W through the N/NE

GLADNEY-WY032325

Pine Hill - Ambient H_2S Odor Study Data — November / December 2001 Tests

Site ID #	2001.4 Test Period Date	Time	Jerome - ambient measurements H_2S ppb			AVG	Wind (360°) direction	mph	Air Temp °F	Weather Conditions and Comments - Observations
7A	9-Dec	9:10	160	240	270	223	30	4.0	56	pp
7B	9-Dec	9:12	138	270	500	303	50	2.7		+ asb edge at end
7c	9-Dec	9:15	280	340	240	287	20	2.3		
7D	9-Dec	9:18	130	130	230	163	350	2.8		p + asb
?	9-Dec	9:30	3	14	14	10	360	9.8		P mill along ___
7	9-Dec	9:57	230	200	140	190	360	3.3		ensr
6D	9-Dec	10:01	500	420	580	500	300	2.4		pp - asb ___
11G	9-Dec	10:09	1008	610	1116	911	30	2.3		pp
11H	9-Dec	10:12	580	580	730	630	20	11.1		pp
11B	9-Dec	10:19	160	180	180	173	10	5.0		pp
11A	9-Dec	10:20	240	220	180	213	340	3.5		pp
11i	9-Dec	10:25	510	710	790	670	350	3.8		pp
11J	9-Dec	10:28	500	490	550	513	360	4.0		
11	9-Dec	10:30	520	530	550	533	360	4.2		R + PP - no H25 smell. Organic
11k	9-Dec	10:33	580	720	670	657	30	2.2		pp
11F	9-Dec	10:35	230	400	420	350	10	6.9		ASB + PP - no H25 - organic
11L	9-Dec	10:37	430	160	150	247	360	5.5		ASB + PP
11m	9-Dec	10:41	290	200	190	227	360	5.9		ASB + PP
11n	9-Dec	10:43	1400	2700	1114	1738	10	5.0		Not bad
11c	9-Dec	10:46	490	500	1111	700	10	3.8		Stinkier -funky
10e	9-Dec	11:48	380	360	170	303	10	7.1		less pungent
10f	9-Dec	11:52	48	59	8	38	350	4.3		clar
10g	9-Dec	11:55	11	14	10	12	10	2.1		not much odor
1a	9-Dec	12:03	10	9	4	8	350	7.8		not much odor, right downwind
1	9-Dec	12:06	9	10	23	14	10	4.8		thru mill
1C	9-Dec	12:09	27	57	10	31	20	3.9		"
7a	9-Dec	12:13	69	64		67	340	1.3		pulp mill smell
7e	9-Dec	12:16	120	130	130	127	10	4.0		ASB
11k	9-Dec	12:20	290	510	320	373	350	5.5		ASB
11i	9-Dec	12:23	500	590	380	490	360	7.0		PP
11a	9-Dec	12:26	280	440	130	283	360	8.6		PP
11b	9-Dec	12:29	170	120	150	147	10	3.7		
3c	9-Dec	12:34	17	21		19	350	0.3		EQ Pond
3a	9-Dec	12:36	41	25	78	48	350	7.1		Ash - E
3	9-Dec	12:39	9	5	4	6	360	3.3		Ash - W - stinky

WEATHER : 12/09/01 - 1/1

Cloudy, cool and windy

Very stable conditions with low clouds, little solar strength and steady winds from N/NE
strong D class early, tending to C after 10:00

GLADNEY-WY032326

All H2S Measurements from identifiable source, over 1 mph wind

Polishing Pond H2S Readings ; P=full reach E or W edge, **P-O**=Outfall Area only **P-I**=Inlet Area measured on south shore, N wind										
LOC	DATE	TIME	1	2	3	AVG	A	MPH	F	S
6B-2	30-Nov	6:18	1100	1400	580	1027	320	3.4	51	P
6B-3	30-Nov	6:20	1400	1100	1006	1169	330	1.8	51	P
6	30-Nov	6:23	1500	1114	1700	1438	330	2.9	51	P
6-2	30-Nov	6:26	1400	1118	1900	1473	320	2.7	51	P
6A	30-Nov	6:30	580	570	1400	850	320	2.9	51	P
5A	30-Nov	6:34	510	420	660	528	210	2.7	51	**P-O**
5	30-Nov	6:40	68	50	32	50	215	1.7	51	P
11D	30-Nov	7:03	52	48	450	183	330	4.5	51	P
11	30-Nov	7:16	2000	2400	400	1600	340	2.4	51	P
11	30-Nov	15:29	160	29	56	82	20	2.0	65	P
11F	30-Nov	15:32	120	23	22	55	320	4.0	65	P
6B-1	30-Nov	15:41	670	1400	1500	1190	320	2.9	65	P
6	30-Nov	15:44	1900	1200	1300	1467	350	5.1	65	**P-O**
6-1	30-Nov	15:46	660	1400	660	907	340	2.3	65	**P-O**
6	30-Nov	15:48	1500	460	570	843	320	2.5	65	P
11D	30-Nov	16:05	107	150	54	104	0	2.0	65	P
6D	4-Dec	14:18	580	530	170	427	10	1.8	75	P
4	4-Dec	14:39	270	220	130	207	95	4.3	75	P
4B	4-Dec	14:42	510	270	180	320	80	4.1	75	P
4D	4-Dec	14:46	520	540	210	423	90	3.5	75	P
4A	4-Dec	14:50	1008	1200	540	916	95	6.1	75	P
4E	4-Dec	14:57	520	540	410	490	100	4.4	75	P
11G	4-Dec	15:10	120	150	500	257	70	3.6	75	P
11H	4-Dec	15:15	1300	2700	1700	1900	75	4.1	75	P
11I	4-Dec	15:20	430	260	300	330	75	5.3	75	P
11J	4-Dec	15:23	290	500	520	437	75	2.3	75	P
11K	4-Dec	15:26	270	280	210	253	80	5.2	75	P
11L	4-Dec	15:29	170	120	120	137	80	2.1	75	P
11B	4-Dec	15:36	520	500	570	530	80	3.6	75	P
11A	4-Dec	15:41	270	570	540	460	85	2.8	75	P
11N	4-Dec	16:09	210	510	530	417	65	5.7	75	P

Polishing Pond H2S Readings (continued)

LOC	DATE	TIME	1	2	3	AVG	A	MPH	F	S
4F	4-Dec	16:20	530	670	670	623	95	3.3	75	P
4G	4-Dec	16:23	1300	1400	1490	1397	95	4.9	75	**P-O**
4H	4-Dec	16:30	1200	1100	500	933	85	1.9	75	P
5	6-Dec	13:15	1100	750	860	903	140	1.9	76	P
4	6-Dec	13:38	420	200	510	377	180	1.5	76	P
6c	8-Dec	13:22	260	220	520	333	270	3.9	74	P
6b	8-Dec	13:25	520	2600	1800	1640	300	3.4	74	P
6	8-Dec	13:32	2800	1500	2300	2200	360	7.0	74	**P-O**
6e	8-Dec	13:35	2200	2400	2800	2467	330	9.3	74	P
6a	8-Dec	13:37	1800	1700	630	1377	350	6.0	74	**P-O**
6d	8-Dec	13:50	3200	1200	2800	2400	310	6.7	74	P
11A	8-Dec	14:22	520	550	520	530	360	8.4	74	P
11H	8-Dec	14:26	540	620	570	577	350	2.1	74	P
7B	9-Dec	9:12	138	270	500	303	50	2.7	56	P
6D	9-Dec	10:01	500	420	580	500	300	2.4	56	P
11G	9-Dec	10:09	1008	610	1116	911	30	2.3	56	P
11H	9-Dec	10:12	580	580	730	630	20	11.1	56	**P-I**
11B	9-Dec	10:19	160	180	180	173	10	5.0	56	P
11A	9-Dec	10:20	240	220	180	213	340	3.5	56	P
11i	9-Dec	10:25	510	710	790	670	350	3.8	56	**P-I**
11J	9-Dec	10:28	500	490	550	513	360	4.0	56	**P-I**
11	9-Dec	10:30	520	530	550	533	360	4.2	56	P
11k	9-Dec	10:33	580	720	670	657	30	2.2	56	P
11L	9-Dec	10:37	430	160	150	247	360	5.5	56	P
11c	9-Dec	10:46	490	500	1111	700	10	3.8	56	P
11k	9-Dec	12:20	290	510	320	373	350	5.5	56	P
11i	9-Dec	12:23	500	590	380	490	360	7.0	56	**P-I**
11a	9-Dec	12:26	280	440	130	283	360	8.6	56	P
11b	9-Dec	12:29	170	120	150	147	10	3.7	56	P
66					**avg**	**726**				
					med	**529**				

P-I = Polishing Pond Inlet Area	avg	576	med	572
P-O = Polishing Pond Outlet Area	avg	1312	med	1387

Clarifier H2S Readings - NOTE: Ash Pond Background it Clarifier measurements from NW through NE

LOC	DATE	TIME	1	2	3	AVG	A	MPH	F	S
10	30-Nov	7:53	3	3	3	3	355	6.9	51	C/A
10	30-Nov	16:45	18	29	15	21	10	1.0	65	C/A
10A	30-Nov	16:47	11	2	5	6	340	1.0	65	C/A
3	6-Dec	14:01	350	300	460	370	200	2.5	76	C
3A	8-Dec	15:21	6	16	50	24	260	5.2	74	C
10e	9-Dec	11:48	380	360	170	303	10	7.1	56	C/A
10f	9-Dec	11:52	48	59	8	38	350	4.3	56	C/A
10g	9-Dec	11:55	11	14	10	12	10	2.1	56	C/A
8					**average**	**97**				
					median	**22**				

ASB H2S Readings - note: some background concentration from Polishing Pond likely at most sample points, a points, as noted, include background from Riffler emissions. Wind swirls around ASB burm, mixing ASB and Pond emissions from W/NW

LOC	DATE	TIME	1	2	3	AVG	A	MPH	F	S
11F	30-Nov	7:21	17	21	54	31	330	1.4	51	ASB/P
11F	30-Nov	7:21	17	21	54	31	330	1.4	51	ASB/P
11E	30-Nov	7:25	46	30	30	35	320	1.9	51	ASB/P
11E	30-Nov	7:25	46	30	30	35	320	1.9	51	ASB/P
11E	30-Nov	15:17	120	55	54	76	350	1.2	65	ASB/P
11E	30-Nov	15:17	120	55	54	76	350	1.2	65	ASB/P
11E	30-Nov	16:08	16	58	47	40	330	2.1	65	ASB/P
11E	30-Nov	16:08	16	58	47	40	330	2.1	65	ASB/P
7C	30-Nov	17:11	56	230	200	162	0	1.3	65	ASB/P
11D	4-Dec	15:00	190	170	140	167	90	3.9	75	ASB/P
11D	4-Dec	15:00	190	170	140	167	90	3.9	75	ASB/P
11	4-Dec	15:45	250	110	147	169	100	3.3	75	ASB
11	4-Dec	15:45	250	110	147	169	100	3.3	75	ASB
11M	4-Dec	15:50	560	490	400	483	85	2.9	75	ASB/P
11M	4-Dec	15:50	560	490	400	483	85	2.9	75	ASB/P
7	6-Dec	12:08	540	580	1400	840	280	2.1	76	ASB/P
7	8-Dec	13:11	12	60	20	31	280	7.0	74	ASB/P
7a	8-Dec	13:14	400	340	210	317	270	7.7	74	ASB/P
7c	8-Dec	13:20	2100	1270	1300	1557	280	7.9	74	ASB/P
11	8-Dec	14:28	1400	2000	1200	1533	320	3.9	74	P/RIF
11	8-Dec	14:28	1400	2000	1200	1533	320	3.9	74	P/RIF
11I	8-Dec	14:30	580	610	200	463	10	3.2	74	ASB/P
7A	9-Dec	9:10	160	240	270	223	30	4.0	56	ASB/P
7c	9-Dec	9:15	280	340	240	287	20	2.3	56	ASB/P
7D	9-Dec	9:18	130	130	230	163	350	2.8	56	ASB/P
7	9-Dec	9:57	230	200	140	190	360	3.3	56	ASB/P
11F	9-Dec	10:35	230	400	420	350	10	6.9	56	ASB/P
11m	9-Dec	10:41	290	200	190	227	360	5.9	56	ASB/P
11m	9-Dec	10:41	290	200	190	227	360	5.9	56	ASB/P
11n	9-Dec	10:43	1400	2700	1114	1738	10	5.0	56	ASB/P
7a	9-Dec	12:13	69	64	-	67	340	1.3	56	ASB/P
7e	9-Dec	12:16	120	130	130	127	10	4.0	56	ASB/P
32					**average**	**376**				
					median	**169**				

Equalization Basin Readings - at edge

LOC	DATE	TIME	1	2	3	AVG	A	MPH	F	S
3A	30-Nov	16:12	8	9	4	7	40	3.0	65	EQ
1					**average**	**7**				
					median	**7**				

Ash Pond Area Readings at edge

LOC	DATE	TIME	1	2	3	AVG	A	MPH	F	S
3	30-Nov	16:14	100	140	5	82	350	1.8	65	ASH
3a	9-Dec	12:36	41	25	78	48	350	7.1	56	ASH
3	9-Dec	12:39	9	5	4	6	360	3.3	56	ASH
3					**average**	**45**				
					median	**48**				

PulpMill, PowerHouse, Evaporator Area Readings

LOC	DATE	TIME	1	2	3	AVG	A	MPH	F	S
1	9-Dec	12:06	9	10	23	14	10	4.8	56	M
1a	9-Dec	12:03	10	9	4	8	350	7.8	56	M
1A	9-Dec	9:30	3	14	14	10	360	9.8	56	M
8B	8-Dec	16:21	52	6	5	21	280	1.9	74	M
8B	30-Nov	7:47	3	3	6	4	330	5.1	51	M
8A	30-Nov	17:00	15	15	10	13	340	2.2	65	M
12	30-Nov	16:34	18	28	27	24	70	2.8	65	pulp
12	30-Nov	8:01	3	3	3	3	220	1.6	51	Recov
7 combined area					**average**	**12**				
					median	**12**				

Recausticizing Area Readings - downwind, through area

LOC	DATE	TIME	1	2	3	AVG	A	MPH	F	S
10	8-Dec	15:40				6	300	9.8	74	R
10E	8-Dec	15:44				15	300	3.8	74	R
2					**average**	**11**				
					median	**11**				

List of Emission Models

Polishing Pond Measurements

MAP LOC	2001 DATE	SAMPLE TIME	H_2S ppb Readings			avg	Wind Data A^o	mph	Temp ^oF	Model	RATE Lbs/Hr
4	4-Dec	14:39	270	220	130	**207**	95	4.3	75		
4A	4-Dec	14:50	1008	1200	540	**916**	95	6.1	75	2P	779
4B	4-Dec	14:42	510	270	180	**320**	80	4.1	75		
4D	4-Dec	14:46	520	540	210	**423**	90	3.5	75		
4E	4-Dec	14:57	520	540	410	**490**	100	4.4	75	5P	309
4F	4-Dec	16:20	530	670	670	**623**	95	3.3	75		
4G	4-Dec	16:23	1300	1400	1490	**1397**	95	4.9	75		
5A	30-Nov	6:34	510	420	660	**528**	210	2.7	51		
6	30-Nov	6:23	1500	1114	1700	**1438**	330	2.9	51	9P	248
6	30-Nov	15:44	1900	1200	1300	**1467**	350	5.1	65		
6	30-Nov	15:48	1500	460	570	**843**	320	2.5	65	11p	123
6	8-Dec	13:32	2800	1500	2300	**2200**	360	7.0	74		
6-1	30-Nov	15:46	660	1400	660	**907**	340	2.3	65		
6-2	30-Nov	6:26	1400	1118	1900	**1473**	320	2.7	51	14p	234
6A	30-Nov	6:30	580	570	1400	**850**	320	2.9	51	15p	147
6a	8-Dec	13:37	1800	1700	630	**1377**	350	6.0	74		
6B-1	30-Nov	15:41	670	1400	1500	**1190**	320	2.9	65	17p	206
6c	8-Dec	13:22	260	220	520	**333**	270	3.9	74		
6d	8-Dec	13:50	3200	1200	2800	**2400**	310	6.7	74	19p	1837
6e	8-Dec	13:35	2200	2400	2800	**2467**	330	9.3	74	20p	2644
7A	9-Dec	9:10	160	240	270	**223**	30	4.0	56		
11	4-Dec	15:45	250	110	147	**169**	100	3.3	75		
11A	4-Dec	15:41	270	570	540	**460**	85	2.8	75		
11A	9-Dec	10:20	240	220	180	**213**	340	3.5	56		
11a	9-Dec	12:26	280	440	130	**283**	360	8.6	56		
11B	4-Dec	15:36	520	500	570	**530**	80	3.6	75		
11B	9-Dec	10:19	160	180	180	**173**	10	5.0	56		
11b	9-Dec	12:29	170	120	150	**147**	10	3.7	56		
11D	4-Dec	15:00	190	170	140	**167**	90	3.9	75		
11G	9-Dec	10:09	1008	610	1116	**911**	30	2.3	56		
11H	8-Dec	14:26	540	620	570	**577**	350	2.1	74		
11H	9-Dec	10:12	580	580	730	**630**	20	11.1	56	32p	33
11I	8-Dec	14:30	580	610	200	**463**	10	3.2	74		
11i	9-Dec	10:25	510	710	790	**670**	350	3.8	56	34p	16
11i	9-Dec	12:23	500	590	380	**490**	360	7.0	56	35p	16
11J	9-Dec	10:28	500	490	550	**513**	360	4.0	56	36p	10
11k	9-Dec	10:33	580	720	670	**657**	30	2.2	56		
11k	9-Dec	12:20	290	510	320	**373**	350	5.5	56		
11M	4-Dec	15:50	560	490	400	**483**	85	2.9	75		
11N	4-Dec	16:09	210	510	530	**417**	65	5.7	75		
6b	8-Dec	13:25	520	2600	1800	**1640**	300	3.4	74	41p	628
6B-2	30-Nov	6:18	1100	1400	580	**1027**	320	3.4	51	42p	204
11	30-Nov	7:16	2000	2400	400	**1600**	340	2.4	51		
11	8-Dec	14:28	1400	2000	1200	**1533**	320	3.9	74		
11	9-Dec	10:30	520	530	550	**533**	360	4.2	56		
11A	8-Dec	14:22	520	550	520	**530**	360	8.4	74		

note: shaded areas; 32p, 34p, 35p and 36p line up to include the Polish Pond inlet area only, 300' W, from 320'

46					avg	**810**				avg	**613**
					med	**555**				med	**248**

GLADNEY-WY032332

ASB Measurements - no models, potential for some background concentration from Pol Pond

MAP LOC	2001 DATE	SAMPLE TIME	H_2S ppb Readings			avg	Wind Data A°	mph	Temp °F	Model	RATE Lbs/Hr
7a	8-Dec	13:14	400	340	210	**317**	270	7.7	74		
7b	8-Dec	13:18	730	670	440	**613**	300	6.9	74		
7B	9-Dec	9:12	138	270	500	**303**	50	2.7	56		
11E	30-Nov	7:25	46	30	30	**35**	320	1.9	51		
11H	4-Dec	15:15	1300	2700	1700	**1900**	75	4.1	75		
11I	4-Dec	15:20	430	260	300	**330**	75	5.3	75		
11J	4-Dec	15:23	290	500	520	**437**	75	2.3	75		
11K	4-Dec	15:26	270	280	210	**253**	80	5.2	75		
11L	4-Dec	15:29	170	120	120	**137**	80	2.1	75		
10					avg	**481**		med	**317**		

Clarifier Measurements - no models, potential for background concentration from Ash Pond

MAP LOC	2001 DATE	SAMPLE TIME	H_2S ppb Readings			avg	Wind Data A°	mph	Temp °F	Model	RATE Lbs/Hr
3C	30-Nov	7:01	120	260	190	**190**	45	3.9	51		
4F	8-Dec	14:04	140	150	120	**137**	330	8.2	74		
10	2-Dec	6:42	14	12	12	**13**	10	2.6	45		
10E	2-Dec	6:48	150	130	44	**108**	0	2.4	45		
10e	9-Dec	11:48	380	360	170	**303**	10	7.1	56		
10f	9-Dec	11:52	48	59	8	**38**	350	4.3	56		
11D	30-Nov	7:03	52	48	450	**183**	330	4.5	51		
11E	30-Nov	16:08	16	58	47	**40**	330	2.1	65		
11G	2-Dec	6:35	40	200	222	**154**	340	2.3	45		
9					avg	**130**		med	**137**		

Ash Pond Area Measurements - no models

MAP LOC	2001 DATE	SAMPLE TIME	H_2S ppb Readings			avg	Wind Data A°	mph	Temp °F	Model	RATE Lbs/Hr
3	9-Dec	12:39	9	5	4	**6**	360	3.3	56		
3A	30-Nov	16:12	8	9	4	**7**	40	3.0	65		
3A	8-Dec	15:21	6	16	50	**24**	260	5.2	74		
3a	9-Dec	12:36	41	25	78	**48**	350	7.1	56		
4D	8-Dec	13:59	60	54	130	**81**	310	3.6	74		
5					avg	**33**		med	**24**		

Kiln and Recaust Area Measurements - no models

MAP LOC	2001 DATE	SAMPLE TIME	H_2S ppb Readings			avg	Wind Data A°	mph	Temp °F	Model	RATE Lbs/Hr
10	8-Dec	15:40	6	6	6	**6**	300	9.8	74		
10E	8-Dec	15:44	16	16	13	**15**	300	3.8	74		
11C	30-Nov	7:08	11	9	9	**10**	330	3.0	51		
3					avg	**10**		med		**10**	

Pulp Mill, PowerHouse, Evaporater Area Measurements - Downwind distance 1450'

MAP LOC	2001 DATE	SAMPLE TIME	H_2S ppb Readings			avg	Wind Data A°	mph	Temp °F	Model	RATE Lbs/Hr
1a	9-Dec	12:03	10	9	4	**8**	350	7.8	56	2m	2.3

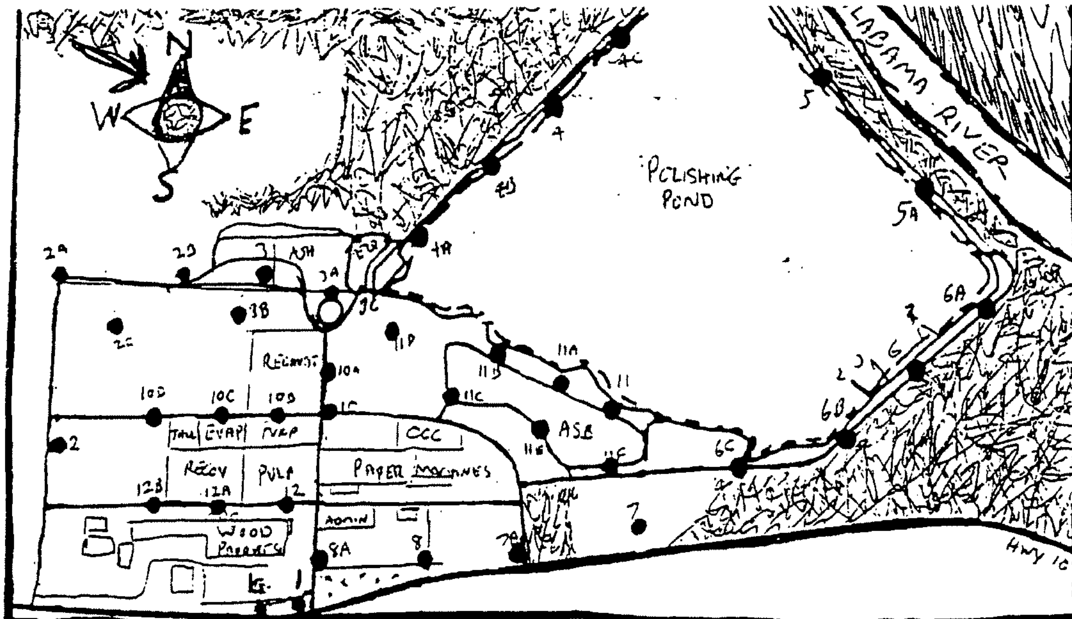
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx end of DEC01 data xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

Polishing Pond Measurements - Inlet area from February 2001 Study, from 320'

MAP LOC	2001 DATE	SAMPLE TIME	H_2S ppb Readings			avg	Wind Data A°	mph	Temp °F	Model	RATE Lbs/Hr
11a	12-Feb	13:46	1900	1100	1700	**1400**	N	6.3	67	FEB01_a	41

PINE HILL TRS STUDY - PHASE II

Field Data



Pine Hill Odor Study

DATE: 11/30/01

general weather conditions today

CLOUDY, COOL
WINDS LIGHT
+ VARIABLE

NW DIRECTION
PREDOM

D

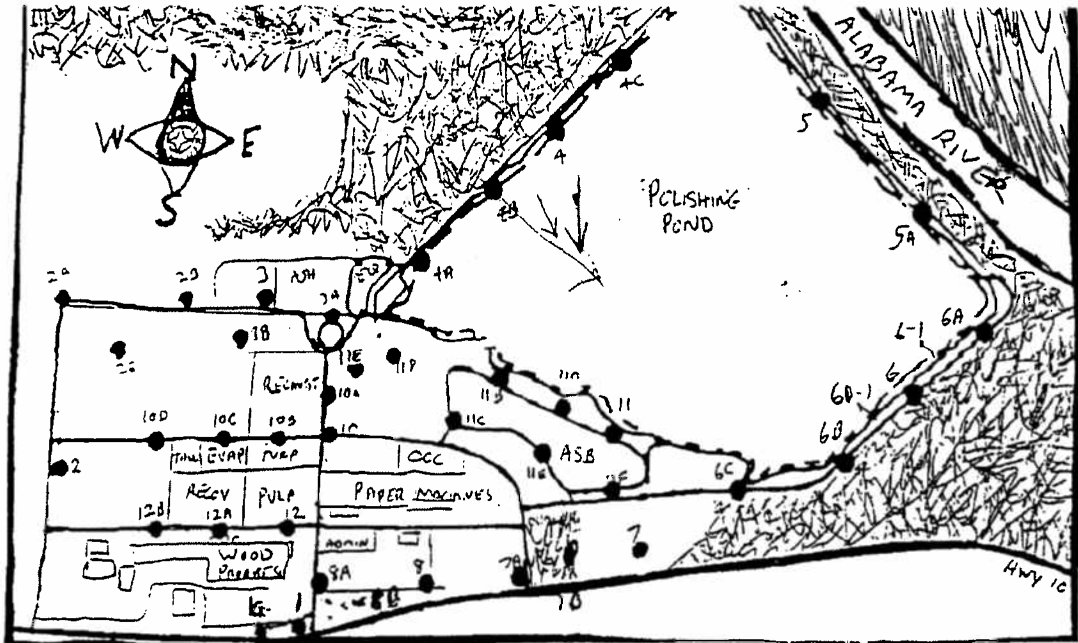
S = SWIRLING

Round: 1/2

POINT #	SAMPLE TIME	HYDROGEN SULFIDE - ppb a	b	c	avg	WIND dir	mph	TEMP °F	notes and observations:
6C	0604	10	9	9		210	1.4		SLT MILL
6B	0613	260	560*	340		40 S	0.2		ASB FROM INLET PY
6B-2	0618	1100	1400	580	1027	320	3.4		
6B-3	0620	1400	1100	1006	1169	330	1.8		
6	0623	1500	1114	1700	1438	330	2.9		
6-2	0626	1400	1118	1900	1473	320	2.7		
6A	0630	580	570	1400		320	2.9		
5A	0634	510	420	660	530	210	2.7		
5	0640	68	40	32		215	1.7		
4C	0645	3	3	3		—	0		
4	0651	3	3	3		— S	0.4		ROAD - MID PT
4B	0655	3	3	3		—	0		
4A	0658	3	3	3		0	1.9		
3C	0701	170	260	190		45	3.9		CLAR - STRONG
HD	0703	52	48	450		330	4.5		CLAR
11C	0708	11	9	9		330	3.0		KILN - VP
11B	0711	54	23	27		350	5.7		
11A	0713	79	9	10		340	7.7		
11	0716	2000	2400	400		340	2.9		RIFFLER
11F	0721	17	21	54		330	1.4		ACROSS ALL ASB
11E	0725	42	30	30		320	1.9		INLET ASB
3	0740	17	12	3		215	3.8		
3A	0743	3	6	8		240	3.2		
3B	0747	3	3	6		330	5.1		
10A	0750	3	3	3		330	5.1		
10	0753	3	3	3		355	6.9		
10B	0755	3	3	3		330	5.3		
10C	0757	3	4	4		325	4.4		
10D	0759	3	3	3		325	3.2		
12	0801	3	3	3		220	1.6		
8	0820	3	3	3		280	6.1		
8A	0822	3	3	3		260	10.1		
7A	0827	2	3	2		200	1.7		
7	0831	2	2	2		270	5.1		ENVSR
1a	0840	2	2	2		210	5.3		
2	0844	2	2	2		260	3.4		
2A	0847	3	3	3		240	6.4		
2B	0849	3	3	6		280	8.4		
2C	0852	3	6	6		270	2.8		

EAST

Data Entered SM



Pine Hill Odor Study

DATE: 11/30/01

general weather conditions today

SUNNY, MILD
LT WINDS CLEAR
SOME GUSTS

MAIN plumes ALL W/NW
LATER, AFTER 1620 more N
C

Round: 2

POINT #	SAMPLE TIME	HYDROGEN SULFIDE - ppb a	b	c	avg	WIND dir	mph	TEMP °F
7	1513	22	5	7		300	1.6	
11E	1517	120	55	54		350	1.7	
11C	1520	6	14	54		320	2.7	
11D	1523	7	5	6		0	2.5	
11A	1526	11	60	50		320	1.4	
11	1529	160	29	56		20	2.0	
11F	1532	120	23	22		320	4.0	
6C	1535	72	68	68		~~330~~	0.5	
6B	1538	580	520	680		300	0.4	
6B-1	1541	670	1400	1500		320	2.9	
6	1544	1900	1200	1300		350	5.1	
6-1	1546	660	1400	660		340	2.3	
6	1548	1500	460	570		320	2.5	
5A	1551	4	3	—		—	0	
5	1553	4	4	3		340	1.9	
4C	1556	3	3	3		330	0.1	
4	1558	3	3	3		340	0.6	
4B	1601	3	3	3		10	0.9	
4A	~~[illegible]~~	23	20	120		350	0.2	
11D	1605	107	150	54		0	2.0	
11E	1608	16	58	47		330	2.1	
3A	1612	8	9	4		40	3.0	
3	1614	100	140	5		350	1.8	
2B	1618	3	3	2		0	1.3	
2A	1620	3	2	3		0	2.1	
2C	1623	8	5	7		340	1.0	
2	1626	3	3	3		10	0.7	
1	1630	3	3	3		320	2.7	
12	1634	18	28	27		70	2.8	
10B	1640	8	8	8		90	0.1	
10C	1642	5	5	4		270	1.2	
10D	1642	4	4	3		—	0	
10	1645	18	29	15		10	1.0	
10A	1647	11	2	5		340	1.0	
8	1655	4	4	4		45	2.3	
8A	1700	15	15	10		340	2.2	
8B	1710	8	4	4		0	1.5	
7C	1717	56	230	200		0	1.3	

notes and observations:

WINDS TWITCHY

WIND SW TO N

NO ODOR

NEAR SLT PP
STRONG ORGANIC ODOR, NOT H2S

DEAD AIR
PP ODOR

CLAR - ON + OFF [illegible]
WINDS DIRECT FROM CLAR
BUT PLUME GOING WEST
DUE TO WIND SWIRL
IN BOWL

STINKY ASH POND
CROSS OL-STAR - ORGANIC ODOR

MAIN STACKS ALL N

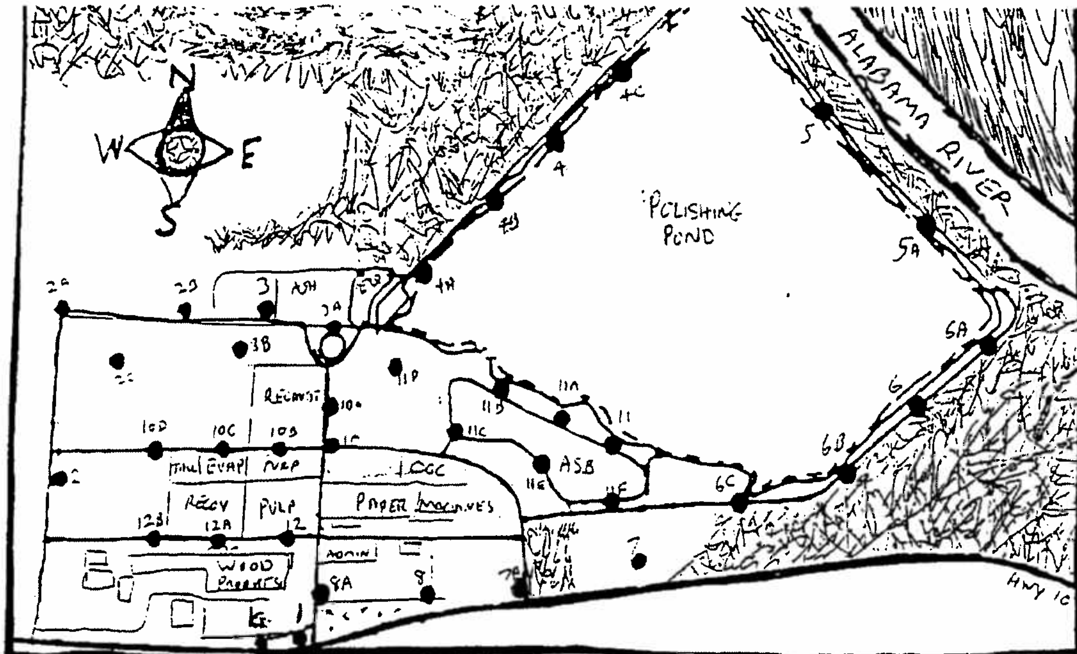
OILY SMELL

CLAR ODOR
SLT CLAR

THN [illegible]

2

[illegible]



Pine Hill Odor Study

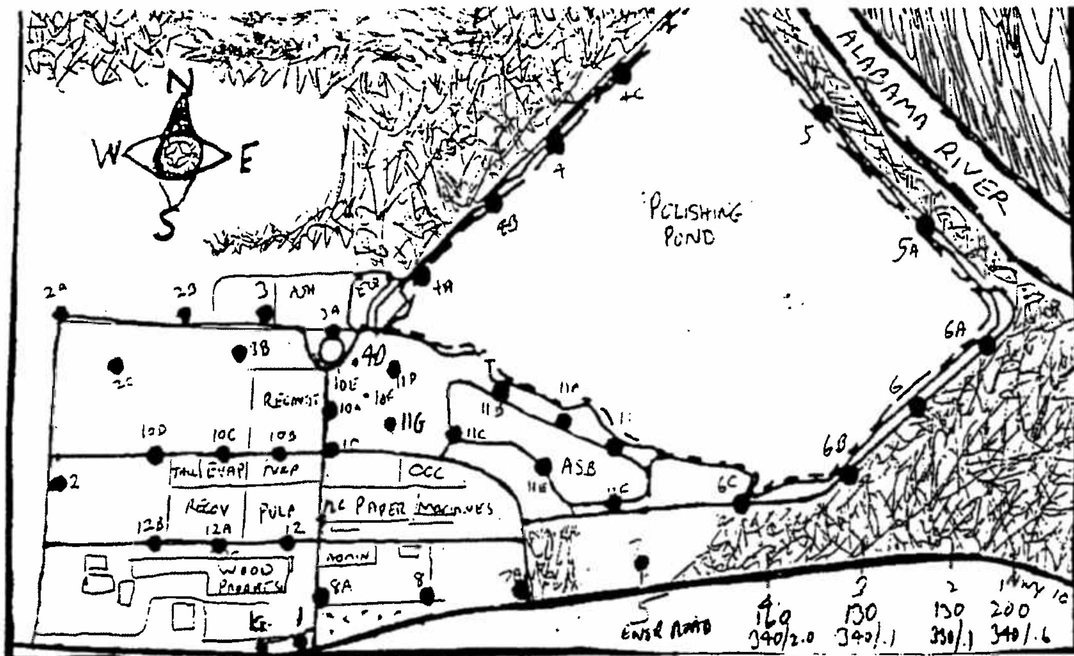
DATE: 12/ /01

general weather conditions today

COOL, FOGGY
NO WIND AT GROUND LEVEL
FOG HEAVIER AT DAYBREAK

Round:

POINT #	SAMPLE TIME	HYDROGEN SULFIDE - ppb a	b	c	avg	WIND dir	mph	TEMP °F	notes and observations:
6C	0546	300	330	330		320	0.2		ODOR PRESENT BUT NON-[illegible]
6B	0550	350	410	420		—	0		
6	[illegible]	[illegible]	[illegible]	540		—	0		
6A	0557	350	[illegible]	310		—	0		
5A	[illegible]	4	12	28		—	0		
5	[illegible]	1	1	1		40	0.2		
4C	[illegible]	1	1	1		200	0		
4	[illegible]	0	0	0		—	0		
4B	[illegible]	1	1	1		350	1.1		
4A	[illegible]	1	[illegible]	[illegible]		—	[illegible]		
11D	0619	180	110	21		60	0.2		
11E	0625	[illegible]	140	19		—	0		
11F	0628	130	230	190		320	0.2		
11	0630	250	240	190		280	0.5		
11A	0634	72	77	110		—	0		
11B	[illegible]	52	57	49		320	0.5		
11C	[illegible]	21	35	48		220	0.1		
7	[illegible]	15	14	12		240	0.6		
7A	[illegible]	8	10	10		—	0		
12	0656	3	3	3		260	1.4		
12A	0659	3	3	3		260	1.4		
12B	0700	7	7	2		220	0.5		
2	0704	2	2	1		—	0		
2C	0707	2	2	2		320	1.2		
2A	0710	3	0	0		340	1.2		
2B	0713	3	0	0		350	0.3		
3	0715	11	2	11		0	2.0		NEAR DISCH — FOUL
3A	0719	3	3	28		10	2.4		
3B	0723	21	14	14		340	1.0		
10A	0726	140	128	50		345	1.3		CLARIFIER NO MILL ODOR AROUND PULPMILL
10	0728	170	120	140		20	2.0		
10B	0731	8	8	8		—	0		
10C	0734	6	3	3		300	2.0		
10D	0736	4	4	3		60	0.9		
1	0741	11	12	13		—	0		
8	0824	180	140	170		30	1.0		ASB/PP
8A	0827	140	50	190		60	0.5		PP



Pine Hill Odor Study

DATE: 12/2/01

general weather conditions today

COOL, CALM PREDOM NORTHERLY WINDS

GROUND WIND VERY LIGHT + VARIABLE

AFTER DAYBREAK CONTINUE CLOUDY + COOL

Round: 1

POINT #	SAMPLE TIME	HYDROGEN SULFIDE - ppb a	b	c	avg	WIND dir	mph	TEMP °F
7	0533	[illegible]	260	310		50	0.1	47
6C	[illegible]	380	230	190		—	0	
6B	[illegible]	190	510	[illegible]		—	0	
6	[illegible]	170	[illegible]	[illegible]		—	0	
6A	[illegible]	950	510	780		320	0.5	
5A	[illegible]	[illegible]	[illegible]	4		10	0.2	
5	[illegible]	4	[illegible]	2		320	0.2	
4C	0602	[illegible]	0	0		—	0	
4	0604	0	0	2		20	0.6	
4B	0608	2	2	2		0	0.1	
4A	0610	340	210	240		350	0.1	
4D	0615	110	350	350		290	0.9	
11D	0617	43	43	32		270	0.1	
11G	0623	110	98	140		—	0	
11A	0625	[illegible]	83	100		350	0.5	
11	0627	[illegible]	110	150		330	0.9	
11F	0633	[illegible]	140	130		10	3.4	
[illegible]	[illegible]	[illegible]	200	222		340	2.3	
11C	[illegible]	[illegible]	230	250		280	1.2	
[illegible]	0642	[illegible]	12	14		10	2.6	
[illegible]	0645	[illegible]	9	9		0	3.8	
10E	0648	150	130	44		0	2.4	
[illegible]	0651	21	53	52		350	1.2	10F
3B	0654	58	52	50		320	0.6	
3	0700	3	3	5		350	1.7	
2B	0702	2	2	3		280	0.5	
2A	0706	3	2	4		300	0.7	
2C	0708	4	0	2		270	0.6	
2	0711	2	2	2		—	0	
12B	0715	2	2	2		260	2.5	
12A	0717	2	2	2		260	3.2	
12	0719	2	6	7		250	0.1	
12C	0723	14	16	11		0	0.8	
10D	0724	2	1	1		310	1.5	
10C	0726	1	1	2		270	3.4	
10B	0729	2	2	3		270	1.3	
1	0735	2	2	3		230	1.8	
8	0740	3	3	3		250	2.0	
8A	0742	1	1			300	1.0	
			(6) 16R 0455	550				
			UTM 353	6986				

notes and observations:

ENSR · 56

DEAD AIR ALONG TREES

DEAD CALM

BREEZE - MOVES ODOR

H2S SMELL

CLAR

MILL

ACROSS ASB

11A OLD OUTFALL

11 RIFFLER

CLAR DIST - 10E/10F

FURTHER DOWN

ASH POND OUTFALL

MARK 6 ENSR STATION

(1) 16R 0456093 UTM 3517859

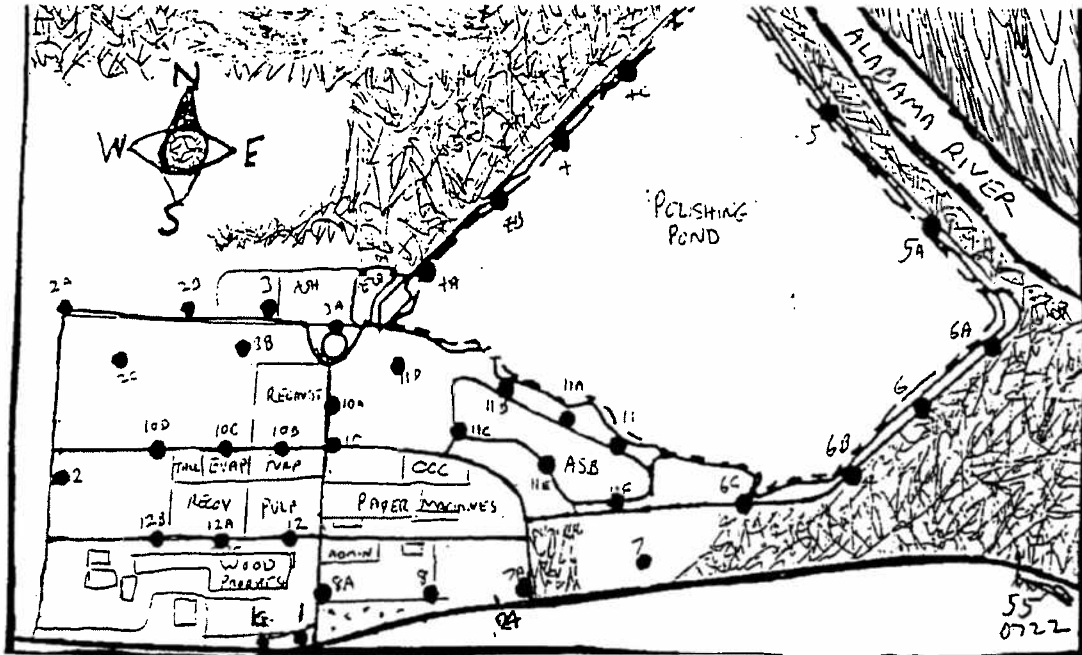
(2) 16R 0455870 UTM 3536968

(3) 16R 0455691 UTM 3536946

(4) 16R 0455606 UTM 3536933

(5) 16R 0455548 UTM 3536926

4



Pine Hill Odor Study

DATE: 12/3/01

general weather conditions today

~~COOL, CALM~~ ~~ALMOST NO~~ ~~[illegible]~~

DEAD CALM

SLIGHT N GUSTS

POINT #	SAMPLE TIME	HYDROGEN SULFIDE - ppb a	b	c	avg	WIND dir	mph	TEMP °F
7	[illegible]	65	60	75		—	0	
6C	[illegible]	73	—	—		—	0	
6B	[illegible]	110	111	140		—	0	
6	[illegible]	[illegible]	160	160		—	0	
6A	[illegible]	[illegible]	57	64		—	0	
5A	[illegible]	[illegible]	140	140		350	0.3	
5	[illegible]	34	31	16		—	0	
4C	[illegible]	0	0	0		—	0	
4	[illegible]	[illegible]	1	0		—	0	
4B	[illegible]	0	0	0		280	0.1	
4A	[illegible]	0	0	0		—	0	
[illegible]	[illegible]	[illegible]	106	130		—	0	
[illegible]	[illegible]	[illegible]	110	75		—	0	
[illegible]	[illegible]	[illegible]	420	450		—	0	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		—	0	
11F	[illegible]	[illegible]	6	[illegible]		—	0	
11E	[illegible]	[illegible]	[illegible]	[illegible]		320	1.1	
11C	[illegible]	590	[illegible]	540		280	2.4	
7A	[illegible]	12	16	7		320	0.3	
8A	[illegible]	3	2	2		—	0	
8	0735	3	5	3		140	1.0	
12A	0740	3	3	2		—	0	
10	0747	2	2	6		—	0	
3A	0755	12	4	8		—	0	
7	0804	5	4	5		—	0	

Round: 1/2

notes and observations:

TRUCK [illegible]

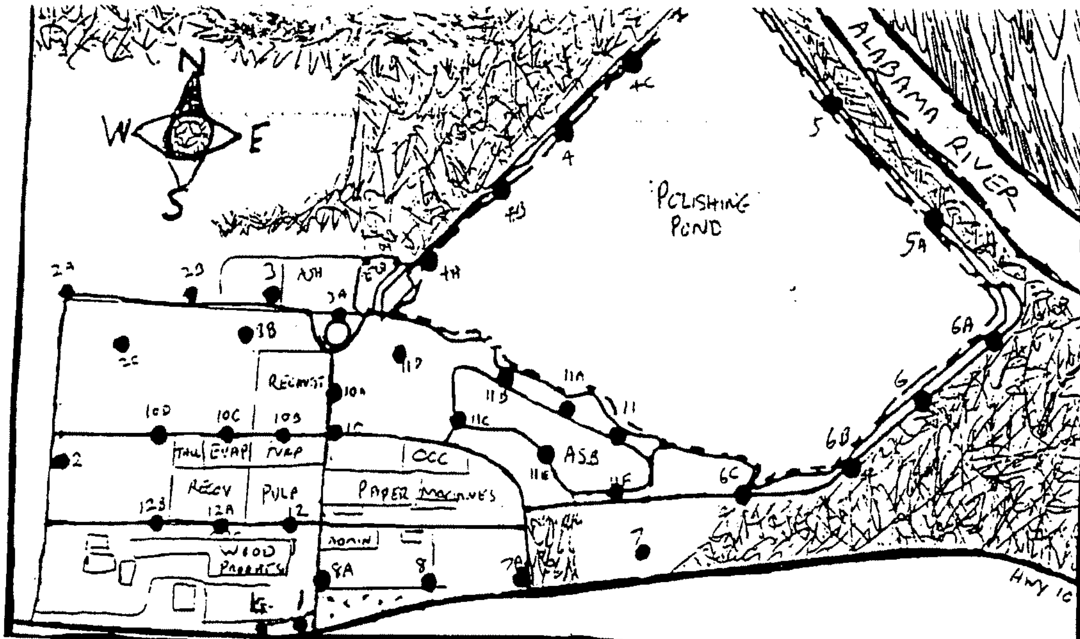
~~VAPOR SITTING [illegible]~~ NOT MOVING OFF

STINKS LIKE [illegible]

STINKY ASB

DRIVE E DOWN HWY 10 MINIMAL ODOR

END NO WIND



Pine Hill Odor Study

DATE: 12 - 3

general weather conditions today

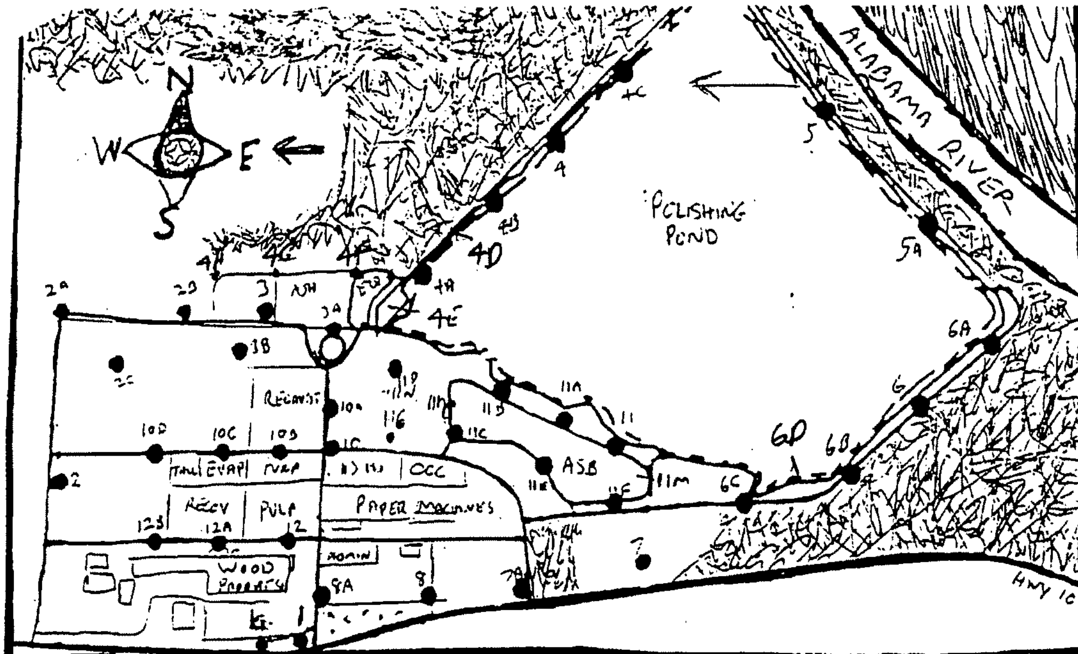
WIND PICKING UP STEADIER NOW AFTER VERY WARM CALM DAY

POINT #	SAMPLE TIME	HYDROGEN SULFIDE - ppb a	b	c	avg	WIND dir	mph	TEMP °F
7	1620	8	8			—	0	
6C	1624	16	17			—	0	
6B	1627	17	17			—	0	

Round: 2/2

notes and observations:

- ABOUT ABSOLUTE DEAD CALM



Pine Hill Odor Study

DATE: 12/4/01

general weather conditions today

FULL SUN 75°
STEADY BREEZE FROM E

B/C WINTER SUN

Round: 1

POINT #	SAMPLE TIME	HYDROGEN SULFIDE - ppb a	b	c	avg	WIND dir	mph	TEMP °F
7	1405	6	6	6		100	4.1	75
6C	1410	110	150	120		90	1.2	
6B	1411	11	8	8		125	2.2	
6D	1418	580	530	170		10	1.8	
6	1421	110	5	2		180	0.5	
6A	1423	118	570	200		350	1.1	
5A	1427	8	8	8		30	0.5	
5	1431	8	8	8		50	0.6	
4C	1435	65	4	4		90	3.0	
4	1439	770	220	130		95	4.3	
4D	1442	510	270	180		80	4.1	
4B	1446	520	540	210	423	90	3.5	
4A	1450	1008	1200	540	916	95	6.1	
4E	1457	520	540	411	490	100	4.4	
11D	1500	190	170	140		90	3.9	
11G	1510	120	150	500		70	3.6	
11h	1515	1300	2700	1700	1900	75	4.1	
11i	1520	430	260	300		75	5.7	
11J	1523	290	500	520		75	2.3	
11K	1526	270	280	210		80	5.2	
11L	1529	170	120	120		80	2.1	
11B	1536	520	500	570		80	3.6	
11A	1541	770	770	540		85	2.8	
11	1545	250	110	147		100	3.3	
11M	1550	560	490	400		85	2.9	
11F	1554	12	12	8		95	2.4	
11N	1609	210	510	530		65	5.7	
4F	1620	530	670	670		95	3.2	
4G	1623	1300	1400	1490	1397	95	4.9	
4H	1630	1200	1100	500		85	1.9	
2	1638	17	9	9		80	3.7	

notes and observations:

STRONG SOLAR RAD

PP ODOR VARIA... [illegible]

FINALLY WIND + STRONG SUN KO... [illegible]

DITTO - WIND STEADY + STRONG WEAKER SUN NOW

ASB + PP
ACROSS ASB WEIR

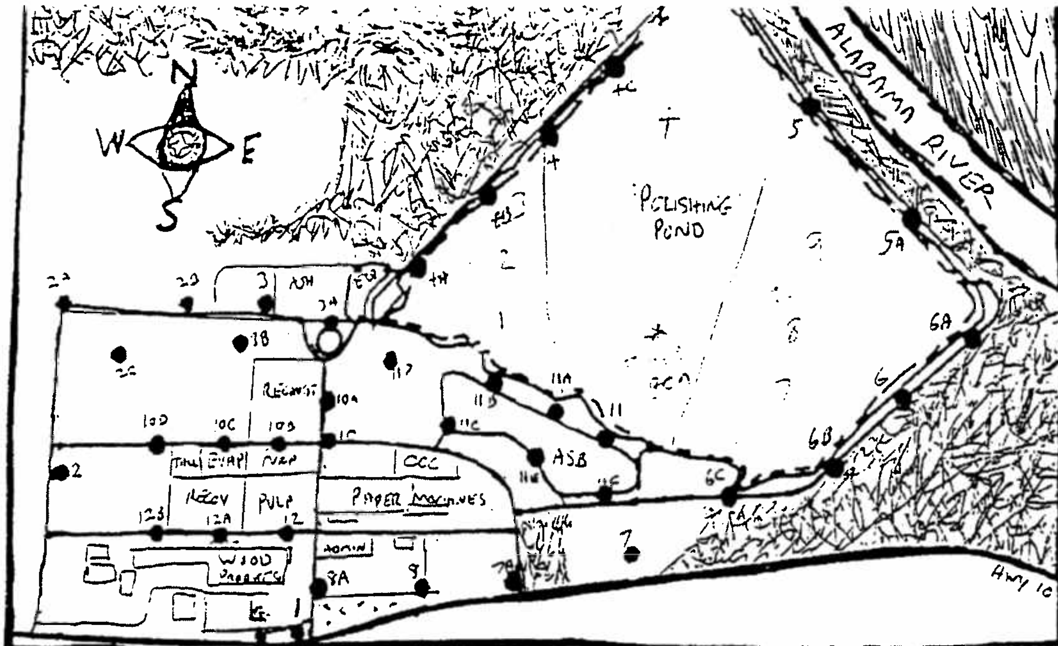
11i @ CORNER OF STONER
MID OF STONER
11K END OF STONER
[illegible]

LOW ROAD DATA 1600-1615

ALL STAB... [illegible]

7

[illegible]



Pine Hill Odor Study

DATE: 2/9/01

general weather conditions today

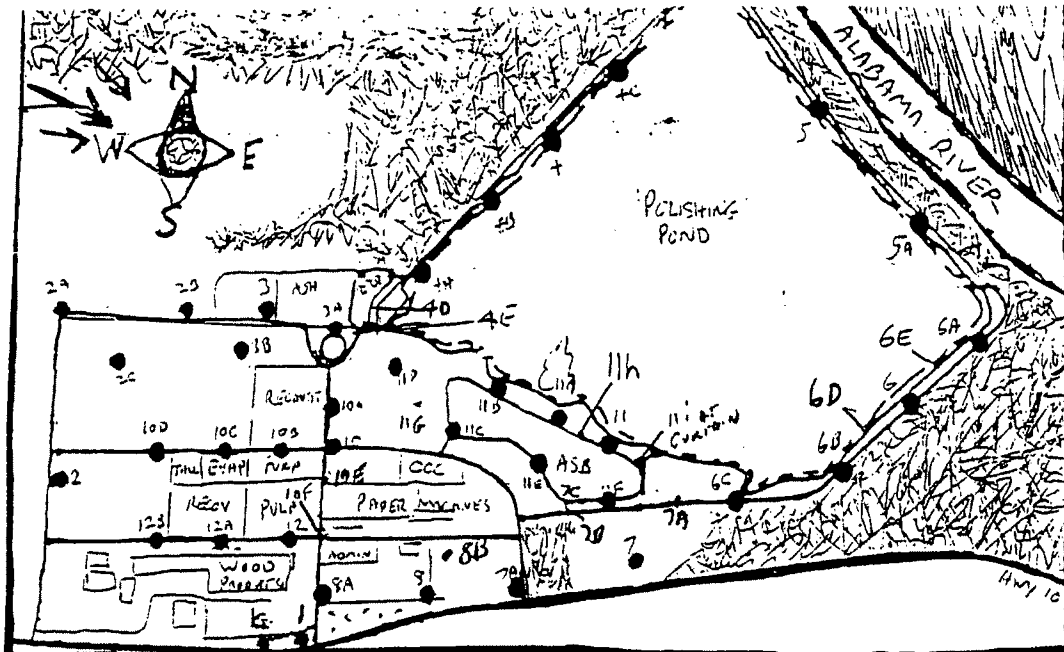
BREEZY SUNNY CLEAR WARM

POND STUDY + [illegible]-O-RAMA

POINT #	SAMPLE TIME	HYDROGEN SULFIDE - ppb a	b	c	avg	WIND dir	mph	TEMP °F	Round: notes and observations:
9 2	1128	1800	320	940		220	3.7	76	16R0456425-3537[illegible]
[illegible]	1139	500	200	880		210	1.2		16R0456373-3537[illegible]
[illegible]	1153	780	950	500		220	1.8		"
[illegible]	1208	540	580	1400		180	2.1		0456333-35[illegible]
6	1229	560	650	1100		180	4.0		0456034-3538227
6a	1239	880	410	320		190	2.5		0455934-3538370
6b	[illegible]	200	140	410		140	1.5		0455784-3538548
5A	1315	1100	[illegible]	860		140	1.9		0455426-3536[illegible]
4a	1338	420	270	510		180	1.5		[illegible]
4b	1401	350	300	460		200	2.5		0455229-3538008
4c	1408	350	410	830		190	1.9		0455134-3537911
4d	1412	110	420	850		200	1.4	80	"

PM Smell with pond

8



Pine Hill Odor Study

DATE: 12/7/01

general weather conditions today

CLOUDY 90%
GUSTY WINDS
FROM S/SW
TO W
MILD W/
SUNBREAKS

STABLE D

GOOD MODEL DAY!

STABLE ↓

POINT #	SAMPLE TIME	HYDROGEN SULFIDE - ppb a	b	c	avg	WIND dir	mph	TEMP °F
7	1311	12	60	20		280	6.6	
7a	1314	400	340	210		270	7.7	
7b	1318	730	670	440		300	6.9	
7C	1320	2100	1270	1300		280	7.9	
6C	1322	260	220	720		270	3.9	
6B	1325	520	2600	1800	1640	302	3.4	
6D	1330	3200	1200	2800	2400	310	6.7	
6	1332	2800	1500	2300	2200	360	7.0	
6E	1335	2200	2400	2800	2200	330	9.3	
6A	1337	1800	1700	630	1377	350	6.0	
5A	1343	6	7	7		20	2.7	
5	1345	2	6	5		320	2.5	
4C	1348	4	5	5		300	2.3	
4	1352	5	5	5		310	1.2	
4B	1355	4	5	4		300	0.3	
4A	[illegible]	4	4	4		270	2.5	
4D	1359	60	54	130		310	3.6	
4E	1402	120	160	120		350	5.3	
4F	1404	140	150	120		330	8.2	
11D	1407	70	23	53		320	3.2	
11G	1411	16	10	17		320	2.9	
11C	1416	6	6	7		280	5.2	
11B	1418	52	14	15		340	4.0	
11A	1422	520	550	520		360	8.4	
11h	1426	540	620	570		350	2.1	
11	1428	1400	2000	1200	1533	320	3.9	
11i	1430	580	610	200		10	3.2	
3a	1521	6	16	50		260	5.2	
3	1524	2	3			270	4.2	
2B	1527	4	4			290	2.9	
2A	1530	4	4			280	4.0	
2C	1533	3	3			260	3.4	
2	1535	3	4			260	1.1	
10D	1538	4	4			270	3.7	
10	1540	6	6			340	9.8	INCIN
10A	1542	7	8	7		320	6.2	MUD F
10E	1544	16	16	13		300	3.8	TMP
10F	1547	8	2			340	0.8	DIG
8B	1621	52	6	5		280	1.9	PULP M

Round: 1/2

notes and observations:

PAP MACHINE + PM SMELL
ASB ISOLATE - @ JUNCTION
ASB - CLOSER UP ROAD
ASB - EDGE

PP - OFF INCIN AREA
NASTY
"
"
NOT AS BAD
FRESH AS A DAISY

SMELLS CLEANER
ASH
ASH - MORE +
CLAR ODOR INSIDE RD
CLAR - OUTSIDE [illegible]
CLAR - W PLANT - EDGE AT TIMES
SLT CLAR/[illegible]
GOOD CLAR SMELL OUT OF IC
RIGHT OVER OUTFALL
PP RIFF
PP
(BREAK)
FULL SUN AGAIN - LOW ANGLE

LTR SMELL

WINDS BECOME LIGHT + VAR

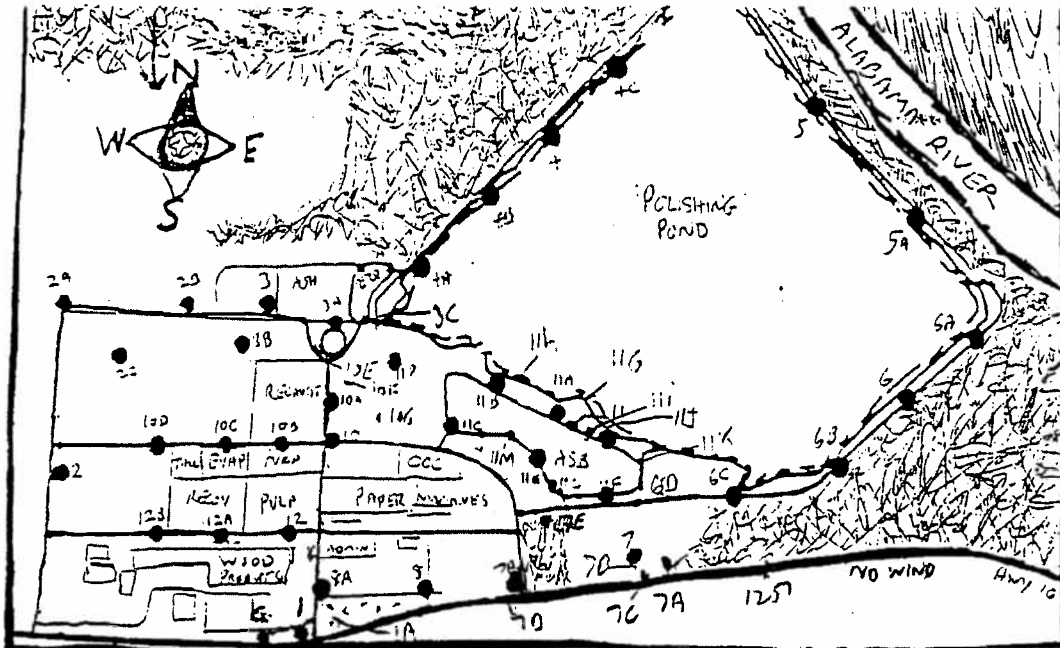
0456512
3537746 INT

0455293 [illegible]
[illegible]

ASB ☆
PP ☆

9

GLADNEY-WY032344



Pine Hill Odor Study

DATE: 12/9/01

general weather conditions today

CLOUDY, COOL

WINDY

LOW CLOUDS

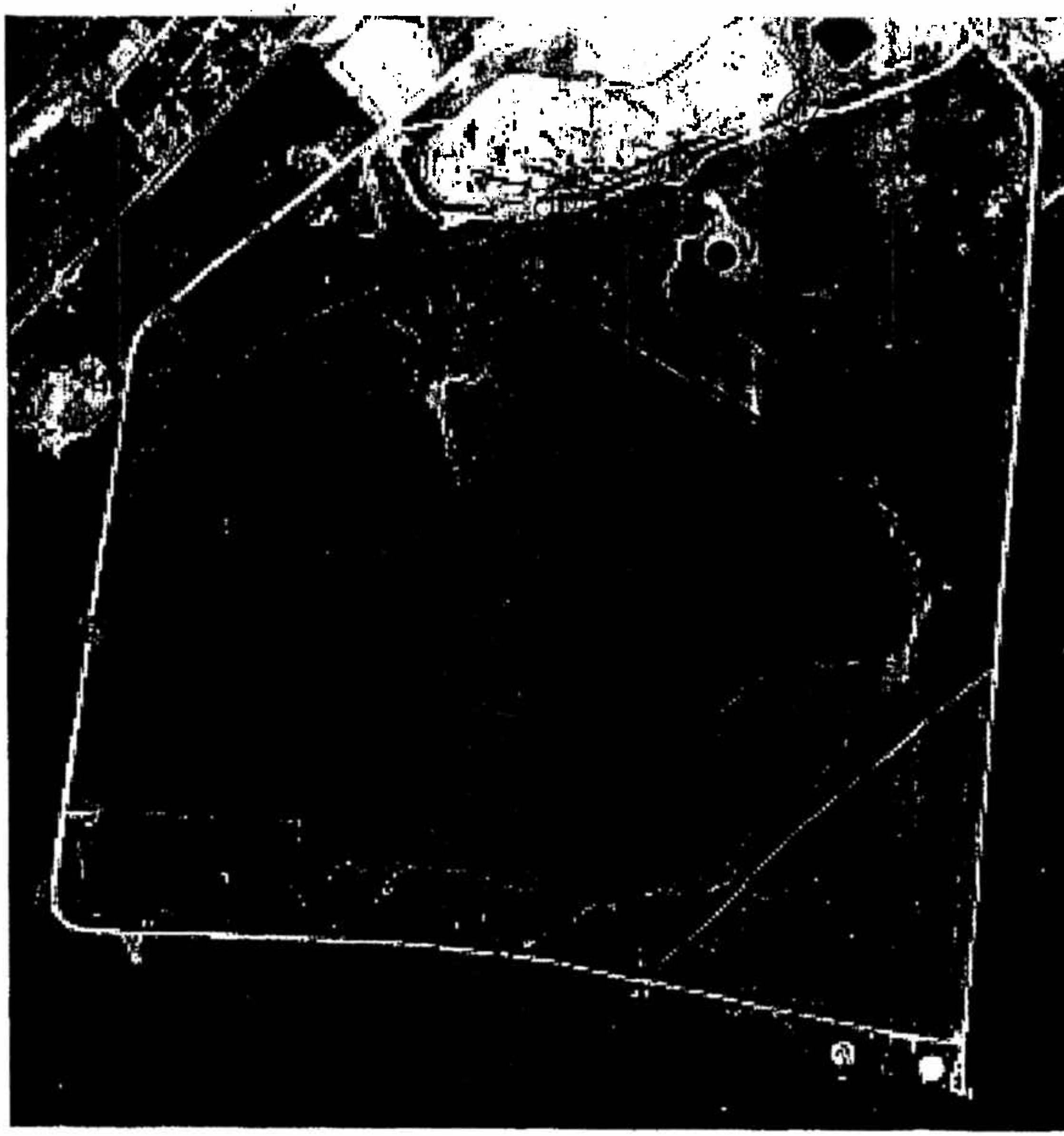
D

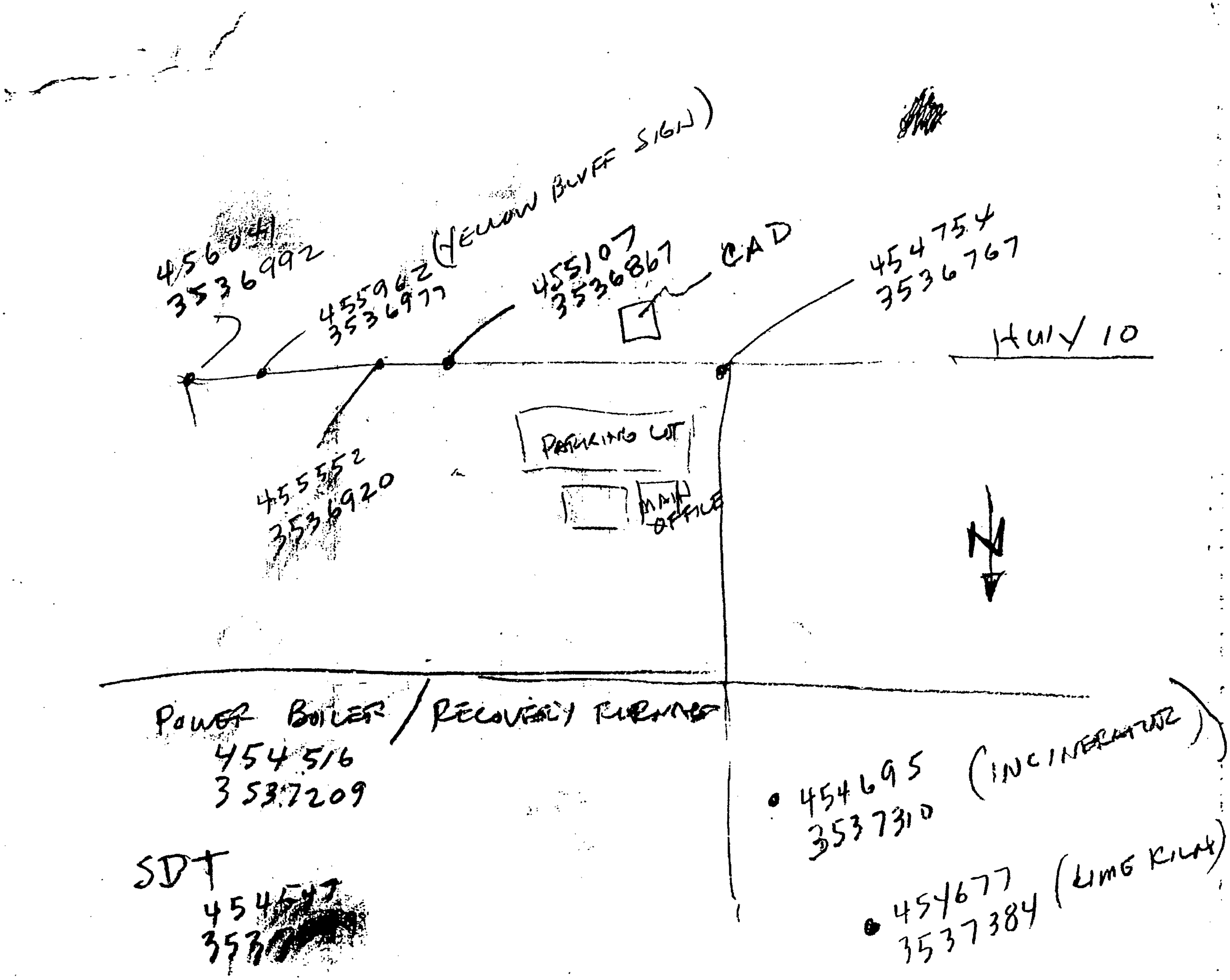
POINT #	SAMPLE TIME	HYDROGEN SULFIDE - ppb a	b	c	avg	WIND dir	mph	TEMP °F	Round: notes and observations:
7D	0910	160	240	370		30	4.0		PP
7C	0912	138	270	300		30	2.7		+ ASB EDGE AT END
7	0915	200	340	240		20	2.3		
7B	0918	130	170	230		350	2.8		P + ASB
1	0930	3	14	14		360	9.8		P MILL ALONG HW
7	0957	230	200	140		360	2.3		ENSA
6D	1001	500	420	580		10	2.2		PP - ASB [illegible]
11G	1009	1008	610	1116	911	30	2.3		PP
11H	1012	580	580	730	[illegible]	20	11.1		PP
11B	1019	160	180	180		10	5.0		↓
[illegible]	1020	240	220	180		340	3.5		
[illegible]	1026	510	710	790	670	350	3.8		
[illegible]	1028	500	490	550	513	360	4.0		
11	1030	520	530	550	533	360	4.2		R + PP - NOT H2S [illegible]
11K	1033	580	720	670	657	10	2.2		
11F	1035	230	400	420		10	6.9		ASB + PP - NOT H2S - [illegible]
11L	1037	430	160	150		360	5.5		ASB + PP
11M	1041	290	200	190		360	5.9		NOT BAD
11N	1043	1400	2700	1114	1736	10	5.0		STINKIER - [illegible]
11C	1046	490	500	1111		10	3.8		LESS PUNGENT
[illegible]	1148	380	360	170		10	7.1		CLAR
10F	1152	48	59	8		350	4.3		NOT MUCH
10G	1155	11	14	10		10	2.1		CLEAN - RIGHT DOWNWIND - C
9A	1203	10	9	4		350	7.8		THRU MILL
[illegible]	1206	9	18	28		10	4.8		"
[illegible]	1209	27	57	10		20	3.9		PULP M SMELL
7A	1213	69	64			340	1.3		ASB
[illegible]	1216	120	130	130		10	4.0		"
[illegible]	1220	290	510	320	373	350	5.5		PP
11I	1223	500	590	380	490	360	7.0		"
11A	1226	280	440	130	283	360	8.6		
11D	1229	170	120	150		10	3.7		
3C	1234	17	21			350	0.3		EQ POND
3A	1236	41	25	28		350	7.1		ASH - E
3	1239	9	5	4		360	3.3		ASH - W - STINKY
125?	—	222	120	130		360	2.1		

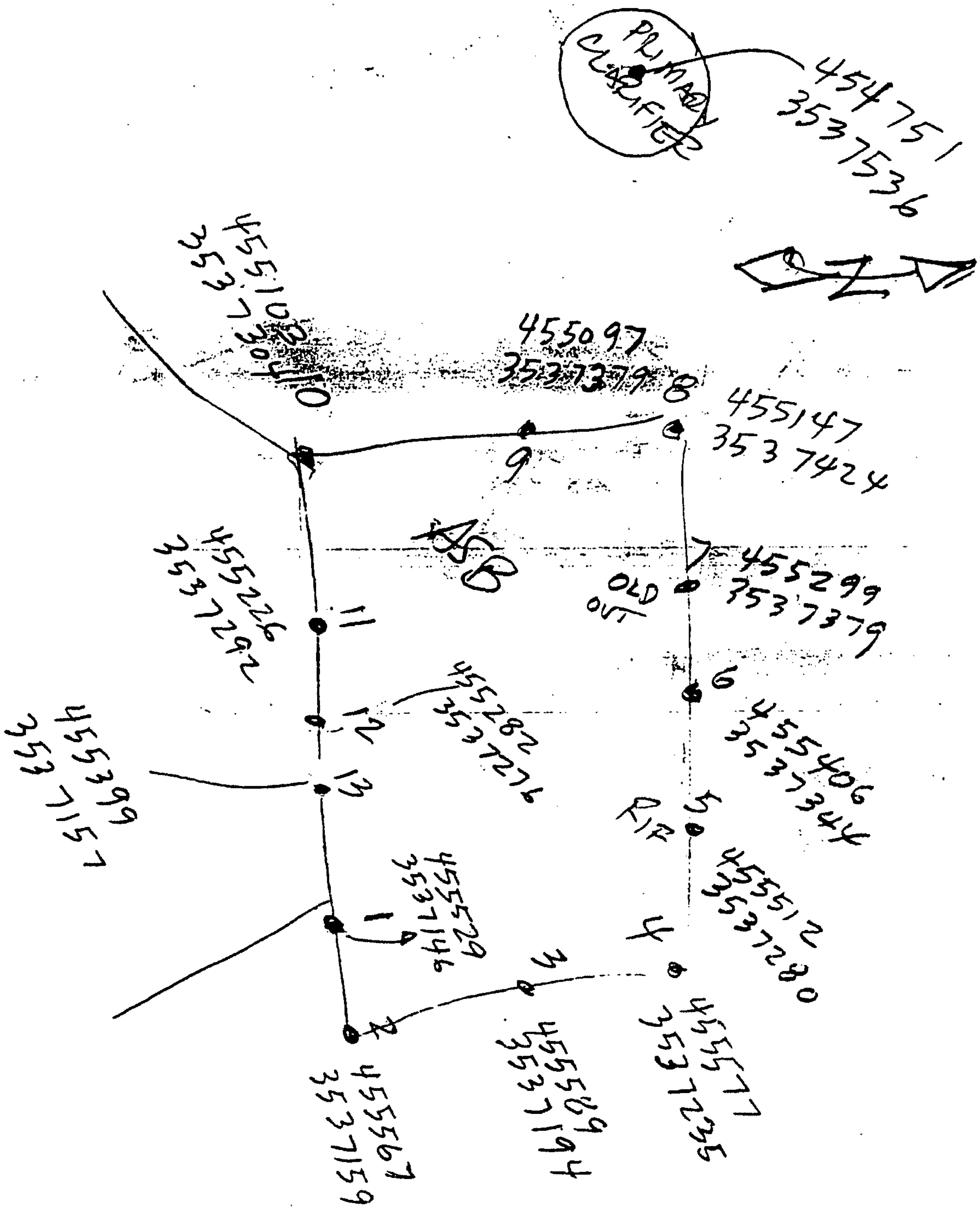
10

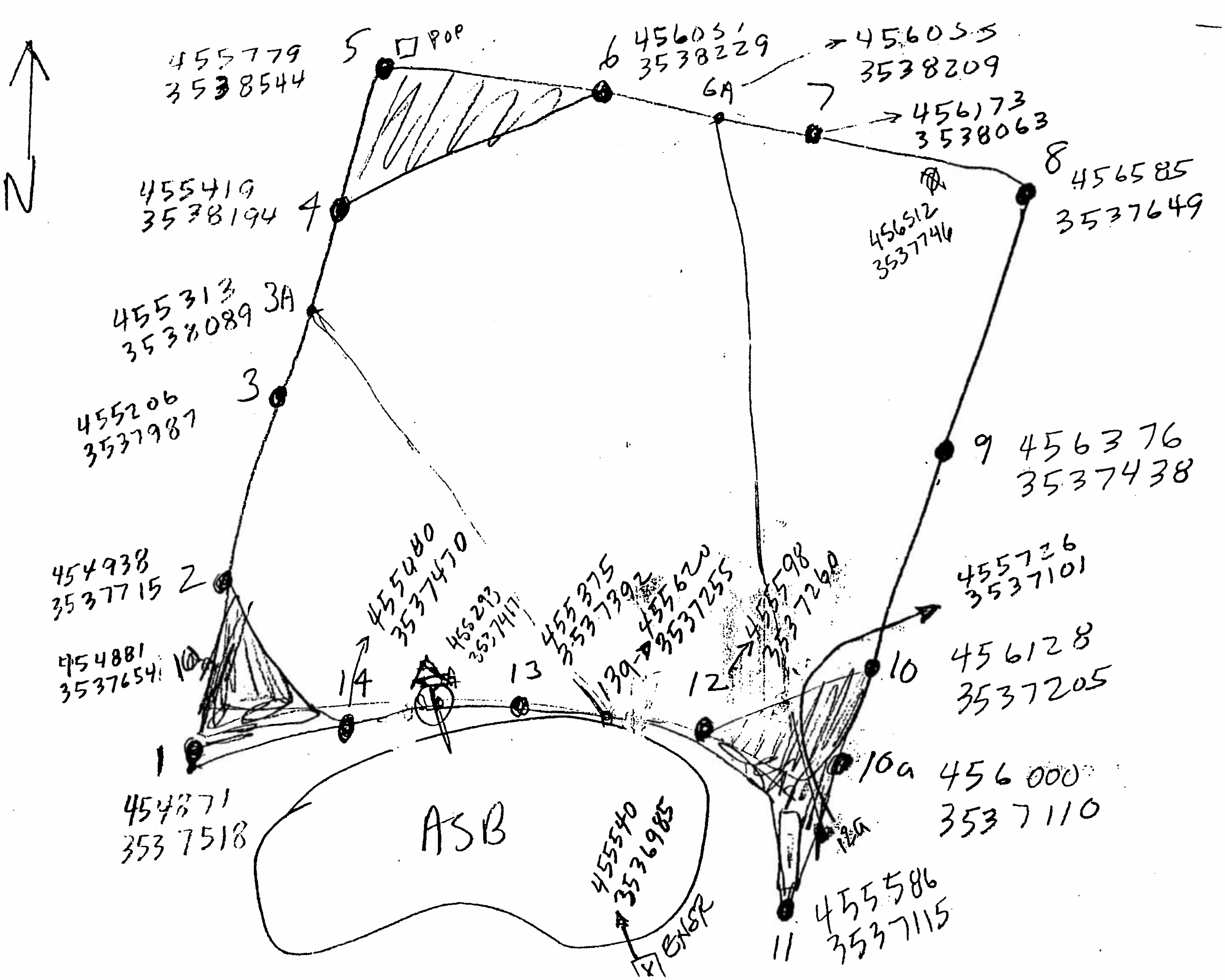
GLADNEY-WY032345

= PONO WW TESTING




456041
3536992
455962 (YELLOW BLUFF SIGN)
3536977
455107
3536867
CAD
454754
3536767
HWY 10
455552
3536920
PARKING LOT
MAIN OFFICE
N
POWER BOILER / RECOVERY FURNACE
454516
3537209
SDT
454695
3537310
(INCINERATOR)
454677
3537384
(LIME KILN)


PRIMARY CLARIFIER
454751
3537536
N
455103
3537304
10
455097
3537379
8
455147
3537424
9
ASB
7
455299
3537379
OLD OUT
11
455226
3537292
12
455282
3537276
13
455399
3537157
6
455406
3537344
5
455512
3537280
4
1
455529
3537146
3
2
455567
3537159
455569
3537194
455577
3537235


N
1
454871
3537518
2
454938
3537715
3
455206
3537987
3A
455313
3538089
4
455419
3538194
5
455779
3538544
POP
6
456031
3538229
6A
456035
3538209
7
456173
3538063
8
456585
3537649
456512
3537746
9
456376
3537438
10
456128
3537205
455726
3537101
10a
456000
3537110
11
455586
3537115
12
13
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455540
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ENGR
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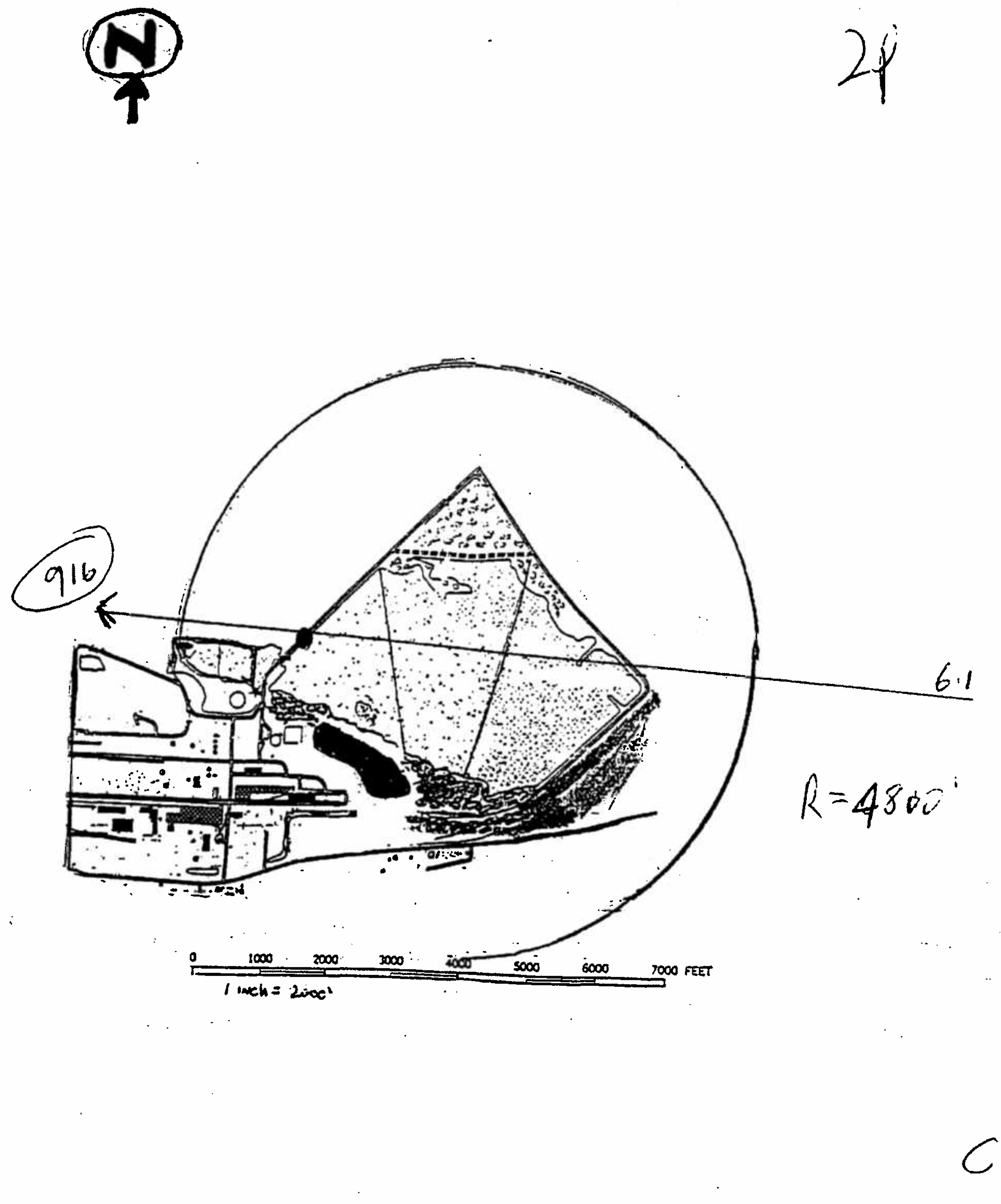
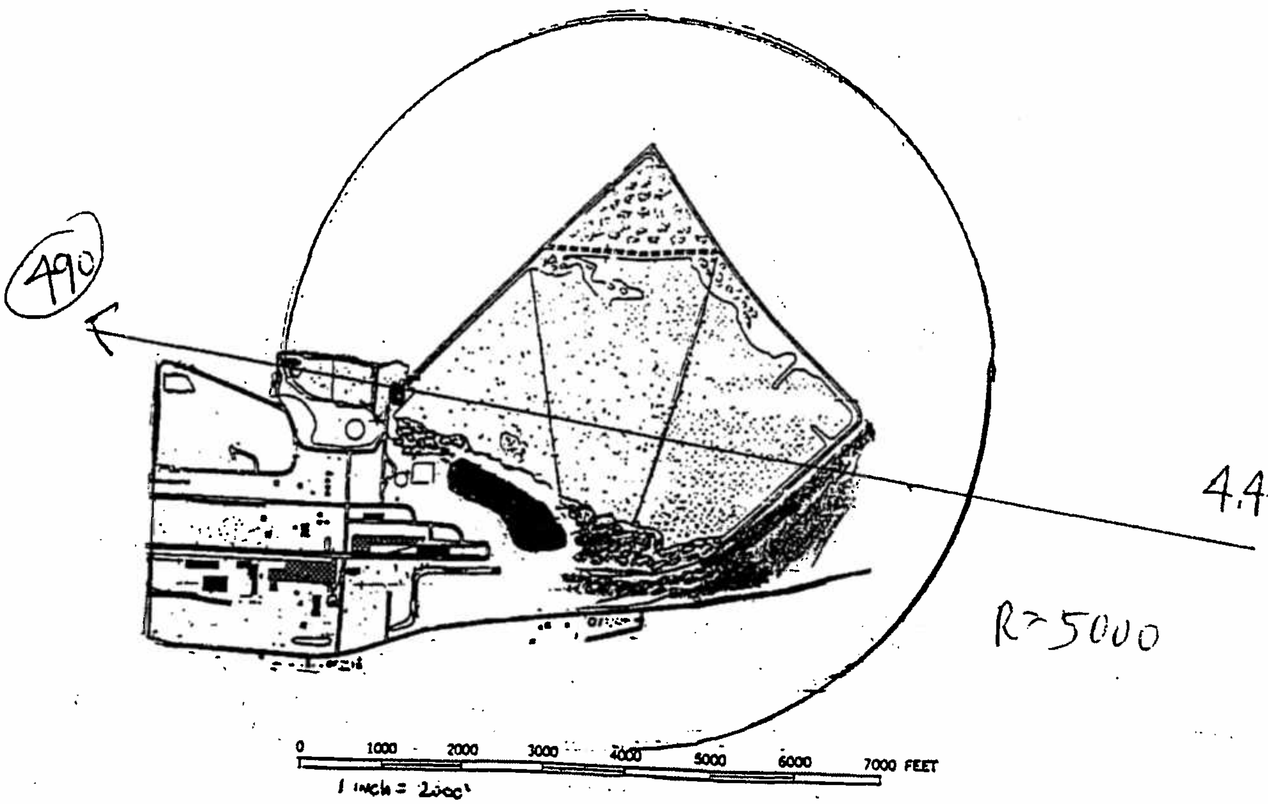

N
24
916
6.1
R=4800'
0
1000
2000
3000
4000
5000
6000
7000 FEET
1 inch = 2000'
C

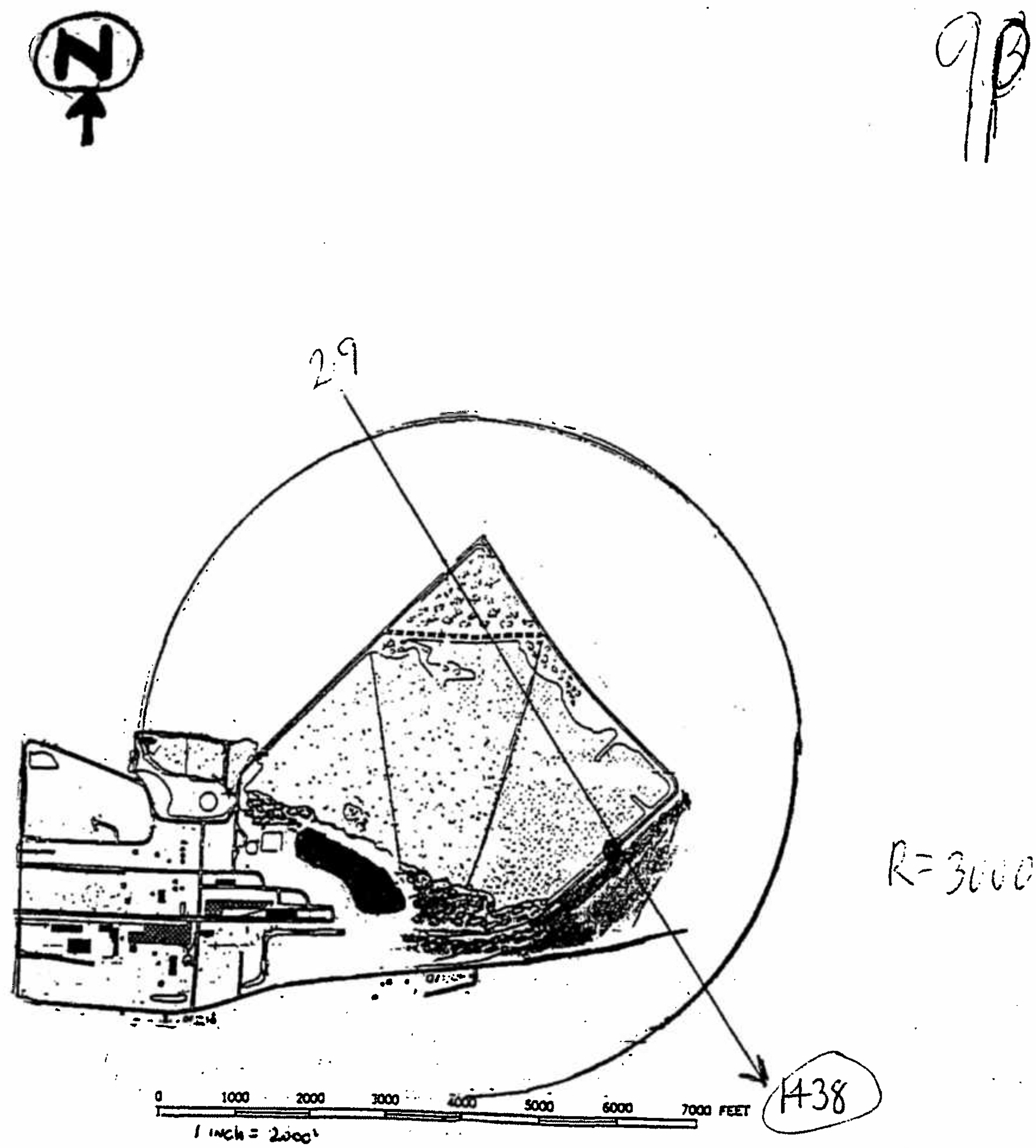
N

5P


490
4.4
R~5000
0 1000 2000 3000 4000 5000 6000 7000 FEET
1 inch = 2000'

C

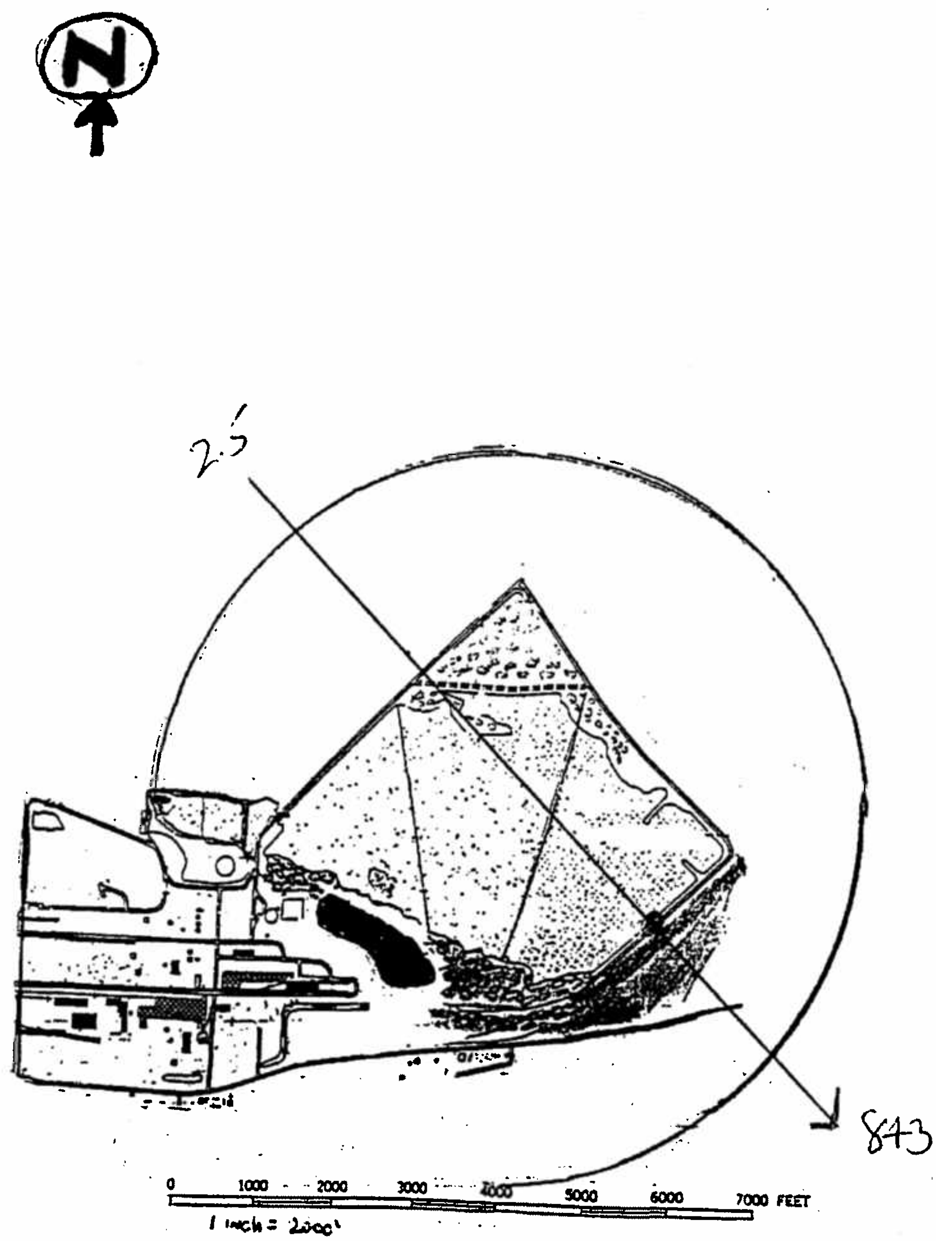
9B



D

GLADNEY-WY032352

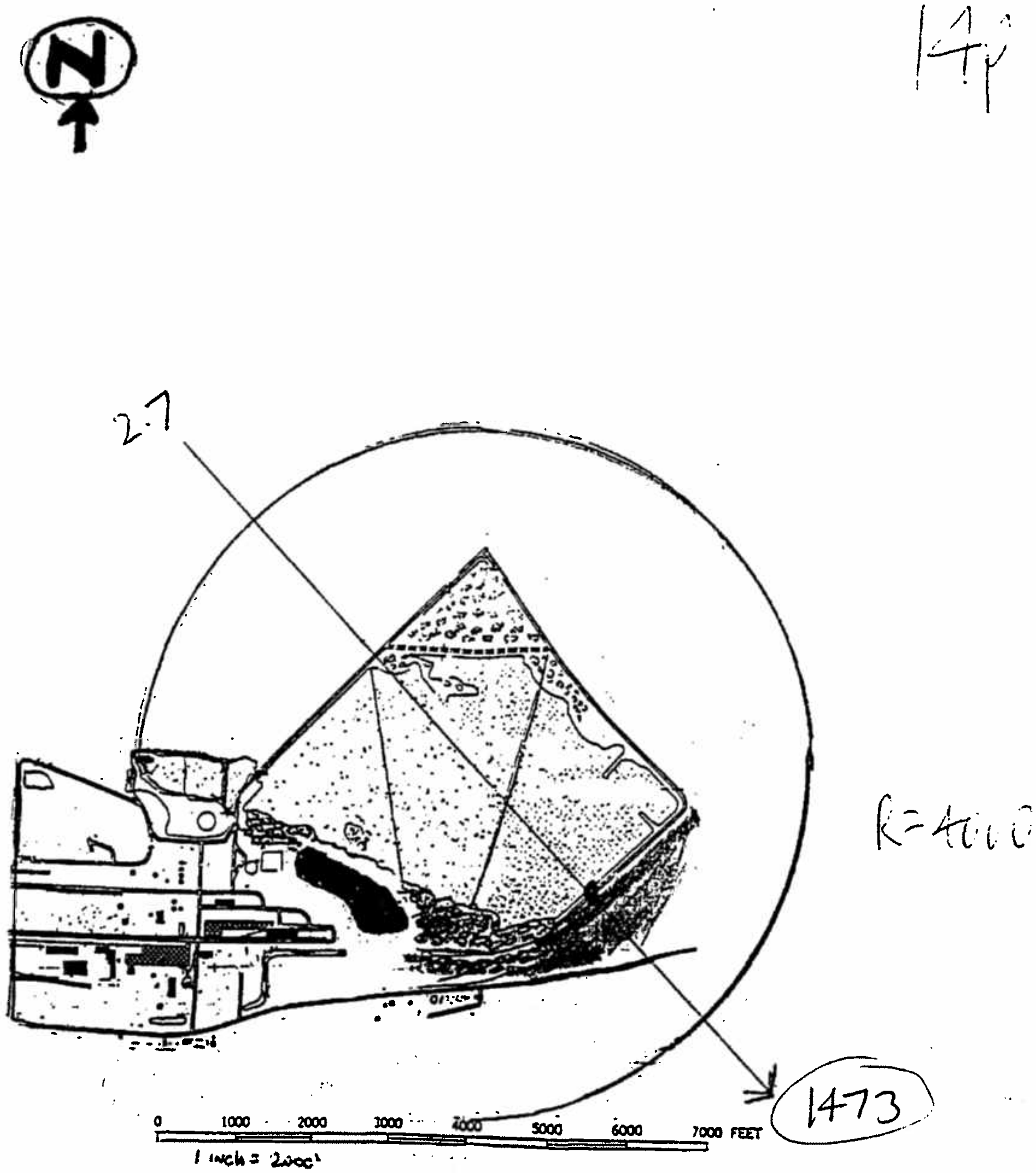
11p



N
2.5
R = 3800
843
0
1000
2000
3000
4000
5000
6000
7000 FEET
1 inch = 2000'

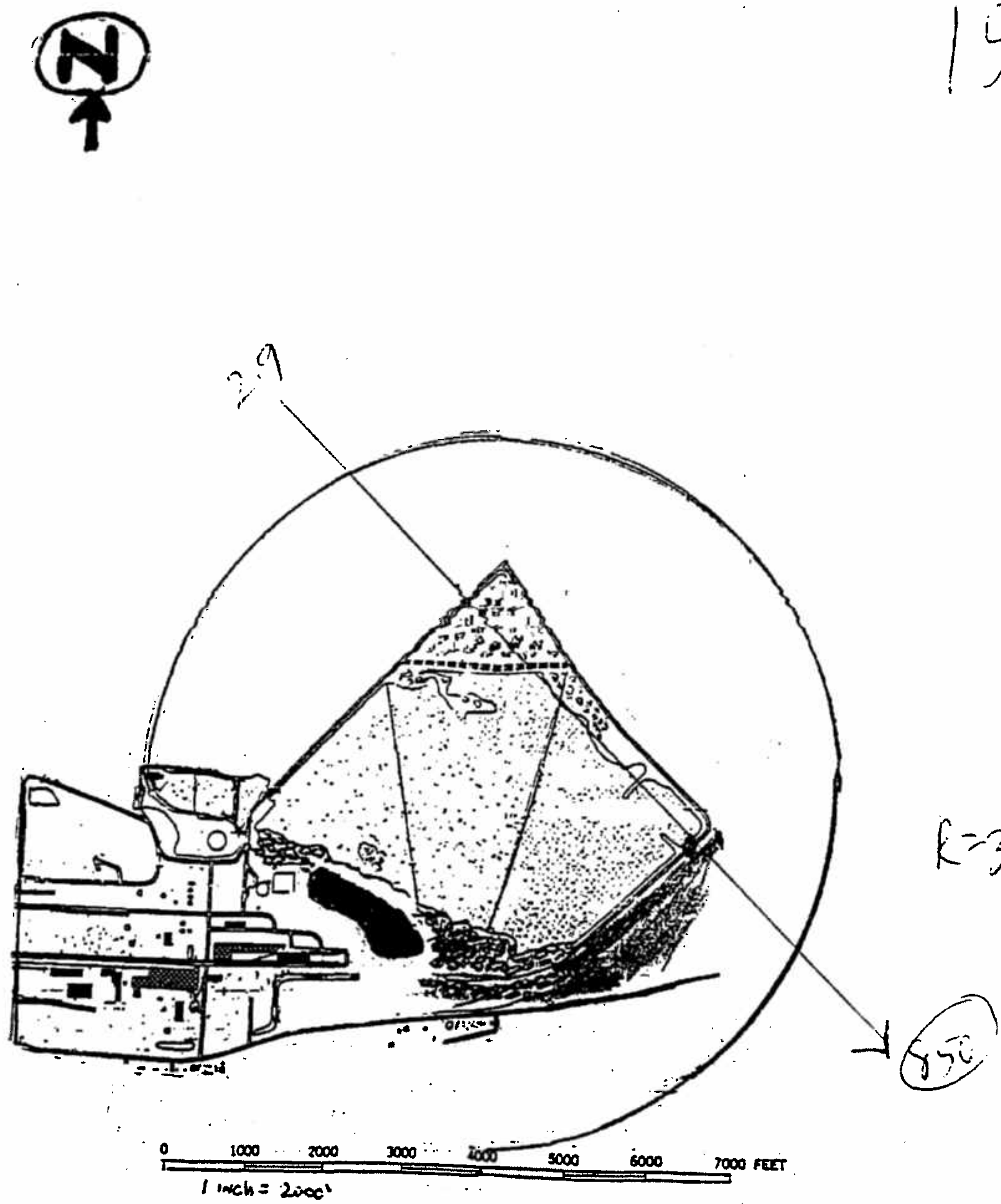
D

14p


N
2.7
R=4000
1473
0
1000
2000
3000
4000
5000
6000
7000 FEET
1 inch = 2000'

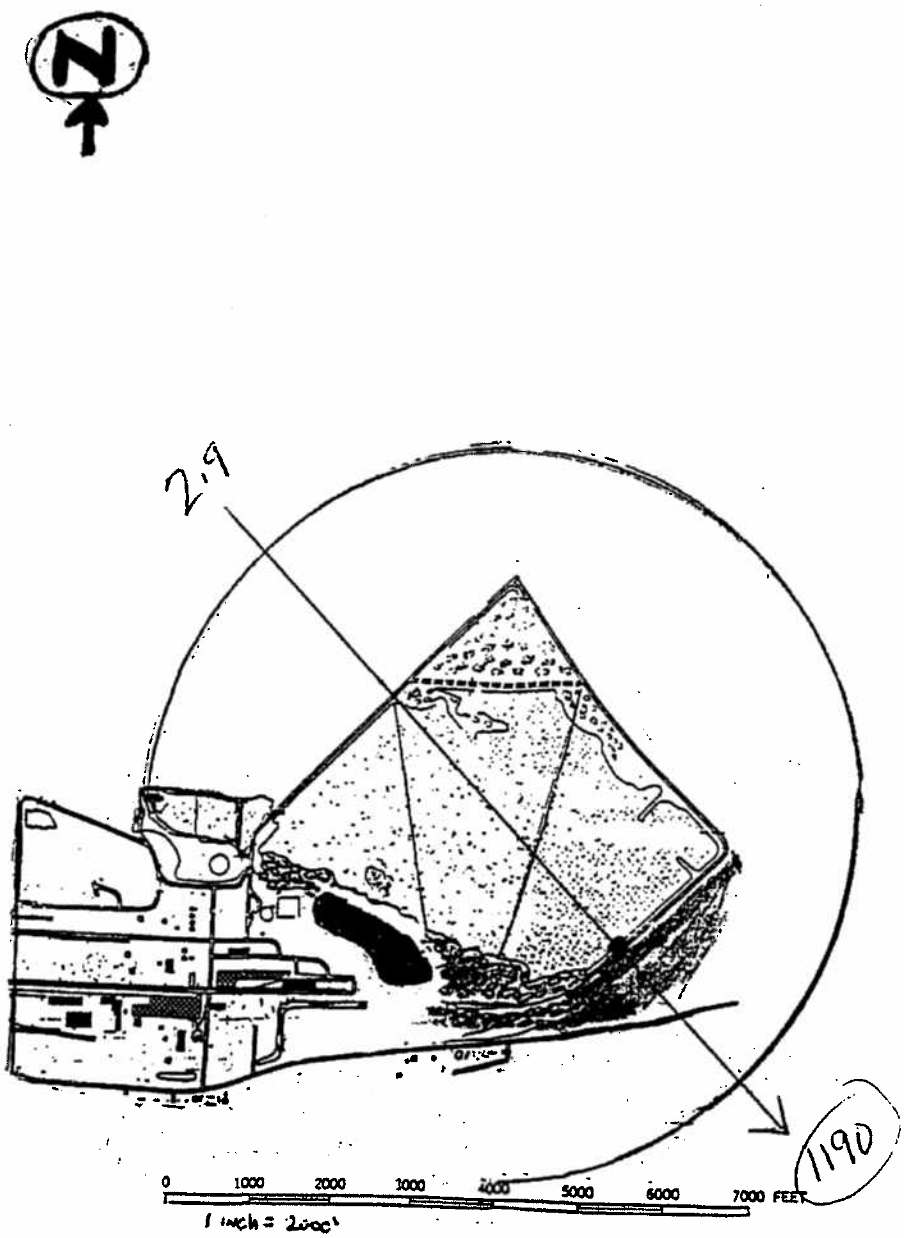
D

15p


N
2.9
R=3000
850
0 1000 2000 3000 4000 5000 6000 7000 FEET
1 inch = 2000'

D

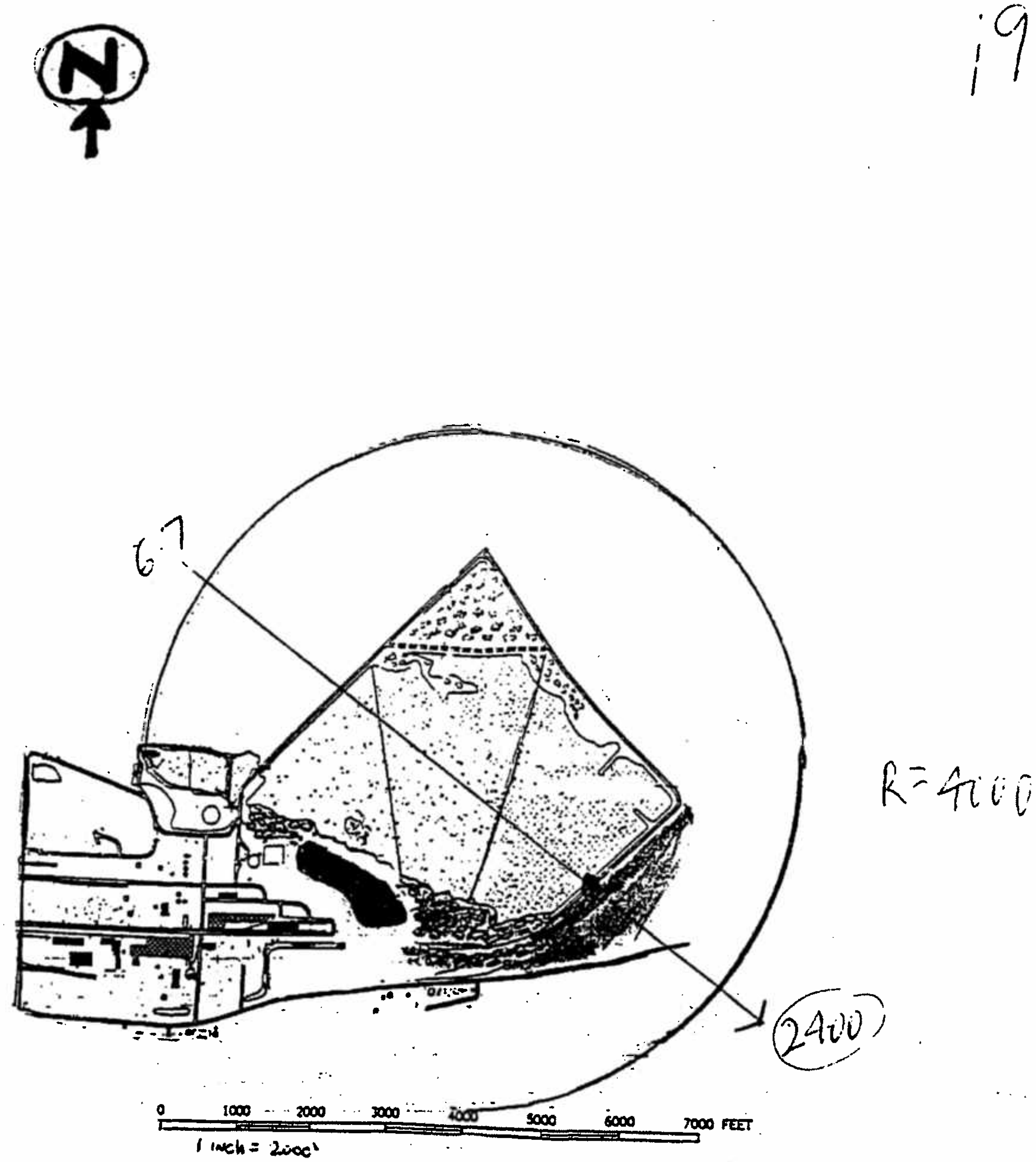
17ρ



R=4000

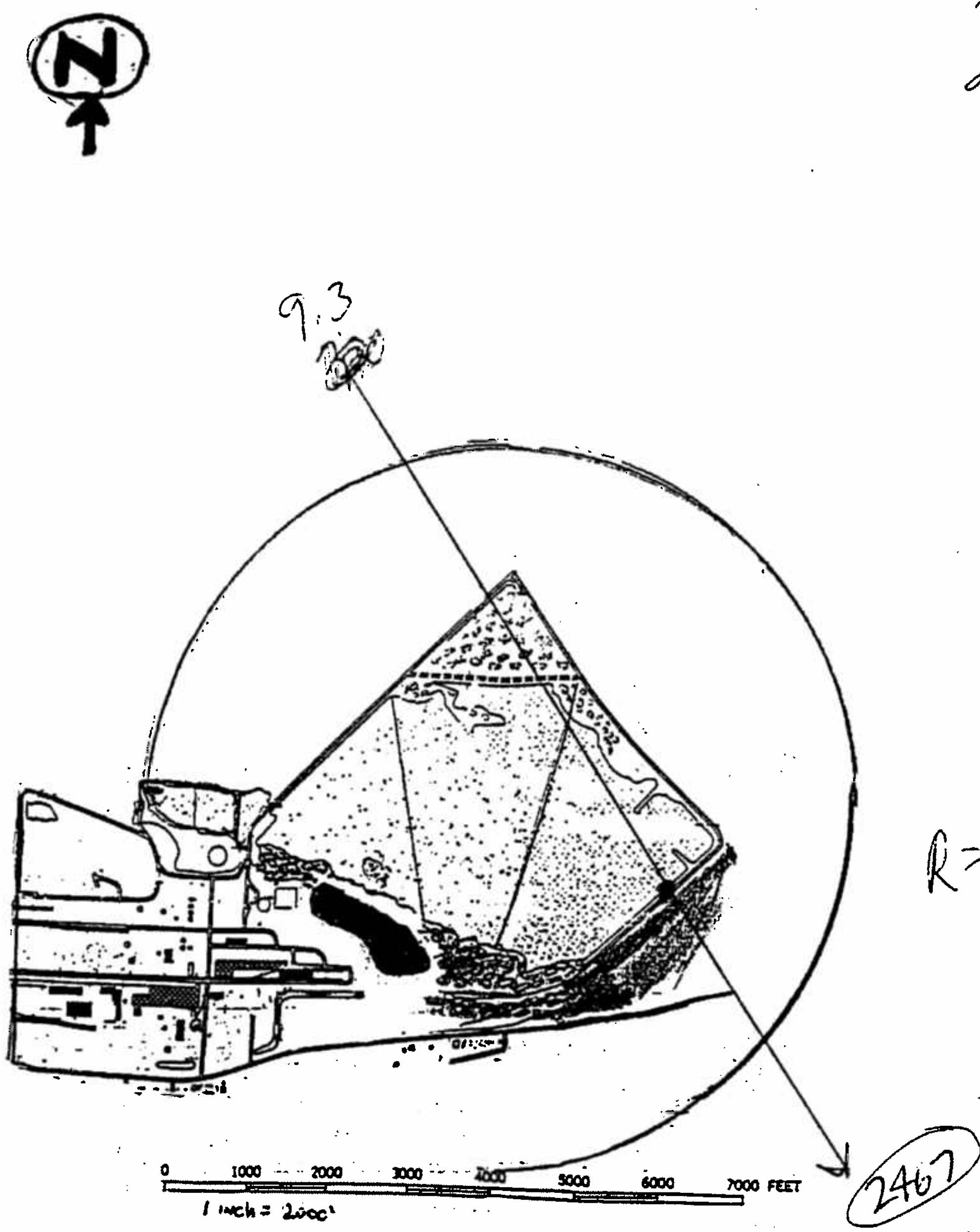
D

i9p


N
67
R=4000
2400
0
1000
2000
3000
4000
5000
6000
7000 FEET
1 inch = 2000'

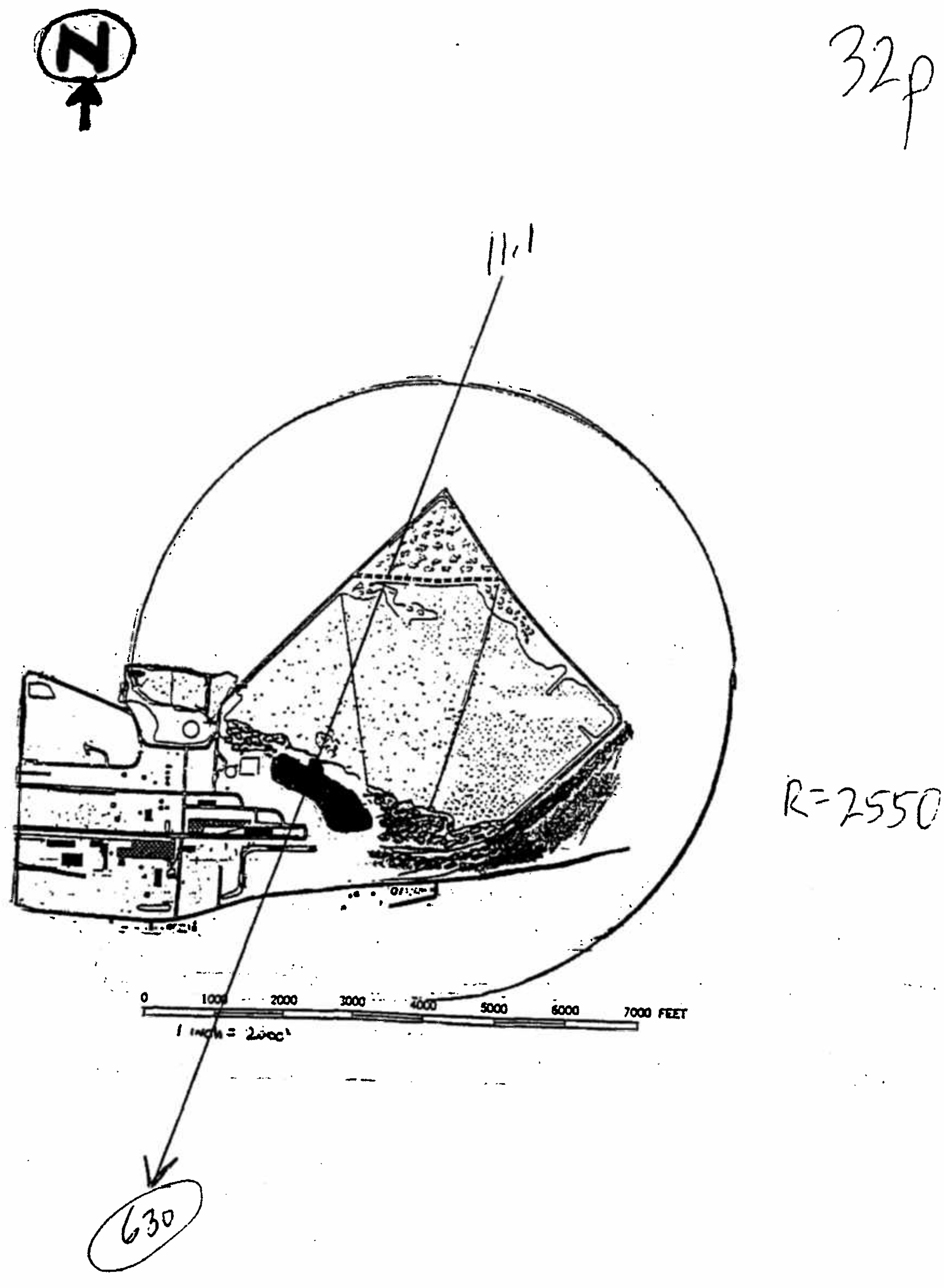
C

20p


N
9.3
R = 3000
2467
0 1000 2000 3000 4000 5000 6000 7000 FEET
1 inch = 2000'

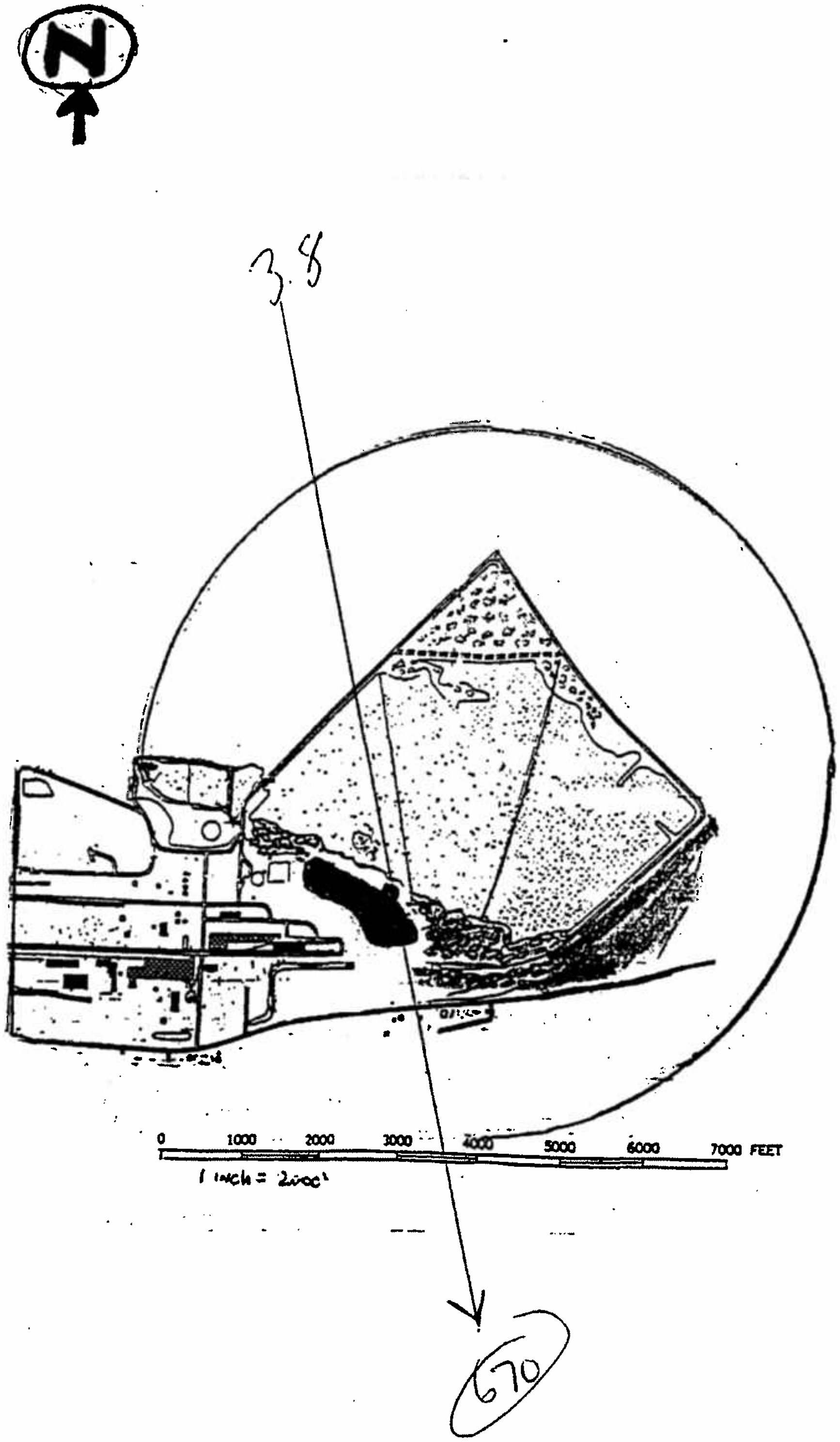
C

32p



INLET

31

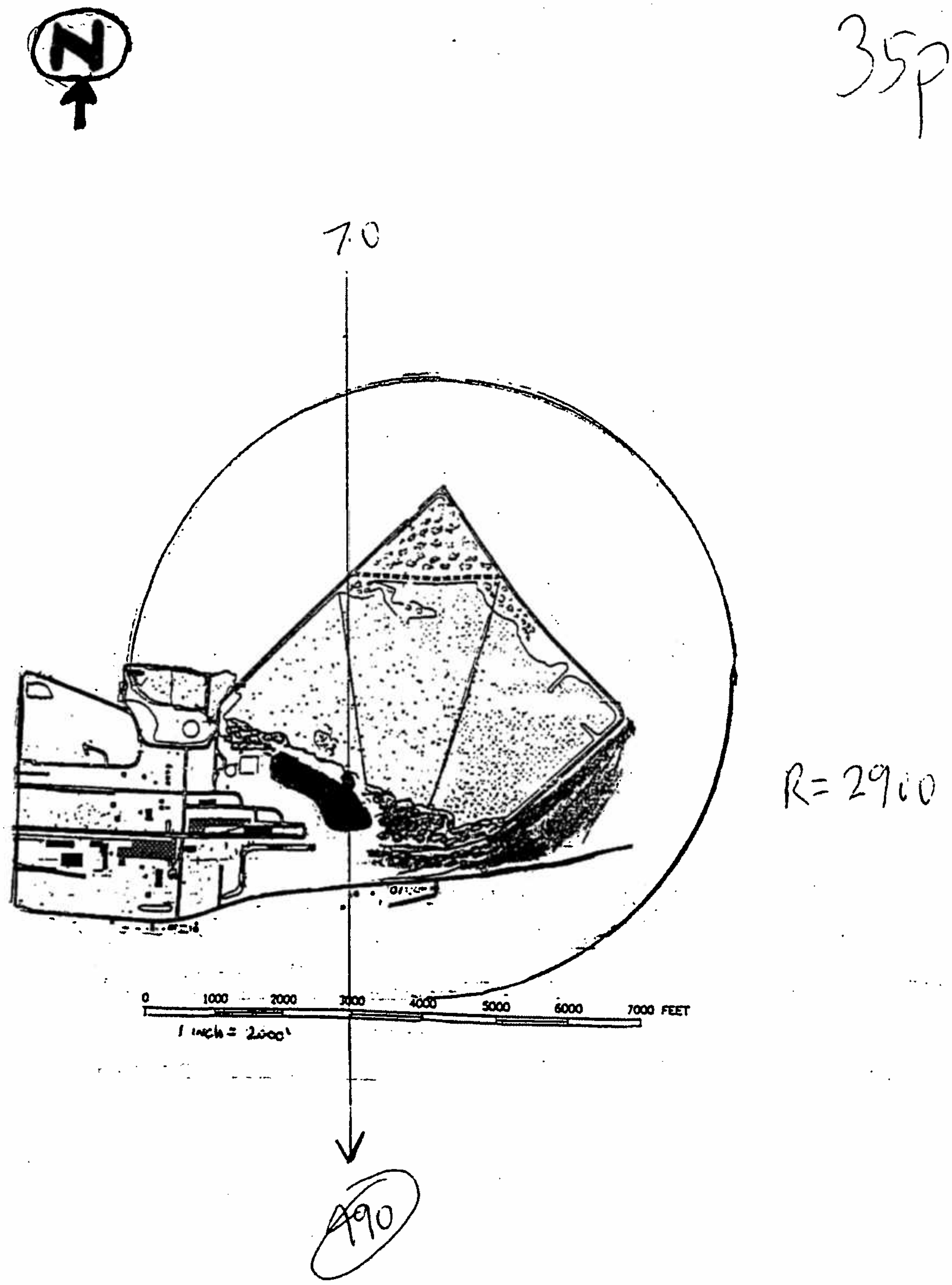


R=2400

C

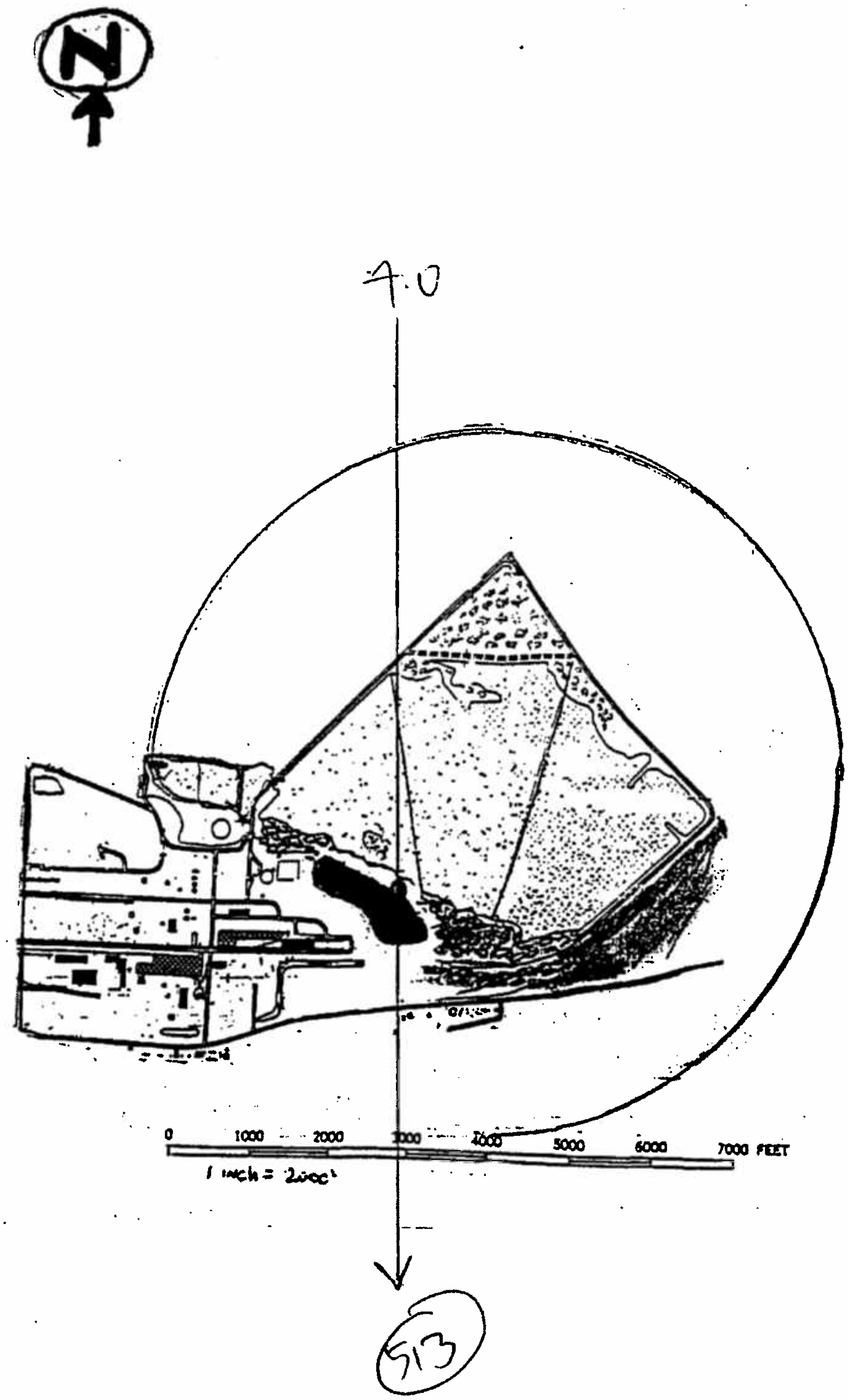
INLET

35p


N
7.0
R=2900
0 1000 2000 3000 4000 5000 6000 7000 FEET
1 inch = 2000'
490

INLET

36p

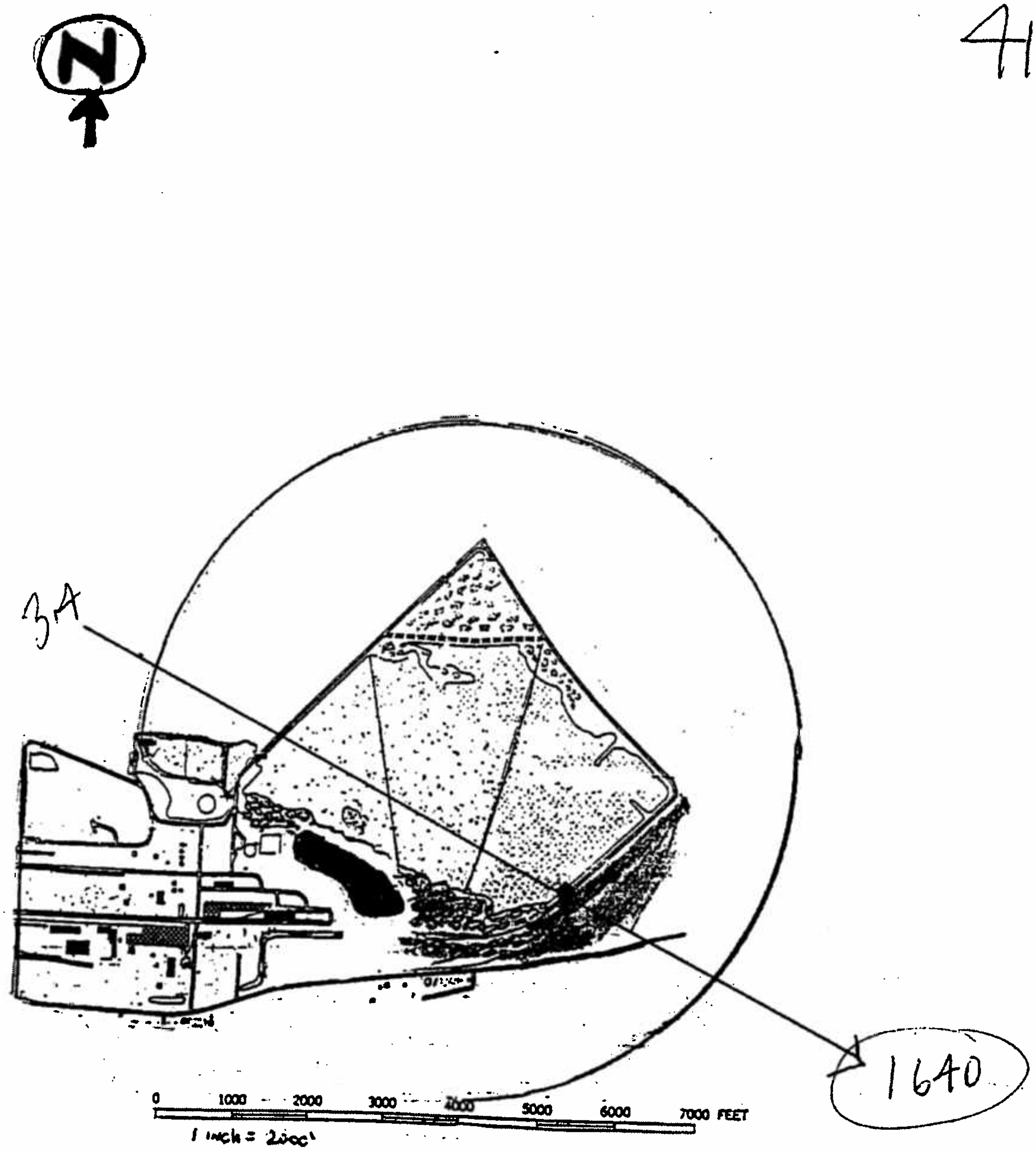


R=2500

C

INLET

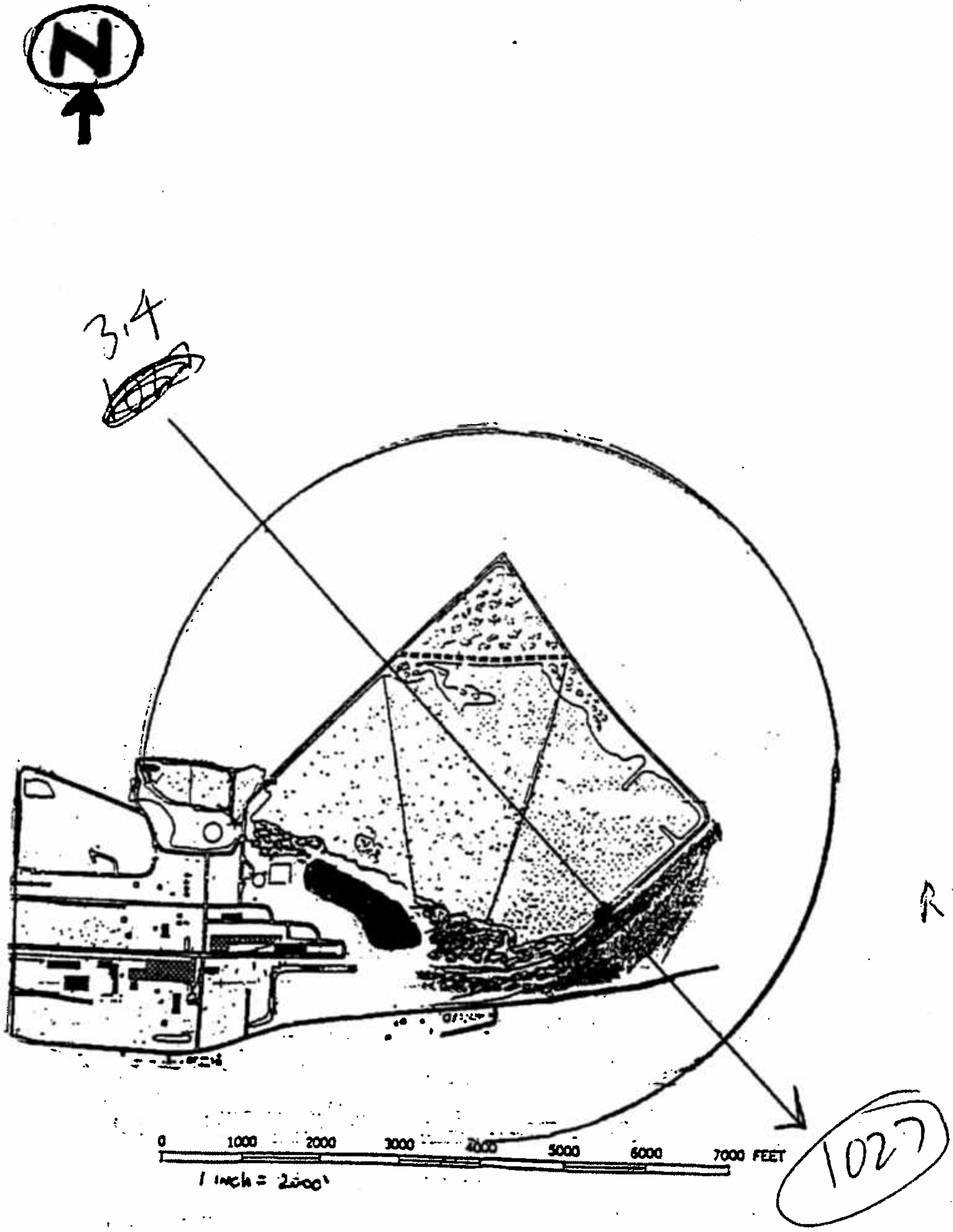
41p



R=4200

C

42p


N
3.4
R=3800
1027
0
1000
2000
3000
4000
5000
6000
7000 FEET
1 inch = 2000'

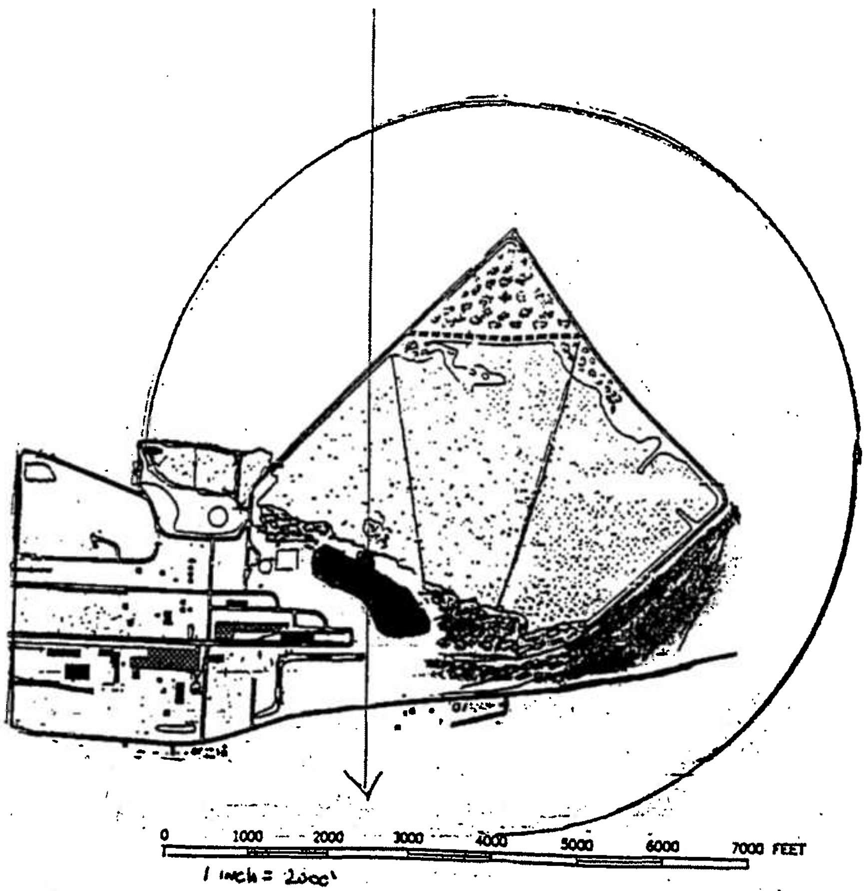
D

ROUND # 1 . 2/12/01

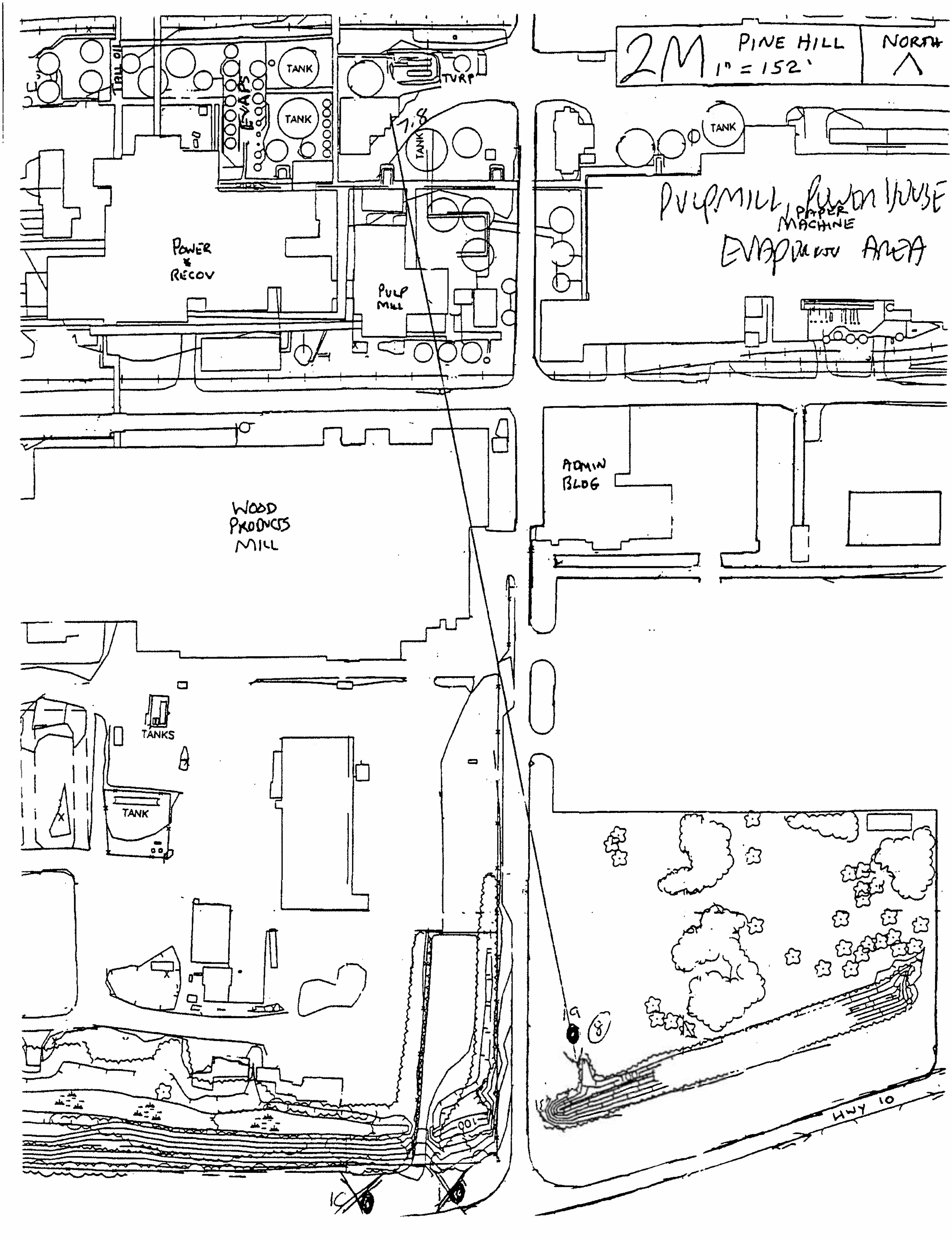
POLISH INLET

FEB01_a

6.6



1400


2M
PINE HILL
1" = 152'
NORTH
TANK
TANK
TANK
TANK
EVAPS
TURP
7,8
PULPMILL POWERHOUSE
PAPER MACHINE
EVAPORATOR AREA
POWER & RECOV
PULP MILL
ADMIN BLDG
WOOD PRODUCTS MILL
TANKS
TANK
19
8
10
HWY 10

PINE HILL TRS STUDY - PHASE II

Emission Models

Models of Polishing Pond- full reach

```
 *** SCREEN-1.1 MODEL RUN ***
 *** VERSION DATED  88300 ***

Model# 2P        WEST EDGE

SIMPLE TERRAIN INPUTS:
   SOURCE TYPE            =     AREA      779 #/HR
   EMISSION RATE (G/S)    =    98.20
   SOURCE HEIGHT (M)      =     1.00
   LENGTH OF SIDE (M)     =   762.50
   RECEPTOR HEIGHT (M)    =     1.00
   IOPT (1=URB,2=RUR)     =     2


BUOY. FLUX =     .00 M**4/S**3;  MOM. FLUX =     .00 M**4/S**2.

*** STABILITY CLASS  3 ONLY ***
*** 10-METER WIND SPEED OF   2.7 M/S ONLY ***

*********************************
*** SCREEN DISCRETE DISTANCES ***
*********************************

*** TERRAIN HEIGHT OF    0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***
```

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
610.	1297.	3	2.7	2.7	864.0	1.0	229.3	38.9	NO

```
 DWASH=   MEANS NO CALC MADE (CONC = 0.0)
 DWASH=NO MEANS NO BUILDING DOWNWASH USED
 DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
 DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
 DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

     ***************************************
     *** SUMMARY OF SCREEN MODEL RESULTS ***
     ***************************************
```

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	1297.	610.	0.

```
***************************************************
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
***************************************************
```


GLADNEY-WY032369

02-13-**
11:02:00

*** SCREEN-1.1 MODEL RUN ***
*** VERSION DATED 88300 ***

Model# 5P WEST EDGE

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	AREA
EMISSION RATE (G/S)	=	38.90
SOURCE HEIGHT (M)	=	1.00
LENGTH OF SIDE (M)	=	762.50
RECEPTOR HEIGHT (M)	=	1.00
IOPT (1=URB,2=RUR)	=	2

309 #/hr

BUOY. FLUX = .00 M**4/S**3; MOM. FLUX = .00 M**4/S**2.

*** STABILITY CLASS 3 ONLY ***
*** 10-METER WIND SPEED OF 2.0 M/S ONLY ***

****
*** SCREEN DISCRETE DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
610.	693.7	3	2.0	2.0	640.0	1.0	229.3	38.9	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	693.7	610.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

GLADNEY-WY032370

02-13-**
09:17:40

*** SCREEN-1.1 MODEL RUN ***
*** VERSION DATED 88300 ***

Model# 9P EAST EDGE

SIMPLE TERRAIN INPUTS:
SOURCE TYPE = AREA
EMISSION RATE (G/S) = 31.25 278 #/hr
SOURCE HEIGHT (M) = 1.00
LENGTH OF SIDE (M) = 762.50
RECEPTOR HEIGHT (M) = 1.00
IOPT (1=URB,2=RUR) = 2

BUOY. FLUX = .00 M**4/S**3; MOM. FLUX = .00 M**4/S**2.

*** STABILITY CLASS 4 ONLY ***
*** 10-METER WIND SPEED OF 1.3 M/S ONLY ***

****
*** SCREEN DISCRETE DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

	DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
EDGE	506.	2033. 1438	4	1.3	1.3	416.0	1.0	203.0	18.5	NO
Hwy	793.	1314.	4	1.3	1.3	416.0	1.0	218.7	26.6	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	2033.	506.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

GLADNEY-WY032371

02-04-**
17:25:18

*** SCREEN-1.1 MODEL RUN ***
*** VERSION DATED 88300 ***

Model# 11P EAST EDGE

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	AREA
EMISSION RATE (G/S)	=	15.50 / 123 #/Hr
SOURCE HEIGHT (M)	=	1.00
LENGTH OF SIDE (M)	=	762.50
RECEPTOR HEIGHT (M)	=	1.00
IOPT (1=URB,2=RUR)	=	2

BUOY. FLUX = .00 M**4/S**3; MOM. FLUX = .00 M**4/S**2.

*** STABILITY CLASS 4 ONLY ***
*** 10-METER WIND SPEED OF 1.1 M/S ONLY ***

****
*** SCREEN DISCRETE DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
506.	1192. 843	4	1.1	1.1	352.0	1.0	203.0	18.5	NO
793.	770.3 545	4	1.1	1.1	352.0	1.0	218.7	26.6	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	1192.	506.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

GLADNEY-WY032372

02-04-**
17:44:55

*** SCREEN-1.1 MODEL RUN ***
*** VERSION DATED 88300 ***

Model# 14P EAST EDGE

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	AREA
EMISSION RATE (G/S)	=	29.50 234#/Hr
SOURCE HEIGHT (M)	=	1.00
LENGTH OF SIDE (M)	=	762.50
RECEPTOR HEIGHT (M)	=	1.00
IOPT (1=URB,2=RUR)	=	2

BUOY. FLUX = .00 M**4/S**3; MOM. FLUX = .00 M**4/S**2.

*** STABILITY CLASS 4 ONLY ***
*** 10-METER WIND SPEED OF 1.2 M/S ONLY ***

****
*** SCREEN DISCRETE DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

	DIST (M)	CONC (UG/M**3)	H_2S ppb	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
E Edge	506.	2080.	1470	4	1.2	1.2	384.0	1.0	203.0	18.5	NO
Hwy (en)	793.	1344.	950	4	1.2	1.2	384.0	1.0	218.7	26.6	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	2080.	506.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

GLADNEY-WY032373

*** SCREEN-1.1 MODEL RUN ***
*** VERSION DATED 88300 ***

Model# 15P EAST EDGE

SIMPLE TERRAIN INPUTS:
SOURCE TYPE = AREA 146.8 #/hr
EMISSION RATE (G/S) = 18.50
SOURCE HEIGHT (M) = 1.00
LENGTH OF SIDE (M) = 762.50
RECEPTOR HEIGHT (M) = 1.00
IOPT (1=URB,2=RUR) = 2

BUOY. FLUX = .00 M**4/S**3; MOM. FLUX = .00 M**4/S**2.

*** STABILITY CLASS 4 ONLY ***
*** 10-METER WIND SPEED OF 1.3 M/S ONLY ***

****
*** SCREEN DISCRETE DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	H2S ppb	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
506.	1204.	851	4	1.3	1.3	416.0	1.0	203.0	18.5	NO
793.	777.9	552	4	1.3	1.3	416.0	1.0	218.7	26.6	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	1204.	506.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

02-04-**
18:15:53

*** SCREEN-1.1 MODEL RUN ***
*** VERSION DATED 88300 ***

Model# 17P EAST EDGE

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	AREA 205.6 #/HR
EMISSION RATE (G/S)	=	25.90
SOURCE HEIGHT (M)	=	1.00
LENGTH OF SIDE (M)	=	762.50
RECEPTOR HEIGHT (M)	=	1.00
IOPT (1=URB,2=RUR)	=	2

BUOY. FLUX = .00 M**4/S**3; MOM. FLUX = .00 M**4/S**2.

*** STABILITY CLASS 4 ONLY ***
*** 10-METER WIND SPEED OF 1.3 M/S ONLY ***

****
*** SCREEN DISCRETE DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)		STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
✓506.	1685.	1192	4	1.3	1.3	416.0	1.0	203.0	18.5	NO
793.	1089.	770	4	1.3	1.3	416.0	1.0	218.7	26.6	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	1685.	506.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

02-04-**
18:19:09

```
 *** SCREEN-1.1 MODEL RUN ***
 *** VERSION DATED  88300 ***

Model# 19P          EAST EDGE

SIMPLE TERRAIN INPUTS:
   SOURCE TYPE            =     AREA
   EMISSION RATE (G/S)    =    231.4   1836.5 #/hr
   SOURCE HEIGHT (M)      =     1.00
   LENGTH OF SIDE (M)     =   762.50
   RECEPTOR HEIGHT (M)    =     1.00
   IOPT (1=URB,2=RUR)     =     2


BUOY. FLUX =     .00 M**4/S**3;  MOM. FLUX =     .00 M**4/S**2.

*** STABILITY CLASS  3 ONLY ***
*** 10-METER WIND SPEED OF   3.0 M/S ONLY ***

**********************************
*** SCREEN DISCRETE DISTANCES ***
**********************************

*** TERRAIN HEIGHT OF    0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***
```

DIST (M)	CONC (UG/M**3)		STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
✓ 506.	3393.	2400	3	3.0	3.0	960.0	1.0	220.3	32.8	NO
793.	2026.	1433	3	3.0	3.0	960.0	1.0	244.9	49.5	NO

```
 DWASH=   MEANS NO CALC MADE (CONC = 0.0)
 DWASH=NO MEANS NO BUILDING DOWNWASH USED
 DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
 DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
 DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

     ***************************************
     *** SUMMARY OF SCREEN MODEL RESULTS ***
     ***************************************
```

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	3393.	506.	0.

```
***************************************************
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
***************************************************
```

02-04-**
18:22:05

*** SCREEN-1.1 MODEL RUN ***
*** VERSION DATED 88300 ***

Model# 20P EAST EDGE

SIMPLE TERRAIN INPUTS:
SOURCE TYPE = AREA
EMISSION RATE (G/S) = 333.1 2643.7 #/hr
SOURCE HEIGHT (M) = 1.00
LENGTH OF SIDE (M) = 762.50
RECEPTOR HEIGHT (M) = 1.00
IOPT (1=URB,2=RUR) = 2

BUOY. FLUX = .00 M**4/S**3; MOM. FLUX = .00 M**4/S**2.

*** STABILITY CLASS 3 ONLY ***
*** 10-METER WIND SPEED OF 4.2 M/S ONLY ***

****
*** SCREEN DISCRETE DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	(1 hr)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
✓506.	3489.	2467	3	4.2	4.2	1344.0	1.0	220.3	32.8	NO
793.	2083.	1473	3	4.2	4.2	1344.0	1.0	244.9	49.5	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	3489.	506.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

02-05-**
13:14:25

*** SCREEN-1.1 MODEL RUN ***
*** VERSION DATED 88300 ***

Model# 41P EAST EDGE

SIMPLE TERRAIN INPUTS:
SOURCE TYPE = AREA
EMISSION RATE (G/S) = 79.10 628 #/hr
SOURCE HEIGHT (M) = 1.00
LENGTH OF SIDE (M) = 762.50
RECEPTOR HEIGHT (M) = 1.00
IOPT (1=URB,2=RUR) = 2

BUOY. FLUX = .00 M**4/S**3; MOM. FLUX = .00 M**4/S**2.

*** STABILITY CLASS 3 ONLY ***
*** 10-METER WIND SPEED OF 1.5 M/S ONLY ***

****
*** SCREEN DISCRETE DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
506.	2320.	3	1.5	1.5	480.0	1.0	220.3	32.8	NO
793.	1385.	3	1.5	1.5	480.0	1.0	244.9	49.5	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	2320.	506.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

02-05-**
13:17:20

*** SCREEN-1.1 MODEL RUN ***
*** VERSION DATED 88300 ***

Model# 42P

EAST EDGE

SIMPLE TERRAIN INPUTS:
SOURCE TYPE = AREA
EMISSION RATE (G/S) = 25.70
SOURCE HEIGHT (M) = 1.00
LENGTH OF SIDE (M) = 762.50
RECEPTOR HEIGHT (M) = 1.00
IOPT (1=URB,2=RUR) = 2

204 #/hr

BUOY. FLUX = .00 M**4/S**3; MOM. FLUX = .00 M**4/S**2.

*** STABILITY CLASS 4 ONLY ***
*** 10-METER WIND SPEED OF 1.5 M/S ONLY ***

****
*** SCREEN DISCRETE DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
506.	1449.	4	1.5	1.5	480.0	1.0	203.0	18.5	NO
793.	936.6	4	1.5	1.5	480.0	1.0	218.7	26.6	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	1449.	506.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

Models of Polishing Pond Inlet

02-12-**
11:34:58

*** SCREEN-1.1 MODEL RUN ***
*** VERSION DATED 88300 ***

PP- INLET

Model# 32p

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	AREA
EMISSION RATE (G/S)	=	4.180 33.2 #/hr
SOURCE HEIGHT (M)	=	1.00
LENGTH OF SIDE (M)	=	91.50
RECEPTOR HEIGHT (M)	=	1.00
IOPT (1=URB,2=RUR)	=	2

BUOY. FLUX = .00 M**4/S**3; MOM. FLUX = .00 M**4/S**2.

*** STABILITY CLASS 3 ONLY ***
*** 10-METER WIND SPEED OF 5.0 M/S ONLY ***

****
*** SCREEN DISCRETE DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
119.	891.4	3	5.0	5.0	1587.2	1.0	34.0	8.7	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	891.4	119.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

GLADNEY-WY032381

02-12-**
11:35:45

*** SCREEN-1.1 MODEL RUN ***
*** VERSION DATED 88300 ***

PP-INLET

Model# 34p

SIMPLE TERRAIN INPUTS:
SOURCE TYPE = AREA
EMISSION RATE (G/S) = 2.000 15.9 #/m
SOURCE HEIGHT (M) = 1.00
LENGTH OF SIDE (M) = 91.50
RECEPTOR HEIGHT (M) = 1.00
IOPT (1=URB,2=RUR) = 2

BUOY. FLUX = .00 M**4/S**3; MOM. FLUX = .00 M**4/S**2.

*** STABILITY CLASS 3 ONLY ***
*** 10-METER WIND SPEED OF 1.7 M/S ONLY ***

****
*** SCREEN DISCRETE DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
119.	1244.	3	1.7	1.7	544.0	1.0	34.0	8.7	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	1244.	119.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

02-12-**
11:38:35

*** SCREEN-1.1 MODEL RUN ***
*** VERSION DATED 88300 ***

PP - INLET

Model# 35p

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	AREA
EMISSION RATE (G/S)	=	2.030
SOURCE HEIGHT (M)	=	1.00
LENGTH OF SIDE (M)	=	91.50
RECEPTOR HEIGHT (M)	=	1.00
IOPT (1=URB,2=RUR)	=	2

16.1 #/hr

BUOY. FLUX = .00 M**4/S**3; MOM. FLUX = .00 M**4/S**2.

*** STABILITY CLASS 3 ONLY ***
*** 10-METER WIND SPEED OF 3.1 M/S ONLY ***

****
*** SCREEN DISCRETE DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
119.	692.7	3	3.1	3.1	992.0	1.0	34.0	8.7	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	692.7	119.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

PP-INLET

02-12-**
11:40:32

*** SCREEN-1.1 MODEL RUN ***
*** VERSION DATED 88300 ***

Model# 36p

SIMPLE TERRAIN INPUTS:

```
   SOURCE TYPE            =     AREA
   EMISSION RATE (G/S)    =    1.230
   SOURCE HEIGHT (M)      =     1.00
   LENGTH OF SIDE (M)     =    91.50
   RECEPTOR HEIGHT (M)    =     1.00
   IOPT (1=URB,2=RUR)     =     2
```

9.8 #/hr

BUOY. FLUX = .00 M**4/S**3; MOM. FLUX = .00 M**4/S**2.

*** STABILITY CLASS 3 ONLY ***
*** 10-METER WIND SPEED OF 1.8 M/S ONLY ***

****
*** SCREEN DISCRETE DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
119.	722.8	3	1.8	1.8	576.0	1.0	34.0	8.7	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	722.8	119.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

Model of PulpMill, PowerHouse, Recovery Area

*** SCREEN-1.1 MODEL RUN ***
*** VERSION DATED 88300 ***

Model# 2m Pulp Mill, Powerhouse(?) EVAP AREAS

SIMPLE TERRAIN INPUTS:
SOURCE TYPE = AREA
EMISSION RATE (G/S) = .2900 2.3 #/hr
SOURCE HEIGHT (M) = 1.00
LENGTH OF SIDE (M) = 152.50
RECEPTOR HEIGHT (M) = 1.00
IOPT (1=URB,2=RUR) = 2

BUOY. FLUX = .00 M**4/S**3; MOM. FLUX = .00 M**4/S**2.

*** STABILITY CLASS 3 ONLY ***
*** 10-METER WIND SPEED OF 3.5 M/S ONLY ***

****
*** SCREEN DISCRETE DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
442.	11.44	3	3.5	3.5	1116.8	1.0	79.7	29.0	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	11.44	442.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

02-12-**
11:32:35

*** SCREEN-1.1 MODEL RUN ***
*** VERSION DATED 88300 ***

PP-INLET

NO @ 6.3 mph
1400 ppb

Model# FEB01_a KNWO #1 (1/1) FEB 2001

2/12 13:46

SIMPLE TERRAIN INPUTS:
SOURCE TYPE = AREA
EMISSION RATE (G/S) = 5.200 41.3 #/HR
SOURCE HEIGHT (M) = 1.00
LENGTH OF SIDE (M) = 91.50
RECEPTOR HEIGHT (M) = 1.00
IOPT (1=URB,2=RUR) = 2

BUOY. FLUX = .00 M**4/S**3; MOM. FLUX = .00 M**4/S**2.

*** STABILITY CLASS 3 ONLY ***
*** 10-METER WIND SPEED OF 2.8 M/S ONLY ***

****
*** SCREEN DISCRETE DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
119.	1964.	3	2.8	2.8	896.0	1.0	34.0	8.7	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	1964.	119.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

PINE HILL TRS STUDY - PHASE II

ENSR Station Weather Summary

Pine Hill Weather Station Data
November 2001

WEYERHAEUSER PINE HILL	TEMP DEGC	WDR DEG	WSP MPH	H2S PPM	DELTAT DEGC	SOLAR WM2	STATMP DEGF	SD1 DEG	STABILITY CLASS Sol	Inv	Class	°F
11/30/2001 5:00	11.3	260.8	3.3	0.001	-0.27	0	76.9	20.6	D	D	D	52
11/30/2001 6:00	10.8	247.9	3.8	0.000	-0.28	0	77.0	23.4	D	D	D	51
11/30/2001 7:00	10.5	252.7	4.2	0.000	-0.30	7	76.9	18.4	D	D	D	51
11/30/2001 8:00	10.6	285.9	4.1	0.002	-0.37	53	77.1	20.6	C	D	C	51
11/30/2001 9:00	10.5	286.5	4.3	0.003	-0.51	95	76.7	24.1	C	D	C	51
11/30/2001 10:00	10.2	331.8	7.5	0.012	-0.43	144	77.2	10.8	C	D	C	50
11/30/2001 11:00	10.8	304.8	3.3	0.002	-0.70	204	76.9	39.3	C	D	C	51
11/30/2001 12:00	11.3	331.6	3.8	0.004	-0.67	249	77.1	37.4	C	D	C	52
11/30/2001 13:00	12.1	286.5	3.7	0.003	-0.94	319	77.1	31.0	C	D	C	54
11/30/2001 14:00	12.7	328.6	5.7	0.007	-0.94	448	77.0	20.1	C	D	C	55
11/30/2001 15:00	12.8	322.4	6.1	0.005	-0.85	351	77.1	15.1	C	D	C	55
11/30/2001 16:00	12.4	329.4	5.6	0.019	-0.54	165	77.3	14.1	C	D	C	54
11/30/2001 17:00	11.3	352.6	5.4	0.079	-0.27	15	76.9	11.7	D	D	D	52
11/30/2001 18:00	9.8	44.0	3.7	0.138	-0.03	0	76.9	16.5	D	D	D	50
11/30/2001 19:00	9.4	23.0	2.8	0.222	-0.01	0	76.7	14.6	D	D	D	49

GLADNEY-WY032389

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Pine Hill Weather Station Data
December 2001

Dec 01 WEYERHAEUSER PINE HILL	TEMP DEGC	WDR DEG	WSP MPH	H2S PPM	DELTAT DEGC	SOLAR WM2	STATMP DEGF	SD1 DEG	STABILITY CLASS Solar	Inversion	Class	°F
12/1/2001 5:00	4.0	294.6	1.3	0.035	-0.40	0	77.2	43.5	D	D	D	39
12/1/2001 6:00	4.4	304.8	1.0	0.133	-0.38	0	77.2	36.5	D	D	D	40
12/1/2001 7:00	4.2	259.5	1.5	0.040	-0.52	9	77.3	23.9	D	D	D	40
12/1/2001 8:00	4.8	77.0	0.8	0.148	-0.27	84	77.3	52.9	C	D	C	41
12/1/2001 9:00	6.0	68.9	2.0	0.112	-0.29	267	76.9	36.7	C	D	C	43
12/1/2001 10:00	8.2	11.9	2.5	0.101	-0.49	466	77.1	26.3	C	D	C	47
12/1/2001 11:00	12.1	6.0	2.9	0.058	-0.61	561	77.1	32.0	C	D	C	54
12/1/2001 12:00	15.1	28.9	3.0	0.044	-0.51	581	77.3	34.2	C	D	C	59
12/1/2001 13:00	16.6	10.8	3.7	0.043	-0.53	562	77.3	32.5	C	D	C	62
12/1/2001 14:00	17.5	28.9	3.0	0.028	-0.36	464	77.5	41.3	C	D	C	64
12/1/2001 15:00	18.1	30.0	3.4	0.059	-0.31	326	77.3	26.5	C	D	C	65
12/1/2001 16:00	17.9	38.9	2.7	0.071	-0.06	134	77.4	27.0	C	D	C	64
12/1/2001 17:00	15.1	241.9	0.4	0.029	1.18	11	77.2	64.9	D	F	C	59
12/1/2001 18:00	12.3	168.2	0.5	0.022	1.46	0	77.1	46.9	D	F	C	54

GLADNEY-WY032390

Pine Hill Weather Station Data
December 2001

Dec 01 WEYERHAEUSER PINE HILL	TEMP DEGC	WDR DEG	WSP MPH	H2S PPM	DELTAT DEGC	SOLAR WM2	STATMP DEGF	SD1 DEG	STABILITY CLASS Solar	Inversion	Class	°F
12/2/2001 5:00	5.8	290.8	0.5	0.028	0.51	0	77.0	37.0	D	F	D	42
12/2/2001 6:00	6.5	341.8	1.8	0.129	0.16	0	76.8	37.2	D	F	D	44
12/2/2001 7:00	6.5	341.6	1.8	0.064	-0.07	7	76.8	44.7	D	F	D	44
12/2/2001 8:00	7.3	312.4	2.9	0.036	-0.28	57	77.8	13.9	D	D	D	44
12/2/2001 9:00	9.0	324.8	3.3	0.054	-0.68	240	77.4	12.9	C	D	C	45
12/2/2001 10:00	12.0	340.7	2.8	0.032	-0.88	431	77.3	23.8	C	D	C	48
12/2/2001 11:00	14.6	13.8	2.7	0.059	-0.51	552	77.2	28.8	C	D	C	54
12/2/2001 12:00	17.2	20.0	2.4	0.041	-0.49	605	77.3	38.1	C	D	C	58
12/2/2001 13:00	19.0	17.0	4.0	0.053	-0.49	548	76.9	23.9	C	D	C	63
12/2/2001 14:00	20.2	11.9	3.7	0.050	-0.43	454	77.0	23.9	C	D	C	66
12/2/2001 15:00	21.1	351.5	4.4	0.063	-0.41	319	76.9	19.9	C	D	C	68
12/2/2001 16:00	20.8	347.8	5.1	0.099	-0.19	154	76.8	12.8	C	D	C	70
12/2/2001 17:00	19.2	336.7	4.8	0.100	0.14	13	77.2	8.3	D	F	D	69
12/2/2001 18:00	15.4	309.7	1.4	0.075	1.57	-1	77.1	39.8	D	F	D	67

GLADNEY-WY032391

Pine Hill Weather Station Data
December 2001

Dec 01 WEYERHAEUSER PINE HILL	TEMP DEGC	WDR DEG	WSP MPH	H2S PPM	DELTAT DEGC	SOLAR WM2	STATMP DEGF	SD1 DEG	STABILITY CLASS Solar	Inversion	Class	°F
12/3/2001 5:00	6.0	345.9	1.0	0.063	0.98	0	77.5	52.5	D	F	D	43
12/3/2001 6:00	5.7	345.6	0.5	0.093	0.75	0	77.7	59.8	D	F	D	42
12/3/2001 7:00	5.0	217.9	1.3	0.014	0.13	11	77.7	24.9	D	F	D	41
12/3/2001 8:00	7.2	349.7	1.1	0.165	-0.15	147	77.7	27.2	C	D	C	45
12/3/2001 9:00	10.2	6.8	2.2	0.195	-0.45	316	77.5	19.1	C	D	C	50
12/3/2001 10:00	13.7	359.6	2.0	0.138	-0.65	467	76.9	28.4	C	D	C	57
12/3/2001 11:00	17.0	4.9	3.2	0.083	-0.49	555	77.3	20.2	C	D	C	63
12/3/2001 12:00	19.6	23.8	2.8	0.028	-0.35	577	77.1	34.4	C	D	C	67
12/3/2001 13:00	21.3	62.9	3.3	0.021	-0.48	539	77.0	37.1	C	D	C	70
12/3/2001 14:00	22.2	91.0	3.2	0.009	-0.40	448	76.9	40.4	C	D	C	72
12/3/2001 15:00								F 19.9	D	E	D	32
12/3/2001 16:00	22.2	87.0	3.7	0.001	-0.02	135	77.1	< 28.9	C	D	C	72
12/3/2001 17:00	19.9	75.9	2.5	0.003	1.06	11	77.2	8.8	D	F	D	68
12/3/2001 18:00	16.5	65.9	1.5	0.071	1.62	-1	77.1	30.1	D	F	D	62

Pine Hill Weather Station Data
December 2001

Dec 01 WEYERHAEUSER PINE HILL	TEMP DEGC	WDR DEG	WSP MPH	H2S PPM	DELTAT DEGC	SOLAR WM2	STATMP DEGF	SD1 DEG	STABILITY CLASS Solar	Inversion	Class	°F
12/4/2001 5:00	7.2	272.4	0.3	0.199	0.28	0	77.2	30.6	D	F	D	45
12/4/2001 6:00	7.5	246.2	0.2	0.149	0.13	0	77.6	53.5	D	F	D	46
12/4/2001 7:00	6.9	58.9	0.7	0.229	0.88	10	77.4	52.9	D	F	D	44
12/4/2001 8:00	9.1	30.8	1.2	0.373	0.20	112	77.5	34.1	C	F	D	48
12/4/2001 9:00	11.7	24.1	1.8	0.358	-0.24	267	77.3	18.3	C	D	C	53
12/4/2001 10:00	16.6	141.8	2.1	0.030	-0.46	444	77.3	40.2	C	D	C	62
12/4/2001 11:00	19.9	157.1	3.0	0.001	-0.70	550	77.2	32.2	C	D	C	68
12/4/2001 12:00	21.2	157.1	2.4	0.001	-0.44	574	77.0	56.7	C	D	C	70
12/4/2001 13:00	22.2	138.8	2.4	0.000	-0.62	536	76.9	36.9	C	D	C	72
12/4/2001 14:00	23.1	110.2	2.9	0.001	-0.37	441	77.0	39.8	C	D	C	74
12/4/2001 15:00	23.3	99.9	3.8	0.001	-0.25	305	77.1	24.4	C	D	C	74
12/4/2001 16:00	22.6	94.8	3.3	0.004	-0.03	140	76.8	19.1	C	D	C	73
12/4/2001 17:00	20.2	104.0	2.3	0.001	0.78	11	77.3	12.4	D	F	D	68
12/4/2001 18:00	16.4	153.9	1.4	0.001	1.47	-1	77.1	13.2	D	F	D	62

Pine Hill Weather Station Data
December 2001

Dec 01 WEYERHAEUSER PINE HILL	TEMP DEGC	WDR DEG	WSP MPH	H2S PPM	DELTAT DEGC	SOLAR WM2	STATMP DEGF	SD1 DEG	STABILITY CLASS Solar	Inversion	Class	°F
12/5/2001 5:00	7.5	55.9	1.3	0.273	1.33	0	77.6	21.6	D	F	D	46
12/5/2001 6:00	6.5	227.3	0.6	0.114	0.79	0	77.7	37.2	D	F	D	44
12/5/2001 7:00	6.5	17.8	0.2	0.145	0.85	9	77.4	43.6	D	F	D	44
12/5/2001 8:00	8.6	153.9	0.4	0.243	-0.13	142	77.6	48.0	C	D	C	47
12/5/2001 9:00	13.0	3.0	0.8	0.201	-0.49	298	77.5	44.7	C	D	C	55
12/5/2001 10:00	16.3	37.0	1.1	0.150	-0.52	470	77.3	35.0	C	D	C	61
12/5/2001 11:00	19.9	148.0	3.5	0.001	-0.57	543	77.2	32.6	C	D	C	68
12/5/2001 12:00	21.6	152.8	3.3	0.001	-0.48	578	77.0	37.8	C	D	C	71
12/5/2001 13:00	23.0	165.2	3.7	0.001	-0.67	528	76.8	32.7	C	D	C	73
12/5/2001 14:00	24.1	164.2	3.9	0.000	-0.53	443	77.1	29.8	C	D	C	75
12/5/2001 15:00	24.1	159.8	4.1	0.000	-0.24	292	77.1	27.9	C	D	C	75
12/5/2001 16:00	23.4	165.0	3.1	0.000	0.10	137	77.0	21.7	C	F	D	74
12/5/2001 17:00	20.9	165.8	1.5	0.001	0.67	13	77.1	17.9	D	F	D	70
12/5/2001 18:00	18.3	136.1	0.5	0.001	1.33	0	77.3	32.3	D	F	D	65

Pine Hill Weather Station Data
December 2001

Dec 01 WEYERHAEUSER PINE HILL	TEMP DEGC	WDR DEG	WSP MPH	H2S PPM	DELTAT DEGC	SOLAR WM2	STATMP DEGF	SD1 DEG	STABILITY CLASS Solar	Inversion	Class	°F
12/6/2001 5:00	11.3	172.3	0.9	0.154	-0.13	0	77.0	34.7	D	D	D	52
12/6/2001 6:00	11.1	186.0	0.9	0.079	-0.16	0	77.0	56.7	D	D	D	52
12/6/2001 7:00	10.7	200.9	1.3	0.027	-0.06	9	77.1	21.2	D	D	D	51
12/6/2001 8:00	11.3	215.2	0.4	0.013	-0.23	120	77.1	51.2	C	D	C	52
12/6/2001 9:00	13.8	171.7	0.6	0.059	-0.46	284	77.3	58.8	C	D	C	57
12/6/2001 10:00	17.9	216.3	1.6	0.004	-1.00	450	77.2	35.6	C	D	C	64
12/6/2001 11:00	21.8	189.8	3.3	0.013	-0.86	545	77.3	41.6	C	D	C	71
12/6/2001 12:00	23.9	197.9	4.1	0.001	-0.79	569	77.1	29.8	C	D	C	75
12/6/2001 13:00	25.1	195.2	5.3	0.001	-0.81	504	77.0	27.3	C	D	C	77
12/6/2001 14:00	25.5	222.8	4.6	0.001	-0.72	370	77.1	28.2	C	D	C	78
12/6/2001 15:00	25.3	215.7	3.5	0.000	-0.40	247	77.1	27.0	C	D	C	78
12/6/2001 16:00	24.5	196.3	2.2	0.000	0.05	131	77.2	19.7	C	F	D	76
12/6/2001 17:00	21.6	180.1	1.3	0.001	0.64	12	77.2	15.6	D	F	D	71
12/6/2001 18:00	18.7	192.2	1.0	0.001	0.95	-1	77.1	33.7	D	F	D	66

Pine Hill Weather Station Data
December 2001

Dec 01 WEYERHAEUSER PINE HILL	TEMP DEGC	WDR DEG	WSP MPH	H2S PPM	DELTAT DEGC	SOLAR WM2	STATMP DEGF	SD1 DEG	STABILITY CLASS Solar	Inversion	Class	^{0}F
12/7/2001 5:00	11.2	124.2	0.6	0.001	0.91	0	77.1	60.0	D	F	D	52
12/7/2001 6:00	11.6	211.4	1.1	0.001	-0.07	0	77.1	27.2	D	D	D	53
12/7/2001 7:00	12.4	199.3	1.3	0.001	-0.19	7	77.1	21.9	D	D	D	54
12/7/2001 8:00	13.0	152.3	2.2	0.001	-0.19	67	77.0	15.8	C	D	C	55
12/7/2001 9:00	14.2	189.3	1.5	0.001	-0.36	156	76.8	33.2	C	D	C	58
12/7/2001 10:00	15.9	226.3	1.6	0.001	-0.58	284	77.0	47.5	C	D	C	61
12/7/2001 11:00	19.2	158.2	1.9	0.008	-0.68	518	76.7	50.7	C	D	C	67
12/7/2001 12:00	22.5	199.8	3.1	0.001	-0.91	564	75.9	32.1	C	D	C	73
12/7/2001 13:00	24.2	7.4	3.4	0.000	0.94	532	75.8	46.3	C	F	D	76
12/7/2001 14:00	24.8	177.1	3.4	0.000	-0.59	454	75.8	37.2	C	D	C	77
12/7/2001 15:00	24.4	2.2	3.2	0.000	0.34	222	75.8	27.9	C	F	D	76
12/7/2001 16:00	23.6	212.8	3.0	0.000	-0.01	116	75.8	16.7	C	D	C	74
12/7/2001 17:00	20.7	181.7	1.5	0.001	0.92	12	75.7	14.8	D	F	D	69
12/7/2001 18:00	17.6	168.2	1.4	0.001	0.69	0	75.6	14.8	D	F	D	64

Pine Hill Weather Station Data
December 2001

Dec 01 WEYERHAEUSER PINE HILL	TEMP DEGC	WDR DEG	WSP MPH	H2S PPM	DELTAT DEGC	SOLAR WM2	STATMP DEGF	SD1 DEG	STABILITY CLASS Solar	Inversion	Class	°F
12/8/2001 5:00	11.2	123.1	0.9	0.002	1.24	0	76.3	47.3	D	F	D	52
12/8/2001 6:00	10.8	189.3	0.6	0.001	0.76	0	76.4	44.9	D	F	D	51
12/8/2001 7:00	10.4	165.8	1.4	0.001	0.34	11	76.6	19.7	D	F	D	51
12/8/2001 8:00	12.7	178.2	1.3	0.002	-0.19	135	76.3	33.0	C	D	C	55
12/8/2001 9:00	16.7	192.8	2.9	0.004	-0.72	291	76.0	19.5	C	D	C	62
12/8/2001 10:00	20.1	208.2	3.9	0.001	-0.91	438	75.9	19.2	C	D	C	68
12/8/2001 11:00	23.0	212.0	5.2	0.001	-1.12	569	75.8	19.4	C	D	C	73
12/8/2001 12:00	24.3	260.3	5.3	0.001	-1.06	430	75.9	24.1	C	D	C	76
12/8/2001 13:00	24.1	288.4	5.8	0.002	-0.94	364	75.8	24.0	C	D	C	75
12/8/2001 14:00	23.1	323.7	7.7	0.084	-0.66	247	75.9	13.0	C	D	C	74
12/8/2001 15:00	22.8	307.3	5.5	0.041	-0.69	264	75.9	24.0	C	D	C	73
12/8/2001 16:00	22.6	280.8	3.5	0.012	-0.31	137	75.7	20.1	C	D	C	73
12/8/2001 17:00	20.9	312.4	2.2	0.047	0.39	15	75.7	24.0	D	F	D	70
12/8/2001 18:00	17.9	181.7	0.3	0.072	1.51	0	75.7	47.4	D	F	D	64

GLADNEY-WY032397

Pine Hill Weather Station Data
December 2001

Dec 01 WEYERHAEUSER PINE HILL	TEMP DEGC	WDR DEG	WSP MPH	H2S PPM	DELTAT DEGC	SOLAR WM2	STATMP DEGF	SD1 DEG	STABILITY CLASS Solar	Inversion	Class	°F
12/9/2001 5:00	13.3	343.7	8.4	0.124	-0.23	0	76.0	11.3	D	D	D	56
12/9/2001 6:00	12.5	348.6	8.1	0.121	-0.25	0	76.0	11.0	D	D	D	55
12/9/2001 7:00	12.3	350.7	7.2	0.111	-0.23	2	76.0	11.2	D	D	D	54
12/9/2001 8:00	12.6	355.6	6.3	0.119	-0.22	23	76.2	10.9	D	D	D	55
12/9/2001 9:00	12.8	8.9	6.6	0.138	-0.24	75	76.2	11.8	C	D	C	55
12/9/2001 10:00	13.1	4.9	6.2	0.137	-0.28	68	76.3	13.1	C	D	C	56
12/9/2001 11:00	13.2	6.0	6.2	0.135	-0.30	128	76.1	13.9	C	D	C	56
12/9/2001 12:00	13.5	6.8	5.3	0.114	-0.37	139	76.0	14.6	C	D	C	56
12/9/2001 13:00	13.8	359.9	5.7	0.104	-0.34	107	76.5	12.8	C	D	C	57
12/9/2001 14:00	14.2	355.9	5.2	0.100	-0.43	170	76.1	15.0	C	D	C	58
12/9/2001 15:00	14.7	1.9	6.1	0.118	-0.34	166	76.5	15.9	C	D	C	58
12/9/2001 16:00	14.6	348.8	7.2	0.119	-0.28	72	76.1	10.6	C	D	C	58
12/9/2001 17:00	14.1	0.8	5.5	0.156	-0.18	7	76.3	9.7	D	D	D	57
12/9/2001 18:00	13.7	11.9	4.2	0.194	-0.16	0	76.5	9.7	D	D	D	57

GLADNEY-WY032398

PINE HILL TRS STUDY - PHASE II

Process Sewer Flow Data

NOVEMBER 30

Source	FLOW MGD	pH	H2S PPM	H2S LB/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	TRS LBS/HR
PULP MILL	1 8	9 7	1.9	1.2	0 18	0.1	0 19	0 1	0	0 0	1 4
POWER & RECOVERY	4.5	9.8	17	26.6	6.3	9.9	0.77	1.2	4.6	7.2	44.9
CAUST AREA TO ASH POND	1.6	>11.0	1000	556.3	0	0.0	0	0.0	0	0.0	556.3
# 1 PM	2.9	6.9	0 09	0.1	0	0 0	0	0 0	0	0 0	0 1
# 2 PM	3 5	7 1	0 13	0 2	0 14	0 2	0	0 0	0 34	0 4	0 7
OCC	1 1			0 0		0 0		0 0		0 0	0 0
ASH POND OVERFLOW TO ASB by-pass Clarifier	13.1		29	132.1	0 95	4.3	0	0.0	0	0.0	136.4
EQ POND DECANT			20	0.0		0.0		0.0		0.0	0.0
CSSC HOTWELL			2.3	0.0		0.0		0.0		0.0	0.0
KRAFT HOTWELL			37	0.0	69	0.0	5.2	0.0	29	0.0	0.0
TOTAL LBS / HR				716.4		14.5		1.3		7.6	739.9

NOVEMBER 30 TREATMENT SYSTEM FLOW

PPM = mg/L

lbs / hr H_2S gain/loss

Location	FLOW MGD	pH	H2S PPM	H2S LB/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	Total TRS PPM	Total TRS LBS/HR
Clarifier Inlet	12	8.5	3.5	14 6	0.87	3 6	0.24	1.0	1.3	5.4	6	25
Clarifier Outlet	12	-	15	62.6	0.93	3.9	0.23	1.0	0	0.0	16	67
Ash Pond Overflow - (includes Caustic Sewer)	7.5	-	29	75.6	0.95	2.5	0	0.0	0	0.0	30	78
ASB Inlet	18 5	11	15	96 5	1 4	9 0	0 2	1 3	0 31	2.0	16.91	109
ASB Outlet - before Riffler	18.5	8.1	0.81	5.2	0	0.0	0	0.0	0	0.0	0.81	5
Polishing Pond Inlet - ASB outlet after Riffler	18.5	-	0.8	5.1	0.17	1.1	0	0.0	0	0.0	0.97	6
Polishing Pond Outlet (Flow MGD*)	18.5	7.6	7.8	50.2	0.19	1.2	0	0 0	0	0.0	7.99	51

lbs / hr H_2S gain/loss	
48.0	CLARIFIER
-91.3	ASB
45.0	POLISH POND

Estimated average flows used, obtained from flow / sulfur balance study

Pond Outlet flows 'normalized' to match inlet flowrate for comparison purposes

DECEMBER 1

Source	FLOW MGD	pH	H2S PPM	H2S LB/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	TRS LBS/HR
PULP MILL	1.8	8.2	38	23.8	0.53	0.3	0.18	0.1	0	0.0	24.2
POWER & RECOVERY	4.5	8.5	17	28.6	4.4	1.2	1.1	1.7	7	11.0	40.5
CAUST AREA TO ASH POND	1.6	>11.0	207	115.2	0	0.0	0	0.0	0	0.0	115.2
# 1 PM	3	7.1	0	0.0	0	0.0	0	0.0	0	0.0	0.0
# 2 PM	3.5	7.6	0	0.0	0	0.0	0	0.0	0.47	0.6	0.6
OCC	1.1			0.0		0.0		0.0		0.0	0.0
ASH POND OVERFLOW TO ASB by-pass Clarifier	13.1		83	378.1	1.5	6.8	0.23	1.0	0	0.0	385.9
EQ POND DECANT				0.0		0.0		0.0		0.0	0.0
CSSC HOTWELL				0.0		0.0		0.0		0.0	0.0
KRAFT HOTWELL				0.0		0.0		0.0		0.0	0.0
TOTAL LBS / HR				543.6		8.4		2.9		11.5	566.4

DECEMBER 1 TREATMENT SYSTEM FLOW

PPM = mg/L

lbs / hr H_2S gain/loss

125.2 CLARIFIER

Clarifier Inlet

FLOW MGD	pH	H2S PPM	H2S LB/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	Total TRS PPM	Total TRS LBS/HR
12	8.5	4	16.7	0.66	2.8	0.24	1.0	3.3	13.8	8	34

Clarifier Outlet

FLOW MGD	pH	H2S PPM	H2S LB/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	Total TRS PPM	Total TRS LBS/HR
12	-	34	141.9	2	8.3	0.28	1.2	0	0.0	36	151

Ash Pond Overflow - (includes Caustic Sewer)

FLOW MGD	pH	H2S PPM	H2S LB/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	Total TRS PPM	Total TRS LBS/HR
7.5	-	83	216.4	1.5	3.9	0.23	0.6	0	0.0	85	221

ASB Inlet

FLOW MGD	pH	H2S PPM	H2S LB/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	Total TRS PPM	Total TRS LBS/HR
18.5	11	32	205.8	2	12.9	0	0.0	0.32	2.1	34.32	221

-202.9 ASB

ASB Outlet - before Riffler

FLOW MGD	pH	H2S PPM	H2S LB/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	Total TRS PPM	Total TRS LBS/HR
18.5	8.1	0.62	4.0	0	0.0	0	0.0	0	0.0	0.62	4

Polishing Pond Inlet - ASB outlet after Riffler

FLOW MGD	pH	H2S PPM	H2S LB/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	Total TRS PPM	Total TRS LBS/HR
18.5	-	0.45	2.9	0.14	0.9	0	0.0	0	0.0	0.59	4

61.4 POLISH POND

Polishing Pond Outlet

Flow MGD	pH	H2S PPM	H2S LB/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	Total TRS PPM	Total TRS LBS/HR
18.5	8.1	10	64.3	0.18	1.2	0	0.0	0	0.0	10.18	65

Estimated average flows used, obtained from flow / sulfur balance study

Pond Outlet flows 'normalized' to match inlet flowrate for comparison purposes

DECEMBER 2

Source	FLOW MGD	pH	H2S PPM	H2S LB/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	TRS LBS/HR
PULP MILL	1 8	6.7	45	28 2	0 57	0 4	0 24	0.2	0	0 0	28 67
POWER & RECOVERY	4.5	8.5	15	23.5	2.5	3.9	0.86	1.4	5.2	8.1	36.9
CAUST AREA TO ASH POND	1.6	>11.0	2300	1279.5	0	0.0	0	0.0	0	0.0	1279.5
# 1 PM	3.2	7.2		0.0		0.0		0.0		0.0	0.0
# 2 PM	3 5	6 4	0 13	0.2	0	0 0	0	0.0	0 48	0 6	0 7
OCC				0.0		0.0		0.0		0.0	0.0
ASH POND OVERFLOW TO ASB by-pass Clarifier	13.1		80	364.4	1.2	5.5	0	0.0	0	0.0	369.9
EQ POND DECANT				0.0		0.0		0.0		0.0	0.0
CSSC HOTWELL				0 0		0 0		0 0		0 0	0 0
KRAFT HOTWELL				0.0		0.0		0.0		0.0	0.0
TOTAL LBS / HR				1695.7		9.7		1.6		8.7	1715.7

DECEMBER 2 TREATMENT SYSTEM FLOW

PPM = mg/L

lbs / hr H_2S gain/loss

Clarifier Inlet

FLOW MGD	pH	H2S PPM	H2S LB/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	Total TRS PPM	Total TRS LBS/HR
12	8.5	7.7	32.1	1.1	4.6	0.33	1.4	4.7	19.6	14	58

193.2 CLARIFIER

Clarifier Outlet

FLOW MGD	pH	H2S PPM	H2S LB/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	Total TRS PPM	Total TRS LBS/HR
12	-	54	225.3	2.5	10.4	0.3	1.3	0	0.0	57	237

Ash Pond Overflow - (includes Caustic Sewer)

FLOW MGD	pH	H2S PPM	H2S LB/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	Total TRS PPM	Total TRS LBS/HR
7.5	-	80	208.6	1.2	3.1	0	0.0	0	0.0	81	212

ASB Inlet

FLOW MGD	pH	H2S PPM	H2S LB/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	Total TRS PPM	Total TRS LBS/HR
18.5	11	33	212.3	1.8	11.6	0	0.0	0.37	2.4	35.17	226

ASB Outlet - before Riffler

FLOW MGD	pH	H2S PPM	H2S LB/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	Total TRS PPM	Total TRS LBS/HR
18.5	8.1	0.6	3.9	0.18	1.2	0.2	1.3	0	0.0	0.98	6

-207.7 ASB

Polishing Pond Inlet - ASB outlet after Riffler

FLOW MGD	pH	H2S PPM	H2S LB/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	Total TRS PPM	Total TRS LBS/HR
18.5	-	0.71	4.6	0	0.0	0	0.0	0	0.0	0.71	5

Polishing Pond Outlet

Flow MGD*	pH	H2S PPM	H2S LB/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	Total TRS PPM	Total TRS LBS/HR
18.5	7.9	12	77.2	0	0.0	0	0.0	0	0.0	12	77

72.6 POLISH POND

Estimated average flows used, obtained from flow / sulfur balance study

Pond Outlet flows 'normalized' to match inlet flowrate for comparison purposes

DECEMBER 3

Source	FLOW MGD	pH	H2S PPM	H2S LB/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	TRS LBS/HR
PULP MILL	1 8	8.3	2 6	1.6	0	0 0	0	0 0	0	0 0	1.6
POWER & RECOVERY	4.5	6.4	16	25 0	6 2	9.7	0	0 0	6 3	9 9	44 6
CAUST AREA TO ASH POND	1 6	>11 0	1500	834 5	0	0 0	0	0 0	0	0 0	834 5
# 1 PM	3.1	6 4		0.0		0 0		0 0		0 0	0 0
# 2 PM	3.5	7 1	0	0.0	0 14	0 2	0	0.0	0	0.0	0.2
OCC				0.0		0.0		0.0		0.0	0.0
ASH POND OVERFLOW TO ASB by-pass Clarifier	13.1		98	446.4	1.3	5.9	0	0.0	0	0.0	452.3
EQ POND DECANT				0.0		0.0		0.0		0.0	0.0
CSSC HOTWELL				0.0		0.0		0.0		0.0	0.0
KRAFT HOTWELL				0.0		0.0		0.0		0.0	0.0
TOTAL LBS / HR				1307.5		15.8		0.0		9.9	1333.2

DECEMBER 3 TREATMENT SYSTEM FLOW

PPM = mg/L

lbs / hr H_2S gain/loss

	Value
CLARIFIER	193.6
ASB	-239.9
POLISH POND	239.9

Location	FLOW MGD	pH	H2S PPM	H2S LB/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	Total TRS PPM	Total TRS LBS/HR
Clarifier Inlet	12	6	2.6	10 8	0 88	3 7	0 31	1 3	2 8	11.7	7	27
Clarifier Outlet	12	-	49	204.4	2.2	9.2	0.38	1.6	0	0.0	52	215
Ash Pond Overflow - (Includes Caustic Sewer)	7 5	-	98	255.6	1.3	3.4	0	0.0	0	0.0	99	259
ASB Inlet	18.5	11.2	39	250 9	2 5	16.1	0 4	2.6	0	0.0	41.9	270
ASB Outlet - before Riffler	18.5	6.3	1.7	10.9	0.47	3.0	0.24	1.5	0	0.0	2.41	16
Polishing Pond Inlet - ASB outlet after Riffler	18.5	-	1.7	10.9	0.44	2.8	0	0.0	0	0.0	2.14	14
Polishing Pond Outlet (Flow MGD*)	18.5	8	39	250.9	0	0.0	0	0.0	0	0.0	39	251

Estimated average flows used, obtained from flow / sulfur balance study

Pond Outlet flows 'normalized' to match inlet flowrate for comparison purposes

DECEMBER 4

Source	FLOW (MGD)	pH	H2S PPM	H2S LB/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	TRS LBS/HR
PULP MILL	1 8	8 4	4 9	3 1	0 45	0 3	0	0 0	0 32	0 2	3 5
POWER & RECOVERY	4.5		35	54.8	11	17.2	1.3	2.0	3.9	6.1	80.1
CAUST AREA TO ASH POND	1 6	>11 0	840	467 3	0	0.0	0	0 0	0	0 0	467 3
# 1 PM	3.2	6 6		0 0		0 0		0 0		0 0	0.0
# 2 PM	3.5	7 1	0	0 0	0	0 0	0	0.0	0 3	0 4	0.4
[illegible]CC				0 0		0 0		0 0		0 0	0 0
ASH POND OVERFLOW TO ASB by-pass Clarifier	13.1		140	637.7	0	0.0	0	0.0	0	0.0	637.7
EC[illegible]OND D[illegible]NT				0.0		0.0		0.0		0.0	0.0
CSSC HOTWELL			2.1	0 0		0.0		0 0		0 0	0 0
KRAFT HOTWELL			34	0.0	33	0.0	3.8	0.0	69	0 0	0.0
TOTAL LBS / HR				1162.8		17.5		2.0		6.7	1189.0

DECEMBER 4 TREATMENT SYSTEM FLOW

PPM = mg/L

lbs / hr H_2S gain/loss

Clarifier Inlet

FLOW MGD	pH	H2S PPM	H2S LB/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	Total TRS PPM	Total TRS LBS/HR
12	11.4	14	58.4	2.5	10.4	0 6	2.5	0.85	3.5	18	75

141.9 CLARIFIER

Clarifier Outlet

FLOW MGD	pH	H2S PPM	H2S LB/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	Total TRS PPM	Total TRS LBS/HR
12	-	48	200.3	2.3	9.6	0.46	1.9	0	0.0	51	212

Ash Pond Overflow - (Includes Caustic Sewer)

FLOW MGD	pH	H2S PPM	H2S LB/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	Total TRS PPM	Total TRS LBS/HR
7 5	-	140	365 1	0	0 0	0	0 0	0	0.0	140	365

ASB Inlet

FLOW MGD	pH	H2S PPM	H2S LB/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	Total TRS PPM	Total TRS LBS/HR
18.5	11.7	43	276.6	2.7	17.4	0.4	2.6	0	0.0	46.1	297

ASB Outlet - before Riffler

FLOW MGD	pH	H2S PPM	H2S LB/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	Total TRS PPM	Total TRS LBS/HR
18.5	8.1	1.6	10.3	0.47	3.0	0	0.0	0	0.0	2.07	13

-259.2 ASB

Polishing Pond Inlet - ASB outlet after Riffler

FLOW MGD	pH	H2S PPM	H2S LB/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	Total TRS PPM	Total TRS LBS/HR
18.5	-	2.7	17.4	0.61	3.9	0	0.0	0	0.0	3.31	21

Polishing Pond Outlet

Flow MGD*	pH	H2S PPM	H2S LB/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	Total TRS PPM	Total TRS LBS/HR
18.5	8 1	41	263.7	0	0.0	0	0.0	0	0.0	41	264

246.4 POLISH POND

Estimated average flows used, obtained from flow / sulfur balance study

Pond Outlet flows 'normalized' to match inlet flowrate for comparison purposes

DECEMBER 5

Source	FLOW MGD	pH	H2S PPM	H2S LBS/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	TRS LBS/HR
PULP MILL	1 8	8.4	19	11 9	0	0 0	0 3	0 2	0	0 0	12.08
POWER & RECOVERY	4 5		2.7	4.2	0	0 0	0	0 0	0	0 0	4 2
CAUST AREA TO ASH POND	1.6	>11.0	900	500.7	0	0.0	0	0.0	0	0.0	500.7
# 1 PM	3.3	6.4		0.0		0.0		0.0		0.0	0.0
# 2 PM	3.5	7.1	0.42	0.5	0	0.0	0	0.0	0	0.0	0.5
OCC				0.0		0.0		0.0		0.0	0.0
ASH POND OVERFLOW TO ASB by-pass Clarifier	13.1		100	455.5	0	0.0	0	0.0	0	0.0	455.5
EQ POND DECANT				0.0		0.0		0.0		0.0	0.0
CSSC HOTWELL				0.0		0.0		0.0		0.0	0.0
KRAFT HOTWELL				0.0		0.0		0.0		0.0	0.0
TOTAL LBS / HR				972.8		0.0		0.2		0.0	973.0

DECEMBER 5 TREATMENT SYSTEM FLOW

lbs / hr
H_2S
[illegible]

PPM = mg/L

Clarifier Inlet

FLOW MGD	pH	H2S PPM	H2S LBS/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	Total TRS PPM	Total TRS LBS/HR
12	9.9	0.55	2.3	0	0.0	0	0.0	0	0.0	1	2

227.2
CLARIFIER

Clarifier Outlet

FLOW MGD	pH	H2S PPM	H2S LBS/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	Total TRS PPM	Total TRS LBS/HR
12	-	55	229.5	0.79	3.3	0	0.0	0	0.0	56	233

Ash Pond Overflow - (Includes Caustic Sewer)

FLOW MGD	pH	H2S PPM	H2S LBS/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	Total TRS PPM	Total TRS LBS/HR
7.5	-	100	260.8	0	0.0	0	0.0	0	0.0	100	261

ASB Inlet

FLOW MGD	pH	H2S PPM	H2S LBS/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	Total TRS PPM	Total TRS LBS/HR
18.5	11.7	57	366.6	0	0 0	0	0 0	0 31	2.0	57 31	369

ASB Outlet - before Riffler

FLOW MGD	pH	H2S PPM	H2S LBS/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	Total TRS PPM	Total TRS LBS/HR
18.5	9	10	64.3	0.33	2.1	0	0.0	0	0.0	10.33	66

-314.5
ASB

Polishing Pond Inlet - ASB outlet after Riffler

FLOW MGD	pH	H2S PPM	H2S LBS/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	Total TRS PPM	Total TRS LBS/HR
18.5	-	8.1	52.1	0.83	5.3	0	0.0	0	0.0	8.93	57

Polishing Pond Outlet

Flow MGD*	pH	H2S PPM	H2S LBS/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	Total TRS PPM	Total TRS LBS/HR
18 5	7 9	49	315 2	0	0 0	0	0.0	0	0.0	49	315

263.1
POLISH
POND

Estimated average flows used, obtained from flow / sulfur balance study
Pond Outlet flows 'normalized' to match inlet flowrate for comparison purposes

DECEMBER 6

Source	FLOW MGD	pH	H2S PPM	H2S LBS/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	TRS LBS/HR
PULP MILL	1.8	8.4	6.2	3.9	0	0.0	0	0.0	0	0.0	3.88
POWER & RECOVERY	4.5		24	37 6	0.95	1.5	0	0.0	6 5	10.2	49.2
CAUST AREA TO ASH POND	1.6	>11.0	870	484.0	0	0.0	0	0.0	0	0.0	484.0
# 1 PM	3.3	8.4	0 51	0 6	0	0 0	0	0 0	0	0 0	0.6
# 2 PM	3.5	7.1	0.16	0.2	0 18	0 2	0	0 0	0 28	0.3	0.8
OCC				0.0		0.0		0.0		0.0	0.0
ASH POND OVERFLOW TO ASB by-pass Clarifier	13.1		41	186.7	0.41	1.9	0	0.0	0	0.0	188.6
EQ POND DECANT				0.0		0.0		0.0		0.0	0.0
CSSC HOTWELL				0 0		0 0		0 0		0.0	0.0
KRAFT HOTWELL				0.0		0.0		0.0		0.0	0.0
TOTAL LBS / HR				713.0		3.6		0.0		10.5	727.0

DECEMBER 6 TREATMENT SYSTEM FLOW

PPM = mg/L

lbs / hr H_2S - gain/loss

217.0 CLARIFIER

Clarifier Inlet

FLOW MGD	pH	H2S PPM	H2S LBS/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	Total TRS PPM	Total TRS LBS/HR
12	9.6	6	25.0	0.61	2.5	0.36	1.5	1.6	6.7	9	36

Clarifier Outlet

FLOW MGD	pH	H2S PPM	H2S LBS/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	Total TRS PPM	Total TRS LBS/HR
12	-	58	242.0	0.48	2.0	0.35	1.5	0.41	1.7	59	247

Ash Pond Overflow - (includes Caustic Sewer)

FLOW MGD	pH	H2S PPM	H2S LBS/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	Total TRS PPM	Total TRS LBS/HR
7.5	-	41	106 9	0.41	1.1	0	0.0	0	0.0	41	108

ASB Inlet

FLOW MGD	pH	H2S PPM	H2S LBS/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	Total TRS PPM	Total TRS LBS/HR
18.5	11	56	360.2	0.77	5.0	0	0.0	0	0.0	56.77	365

-319.7 ASB

ASB Outlet - before Riffler

FLOW MGD	pH	H2S PPM	H2S LBS/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	Total TRS PPM	Total TRS LBS/HR
18.5	8.7	9.1	58.5	0	0.0	0.25	1.6	0	0.0	9.35	60

Polishing Pond Inlet - ASB outlet after Riffler

FLOW MGD	pH	H2S PPM	H2S LBS/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	Total TRS PPM	Total TRS LBS/HR
18.5	-	6.3	40.5	0.28	1.8	0.22	1.4	0	0.0	6.8	44

261.8 POLISH POND

Polishing Pond Outlet

Flow MGD*	pH	H2S PPM	H2S LBS/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	Total TRS PPM	Total TRS LBS/HR
18 5	8	47	302 3	0	0 0	0	0 0	0	0.0	47	302

Estimated average flows used, obtained from flow / sulfur balance study

Pond Outlet flows 'normalized' to match inlet flowrate for comparison purposes

DECEMBER 7

Source	FLOW MGD	pH	H2S PPM	H2S LB/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	TRS LBS/HR
PULP MILL	1.8	8.4	12	7.5	0.22	0.1	0	0.0	0.36	0.2	7.87
POWER & RECOVERY	4.5		38	59.5	7.8	12.2	1.9	3.0	11	17.2	91.8
CAUST AREA TO ASH POND	1.6	>11.0	70	38.9	0	0.0	0	0.0	0	0.0	38.9
# 1 PM	3.3	6.4	0.56	0.6	0	0.0	0	0.0	0	0.0	0.6
# 2 PM	3.5	7.1	0.33	0.4	0	0.0	0	0.0	0	0.0	0.4
OCC				0.0		0.0		0.0		0.0	0.0
ASH POND OVERFLOW TO ASB by-pass Clarifier	13.1		32	145.8	0.43	2.0	0	0.0	0	0.0	147.7
EQ POND DECANT				0.0		0.0		0.0		0.0	0.0
CSSC HOTWELL				0.0		0.0		0.0		0.0	0.0
KRAFT HOTWELL				0.0		0.0		0.0		0.0	0.0
TOTAL LBS / HR				252.7		14.3		3.0		17.4	287.4

DECEMBER 7 TREATMENT SYSTEM FLOW

PPM = mg/L

lbs / hr H_2S gain/loss

Location	FLOW MGD	pH	H2S PPM	H2S LB/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	Total TRS PPM	Total TRS LBS/HR
Clarifier Inlet	12	8.1	8.1	33.8	0.73	3.0	0.61	2.5	3.3	13.8	13	53
Clarifier Outlet	12	-	37	154.4	0.64	2.7	0.42	1.8	1.6	6.7	40	165
Ash Pond Overflow - (Includes Caustic Sewer)	7.5	-	32	83.4	0.43	1.1	0	0.0	0	0.0	32	85
ASB Inlet	18.5	9.8	31	199.4	0.55	3.5	0.41	2.6	1.8	11.6	33.76	217
ASB Outlet - before Riffler	18.5	7.8	14	90.1	0.24	1.5	0.27	1.7	0	0.0	14.51	93
Polishing Pond Inlet - ASB outlet after Riffler	18.5	-	10	64.3	0.29	1.9	0.21	1.4	0	0.0	10.5	68
Polishing Pond Outlet (Flow MGD*)	18.5	8	46	295.9	0	0.0	0	0.0	0	0.0	46	296

H_2S gain/loss (lbs / hr)	
CLARIFIER	120.6
ASB	-135.1
POLISH POND	231.6

Estimated average flows used, obtained from flow / sulfur balance study

Pond Outlet flows 'normalized' to match inlet flowrate for comparison purposes

DECEMBER 8

Source	FLOW MGD	pH	H2S PPM	H2S LBS/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	TRS LBS/HR
PULP MILL	1.8	8.4	31	19.4	0	0.0	0.2	0.1	0	0.0	19.53
POWER & RECOVERY	4.5		57	89.2	3.9	6.1	1.8	2.8	17	26.6	124.7
CAUST AREA TO ASH POND	1.6	>11.0	190	105.7	0	0.0	0	0.0	0	0.0	105.7
# 1 PM	3.3	6.4	0.17	0.2	0	0 0	0	0 0	0	0 0	0.2
# 2 PM	3.5	7 1	0 37	0.5	0.15	0 2	0	0.0	0	0 0	0 6
OCC				0.0		0.0		0.0		0.0	0.0
ASH POND OVERFLOW TO ASB by-pass Clarifier	13.1		44	200.4	0.35	1.6	0	0.0	0	0.0	202.0
EQ POND DECANT				0.0		0.0		0.0		0.0	0.0
CSSC HOTWELL				0.0		0.0		0.0		0 0	0.0
KRAFT HOTWELL				0.0		0.0		0.0		0.0	0.0
TOTAL LBS / HR				415.3		7.9		2.9		26.6	452.8

lbs / hr
H_2S
gain/loss

45.9
CLARIFIER

-155.7
ASB

200.7
POLISH POND

DECEMBER 8 TREATMENT SYSTEM FLOW

PPM = mg/L

Location	FLOW MGD	pH	H2S PPM	H2S LBS/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	Total TRS PPM	Total TRS LBS/HR
Clarifier Inlet	12	8.7	15	62 6	0 68	2 8	0 41	1.7	3.4	14.2	19	81
Clarifier Outlet	12	-	26	108 5	0.69	2.9	0 25	1 0	1 2	5.0	28	117
Ash Pond Overflow - (Includes Caustic Sewer)	7 5	-	44	114 7	0 35	0 9	0	0 0	0	0 0	44	116
ASB Inlet	18 5	9 8	33	212 3	0 92	5.9	0 41	2 6	1.3	8 4	35.63	229
ASB Outlet - before Riffler	18.5	7.8	16	102.9	0.31	2.0	0.29	1.9	0	0.0	16.6	107
Polishing Pond Inlet - ASB outlet after Riffler	18.5	-	8.8	56.6	0	0.0	0	0.0	0	0.0	8.8	57
Polishing Pond Outlet (Flow MGD*)	18 5	8.2	40	257.3	0	0.0	0	0.0	0	0.0	40	257

Estimated average flows used, obtained from flow / sulfur balance study

Pond Outlet flows 'normalized' to match inlet flowrate for comparison purposes

DECEMBER 9

Source	FLOW MGD	pH	H2S PPM	H2S LBS/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	TRS LBS/HR
PULP MILL	1.8	8.4	11	6.9	0	0.0	0.34	0.2	0.29	0.2	7.28
POWER & RECOVERY	4.5		48	75.1	3.7	5.8	1.6	2.5	18	28.2	111.6
CAUST AREA TO ASH POND	1.6	>11.0	1300	723.2	1000	556.3	120	66.8	46	25.6	1371.9
# 1 PM	3.3	6 4	0 37	0 4	0	0 0	0	0 0	0	0.0	0.4
# 2 PM	3.5	7 1	0 37	0 5	0 15	0 2	0	0 0	0	0.0	0.6
OCC				0.0		0.0		0.0		0.0	0.0
ASH POND OVERFLOW TO ASB by-pass Clarifier	13.1		27	123.0	0	0.0	0	0.0	0	0.0	123.0
EQ POND DECANT				0.0		0.0		0.0		0.0	0.0
CSSC HOTWELL				0.0		0 0		0.0		0.0	0.0
KRAFT HOTWELL				0.0		0.0		0.0		0.0	0.0
TOTAL LBS / HR				929.1		562.3		69.5		53.9	1614.8

lbs / hr
H_2S
gain/loss

50.1
CLARIFIER

-100.3
ASB

216.1
POLISH
POND

DECEMBER 9 TREATMENT SYSTEM FLOW

PPM = mg/L

Location	FLOW MGD	pH	H2S PPM	H2S LBS/HR	MESH PPM	MESH LBS/HR	DMS PPM	DMS LBS/HR	DMDS PPM	DMDS LBS/HR	Total TRS PPM	Total TRS LBS/HR
Clarifier Inlet	12	8.7	10	41.7	0.78	3.3	0.52	2.2	4.7	19.6	16	67
Clarifier Outlet	12	-	22	91.8	0.41	1.7	0.36	1.5	1.4	5.8	24	101
Ash Pond Overflow - (Includes Caustic Sewer)	7 5	-	27	70 4	0	0 0	0	0 0	0	0 0	27	70
ASB Inlet	18.5	9.8	23	147.9	0.55	3 5	0	0 0	1.4	9.0	24.95	180
ASB Outlet - before Riffler	18.5	7.8	6.7	43.1	0	0.0	0.2	1.3	0	0.0	6.9	44
Polishing Pond Inlet - ASB outlet after Riffler	18.5	-	7.4	47.6	0	0.0	0.17	1.1	0	0.0	7.57	49
Polishing Pond Outlet (Flow MGD*)	18.5	8.2	41	263.7	0	0.0	0	0.0	0	0.0	41	264

Estimated average flows used, obtained from flow / sulfur balance study

Pond Outlet flows 'normalized' to match inlet flowrate for comparison purposes

TEST PERIOD AVG (11/30 - 12/9) TREATMENT SYSTEM FLOW

PPM = mg/L

lbs / hr
H_2S
gain/loss

Clarifier Inlet

FLOW	pH	H2S		MESH		DMS		DMDS		Total TRS	
MGD		PPM	LB/HR	PPM	LBS/HR	PPM	LBS/HR	PPM	LBS/HR	PPM	LBS/HR
12	9.0	7.1	29.8	0.9	3.7	0.4	1.5	2.6	10.8	11.0	45.8

136.2

CLARIFIER

Clarifier Outlet

FLOW	pH	H2S		MESH		DMS		DMDS		Total TRS	
MGD		PPM	LB/HR	PPM	LBS/HR	PPM	LBS/HR	PPM	LBS/HR	PPM	LBS/HR
12	-	39.8	166.1	1.3	5.4	0.3	1.3	0.5	1.9	41.9	174.6

Ash Pond Overflow - (includes Caustic Sewer)

FLOW	pH	H2S		MESH		DMS		DMDS		Total TRS	
MGD		PPM	LB/HR	PPM	LBS/HR	PPM	LBS/HR	PPM	LBS/HR	PPM	LBS/HR
7.5	-	67.4	175.8	0.6	1.6	0.0	0.1	0.0	0.0	68.0	177.4

ASB Inlet

FLOW	pH	H2S		MESH		DMS		DMDS		Total TRS	
MGD		PPM	LB/HR	PPM	LBS/HR	PPM	LBS/HR	PPM	LBS/HR	PPM	LBS/HR
18.5	10.8	36.2	232.9	1.3	8.5	0.2	1.2	0.6	3.7	38.3	246.2

ASB Outlet - before Riffler

FLOW	pH	H2S		MESH		DMS		DMDS		Total TRS	
MGD		PPM	LB/HR	PPM	LBS/HR	PPM	LBS/HR	PPM	LBS/HR	PPM	LBS/HR
18.5	8.2	6.1	39.3	0.2	1.3	0.1	0.9	0.0	0.0	6.5	41.5

-202.6

ASB

Polishing Pond Inlet - ASB outlet after Riffler

FLOW	pH	H2S		MESH		DMS		DMDS		Total TRS	
MGD		PPM	LB/HR	PPM	LBS/HR	PPM	LBS/HR	PPM	LBS/HR	PPM	LBS/HR
18.5	-	4.7	30.2	0.3	1.8	0.1	0.4	0.0	0.0	5.0	32.4

Polishing Pond Outlet

Flow	pH	H2S		MESH		DMS		DMDS		Total TRS	
MGD*		PPM	LB/HR	PPM	LBS/HR	PPM	LBS/HR	PPM	LBS/HR	PPM	LBS/HR
18.5	8.0	33.3	214.1	0.0	0.2	0.0	0.0	0.0	0.0	33.3	214.3

183.9

POLISH POND

Estimated average flows used, obtained from flow / sulfur balance study

Pond Outlet flows 'normalized' to match inlet flowrate for comparison purposes

PINE HILL TRS STUDY - PHASE II

Wastewater Lab Test Results

Weyerhaeuser Analytical & Testing Services
32901 Weyerhaeuser Way South
Federal Way, WA 98003

Service Request 01-3322

Report
Pine Hill TRS Field Study
Units in mg/L (PPM)

Client ID	Sample Date	Sample Time	Lab ID	Hydrogen sulfide 624-92-0	Methyl mercaptan 74-93-1	Dimethyl sulfide 75-18-3	Dimethyl disulfide 624-92-0	Date Analyzed
#1 PM	11/30/01	9:45	004	**0.09**	<0.13	<0.17	<0.26	12/06/01
#1 PM	12/01/01	8:40	016	<0.09	<0.13	<0.17	<0.26	12/06/01
#1 PM	12/02/01	9:10	028	<0.09	<0.13	<0.17	<0.26	12/06/01
#1 PM	12/03/01	10:30	049	<0.09	<0.13	<0.17	<0.26	12/13/01
#1 PM	12/04/01	9:15	061	<0.09	<0.13	<0.17	<0.26	12/13/01
#1 PM	12/05/01	9:00	073	<0.09	<0.13	<0.17	<0.26	12/13/01
#1 PM	12/06/01	11:00	094	**0.51**	<0.13	<0.17	<0.26	12/18/01
#1 PM	12/07/01	10:00	106	**0.56**	<0.14	<0.18	<0.27	12/19/01
#1 PM	12/08/01	8:00	122	**0.17**	<0.13	<0.17	<0.26	12/19/01
#1 PM	12/09/01	8:00	134	**0.37**	<0.13	<0.17	<0.26	12/19/01
#2 PM	11/30/01	9:45	005	**0.13**	**0.14**	<0.17	**0.34**	12/06/01
#2 PM	12/01/01	8:40	017	<0.09	<0.13	<0.17	**0.47**	12/06/01
#2 PM	12/02/01	9:10	029	**0.13**	<0.13	<0.17	**0.48**	12/06/01
#2 PM	12/03/01	10:30	050	<0.09	**0.14**	<0.17	<0.26	12/13/01
#2 PM	12/04/01	9:15	062	<0.09	<0.13	<0.17	**0.30**	12/13/01
#2 PM	12/05/01	9:00	074	**0.42**	<0.13	<0.17	<0.26	12/13/01
#2 PM	12/06/01	11:00	095	**0.16**	**0.18**	<0.17	**0.28**	12/19/01
#2 PM	12/07/01	10:00	107	**0.33**	<0.13	<0.17	<0.26	12/19/01
#2 PM	12/08/01	8:00	123	**0.37**	**0.15**	<0.17	<0.26	12/19/01
#2 PM	12/09/01	8:00	135	**0.37**	**0.15**	<0.17	<0.26	12/19/01
APO	11/30/01	9:45	006	**29**	**0.95**	<0.17	<0.26	12/07/01
APO	12/01/01	8:40	018	**83**	**1.5**	**0.23**	<0.26	12/07/01
APO	12/02/01	9:10	030	**80**	**1.2**	<0.17	<0.26	12/07/01
APO	12/03/01	10:30	051	**98**	**1.3**	<0.19	<0.26	12/17/01
APO	12/04/01	9:15	063	**140**	<0.13	<0.17	<0.26	12/17/01
APO	12/05/01	9:00	075	**100**	<0.13	<0.17	<0.26	12/17/01
APO	12/06/01	11:00	096	**41**	**0.41**	<0.17	<0.26	01/02/02
APO	12/07/01	10:00	108	**32**	**0.43**	<0.17	<0.26	01/02/02
APO	12/08/01	8:00	124	**44**	**0.35**	<0.17	<0.26	12/26/01
APO	12/09/01	8:00	136	**27**	<0.13	<0.17	<0.26	12/26/01
ASB In	11/30/01	9:45	009	**15**	**1.4**	**0.20**	**0.31**	12/10/01
ASB In	12/01/01	8:40	021	**32**	**2.0**	<0.17	**0.32**	12/10/01
ASB In	12/02/01	9:10	033	**33**	**1.8**	<0.17	**0.37**	12/10/01
ASB In	12/03/01	10:30	054	**39**	**2.5**	**0.40**	<0.26	12/14/01
ASB In	12/04/01	9:15	066	**43**	**2.7**	**0.40**	<0.26	12/14/01
ASB In	12/05/01	9:00	078	**57**	<0.14	<0.18	**0.34**	12/17/01
ASB In	12/06/01	11:00	099	**56**	**0.77**	<0.17	<0.26	12/20/01
ASB In	12/07/01	10:00	111	**31**	**0.55**	**0.41**	**1.8**	12/20/01
ASB In	12/08/01	8:00	127	**33**	**0.92**	**0.41**	**1.3**	12/20/01
ASB In	12/09/01	8:00	139	**23**	**0.55**	<0.17	**1.4**	12/27/01

J - Indicates the compound was detected below the calibration range. The reported value is an estimate.

Approved: Randy Eatherton Date: 01/07/02
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Weyerhaeuser Analytical & Testing Services
32901 Weyerhaeuser Way South
Federal Way, WA 98003

Service Request 01-3322

Prelimanry Report
Pine Hill TRS Field Study
Units in mg/L (PPM)

Client ID	Sample Date	Sample Time	Lab ID	Hydrogen sulfide 624-92-0	Methyl mercaptan 74-93-1	Dimethyl sulfide 75-18-3	Dimethyl disulfide 624-92-0	Date Analyzed
ASB Out	11/30/01	9:45	010	**0.81**	<0.13	<0.17	<0.26	12/11/01
ASB Out	12/01/01	8:40	022	**0.62**	<0.13	<0.17	<0.26	12/11/01
ASB Out	12/02/01	9:10	034	**0.60**	**0.18**	**0.20**	<0.26	12/11/01
ASB Out	12/03/01	10:30	055	**1.7**	**0.47**	**0.24**	<0.26	12/14/01
ASB Out	12/04/01	9:15	067	**1.6**	**0.47**	<0.17	<0.26	12/14/01
ASB Out	12/05/01	9:00	079	**10**	**0.33**	<0.17	<0.26	12/17/01
ASB Out	12/06/01	11:00	100	**9.1**	<0.13	**0.25**	<0.26	12/20/01
ASB Out	12/07/01	10:00	112	**14**	**0.24**	**0.27**	<0.26	12/20/01
ASB Out	12/08/01	8:00	128	**16**	**0.31**	**0.29**	<0.26	12/20/01
ASB Out	12/09/01	8:00	140	**6.7**	<0.13	**0.20**	<0.26	12/27/01
Clar In	11/30/01	9:45	007	**3.5**	**0.87**	**0.24**	**1.3**	12/06/01
Clar In	12/01/01	8:40	019	**4.0**	**0.66**	**0.24**	**3.3**	12/06/01
Clar In	12/02/01	9:10	031	**7.7**	**1.1**	**0.33**	**4.7**	12/06/01
Clar In	12/03/01	10:30	052	**2.6**	**0.88**	**0.31**	**2.8**	12/13/01
Clar In	12/04/01	9:15	064	**14**	**2.5**	**0.60**	**0.85**	12/14/01
Clar In	12/05/01	9:00	076	<0.09	<0.13	<0.17	<0.26	12/14/01
Clar In	12/05/01	9:00	076	**0.55**	<0.13	<0.17	<0.26	12/14/01
Clar In	12/06/01	11:00	097	**6.0**	**0.61**	**0.36**	**1.6**	12/21/01
Clar In	12/07/01	10:00	109	**8.1**	**0.73**	**0.61**	**3.3**	12/21/01
Clar In	12/08/01	8:00	125	**15**	**0.68**	**0.41**	**3.4**	01/02/02
Clar In	12/09/01	8:00	137	**10**	**0.78**	**0.52**	**4.7**	12/26/01
Clar Out	11/30/01	9:45	008	**15**	**0.93**	**0.23**	<0.26	12/06/01
Clar Out	12/01/01	8:40	020	**34**	**2.0**	**0.28**	<0.26	12/07/01
Clar Out	12/01/01	8:40	020Dup	**33**	**1.1**	<0.17	<0.26	01/02/02
Clar Out	12/02/01	9:10	032	**54**	**2.5**	**0.30**	<0.26	12/07/01
Clar Out	12/03/01	10:30	053	**49**	**2.2**	**0.38**	<0.26	12/14/01
Clar Out	12/04/01	9:15	065	**48**	**2.3**	**0.46**	<0.26	12/14/01
Clar Out	12/05/01	9:00	077	**55**	**0.79**	<0.17	<0.26	12/14/01
Clar Out	12/06/01	11:00	098	**58**	**0.48**	**0.35**	**0.41**	12/21/01
Clar Out	12/07/01	10:00	110	**37**	**0.64**	**0.42**	**1.6**	12/21/01
Clar Out	12/08/01	8:00	126	**26**	**0.69**	**0.25**	**1.2**	12/26/01
Clar Out	12/09/01	8:00	138	**22**	**0.41**	**0.36**	**1.4**	12/27/01
Lime Kiln	11/30/01	9:45	003	**1000**	<1.1	<1.4	<2.1	12/05/01
Lime Kiln	12/01/01	8:40	015	**207**	<5.3	<6.8	<10	12/05/01
Lime Kiln	12/02/01	9:10	027	**2300**	<5.3	<6.8	<10	12/05/01
Lime Kiln	12/03/01	10:30	048	**1500**	<5.3	<6.8	<10	12/28/01
Lime Kiln	12/04/01	9:15	060	**840**	<5.3	<6.8	<10	12/28/01
Lime Kiln	12/05/01	9:00	072	**900**	<5.3	<6.8	<10	12/28/01
Lime Kiln	12/06/01	11:00	093	**870**	<5.3	<6.8	<10	12/28/01
Lime Kiln	12/07/01	10:00	105	**70**	<5.3	<6.8	<10	12/28/01
Lime Kiln	12/08/01	8:00	121	**190**	<5.3	<6.8	<10	12/28/01
Lime Kiln	12/09/01	8:00	133	**1300**	**1000**	**120**	**46**	12/28/01

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Weyerhaeuser Analytical & Testing Services
32901 Weyerhaeuser Way South
Federal Way, WA 98003

Service Request 01-3322

Prelimanry Report
Pine Hill TRS Field Study
Units in mg/L (PPM)

Client ID	Sample Date	Sample Time	Lab ID	Hydrogen sulfide 624-92-0	Methyl mercaptan 74-93-1	Dimethyl sulfide 75-18-3	Dimethyl disulfide 624-92-0	Date Analyzed
P. Pond Out	11/30/01	9:45	012	**7.8**	**0.19**	<0.17	<0.26	12/11/01
P. Pond Out	12/01/01	8:40	024	**10**	**0.18**	<0.17	<0.26	12/11/01
P. Pond Out	12/02/01	9:10	036	**12**	**0.18**	<0.17	<0.26	12/11/01
P. Pond Out	12/03/01	10:30	057	**39**	<0.13	<0.17	<0.26	12/17/01
P. Pond Out	12/04/01	9:15	069	**41**	<0.13	<0.17	<0.26	12/17/01
P. Pond Out	12/05/01	9:00	081	**49**	<0.13	<0.17	<0.26	12/17/01
P. Pond Out	12/06/01	11:00	102	**47**	<0.13	<0.17	<0.26	12/21/01
P. Pond Out	12/07/01	10:00	114	**46**	<0.13	<0.17	<0.26	12/21/01
P. Pond Out	12/08/01	8:00	130	**40**	<0.13	<0.17	<0.26	12/26/01
P. Pond Out	12/09/01	8:00	142	**41**	<0.13	<0.17	<0.26	12/27/01
Power/Rec	11/30/01	9:45	002	**17**	**6.3**	**0.77**	**4.6**	12/04/01
Power/Rec	12/01/01	8:40	014	**17**	**4.4**	**1.1**	**7.0**	12/05/01
Power/Rec	12/02/01	9:10	026	**15**	**2.5**	**0.88**	**5.2**	12/05/01
Power/Rec	12/03/01	10:30	047	**16**	**6.2**	<0.85	**6.3**	12/27/01
Power/Rec	12/04/01	9:15	059	**35**	**11**	**1.3**	**3.9**	12/27/01
Power/Rec	12/05/01	9:00	071	**2.7**	<0.15	<0.19	<0.29	12/27/01
Power/Rec	12/06/01	11:00	092	**24**	**0.95**	<0.85	**6.5**	12/27/01
Power/Rec	12/07/01	10:00	104	**38**	**7.8**	**1.9**	**11**	12/27/01
Power/Rec	12/08/01	8:00	120	**57**	**3.9**	**1.8**	**17**	12/27/01
Power/Rec	12/09/01	8:00	132	**48**	**3.7**	**1.6**	**18**	12/27/01
PPI #1	12/03/01	11:50	037	**12**	**0.42**	<0.17	<0.26	12/12/01
PPI #1	12/06/01	2:15	082	**38**	**0.51**	**0.54**	<0.26	12/18/01
PPI #2	12/03/01	11:40	038	**10**	**0.37**	<0.17	<0.26	12/12/01
PPI #2	12/06/01	2:03	083	**41**	**0.55**	**0.25**	**0.30**	12/18/01
PPI #3	12/03/01	11:30	039	**9.4**	**0.37**	**0.19**	<0.26	12/12/01
PPI #3	12/06/01	1:50	084	**37**	**0.51**	**0.32**	**0.45**	12/18/01
PPI #4	12/03/01	11:15	040	**16**	**0.31**	<0.17	<0.26	12/12/01
PPI #4	12/06/01	1:25	085	**38**	<0.13	<0.17	<0.26	12/18/01
PPI #4	12/07/01	14:27	115	**35**	<0.13	<0.17	<0.26	12/19/01
PPI #5	12/03/01	11:05	041	**12**	**0.31**	<0.17	<0.26	12/12/01
PPI #5	12/06/01	1:12	086	**45**	<0.13	<0.17	<0.26	12/18/01
PPI #6	12/03/01	10:50	042	**17**	**0.32**	<0.17	<0.26	12/12/01
PPI #6	12/06/01	1:00	087	**48**	<0.13	<0.17	<0.26	12/18/01
PPI #7	12/03/01	10:30	043	**19**	**0.22**	<0.17	<0.26	12/12/01
PPI #7	12/06/01	12:05	088	**43**	<0.14	<0.18	<0.27	12/18/01
PPI #8	12/03/01	10:20	044	**13**	**0.20**	<0.17	<0.26	12/12/01
PPI #8	12/06/01	11:50	089	**45**	<0.13	<0.17	<0.26	12/18/01
PPI #8	12/07/01	13:45	116	**41**	<0.13	<0.17	<0.26	12/19/01
PPI #9	12/03/01	10:05	045	**20**	**0.21**	<0.17	<0.26	12/12/01
PPI #9	12/06/01	11:25	090	**45**	<0.13	<0.17	<0.26	12/18/01
PPI #9	12/07/01	13:30	117	**42**	<0.13	<0.17	<0.26	12/19/01

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Service Request 01-3322

Prelimanry Report
Pine Hill TRS Field Study
Units in mg/L (PPM)

Client ID	Sample Date	Sample Time	Lab ID	Hydrogen sulfide 624-92-0	Methyl mercaptan 74-93-1	Dimethyl sulfide 75-18-3	Dimethyl disulfide 624-92-0	Date Analyzed
Pulp Mill	11/30/01	9:45	001	**1.9**	**0.18**	**0.19**	<0.26	12/04/01
Pulp Mill	12/01/01	8:40	013	**38**	**0.53**	**0.18**	<0.26	12/05/01
Pulp Mill	12/02/01	9:10	025	**45**	**0.57**	**0.24**	<0.26	12/13/01
Pulp Mill	12/03/01	10:30	046	**2.6**	<0.13	<0.17	<0.26	12/13/01
Pulp Mill	12/04/01	9:15	058	**4.9**	**0.45**	<0.17	**0.32**	12/13/01
Pulp Mill	12/05/01	9:00	070	**19**	<0.13	**0.30**	<0.26	12/13/01
Pulp Mill	12/06/01	11:00	091	**6.2**	<0.13	<0.17	<0.26	12/20/01
Pulp Mill	12/07/01	10:00	103	**11**	<0.13	<0.17	**0.30**	12/20/01
Pulp Mill	12/07/01	10:00	103DUp	**12**	**0.22**	<0.17	**0.36**	01/02/02
Pulp Mill	12/08/01	8:00	119	**31**	<0.14	**0.20**	<0.26	12/20/01
Pulp Mill	12/09/01	8:00	131	**11**	<0.14	**0.34**	**0.29**	12/20/01
Riff Out	11/30/01	9:45	011	**0.8**	**0.17**	<0.17	<0.26	12/11/01
Riff Out	12/01/01	8:40	023	**0.45**	**0.14**	<0.17	<0.26	12/11/01
Riff Out	12/02/01	9:10	035	**0.71**	<0.13	<0.17	<0.26	12/11/01
Riff Out	12/03/01	10:30	056	**1.7**	**0.44**	<0.17	<0.26	12/14/01
Riff Out	12/04/01	9:15	068	**2.7**	**0.61**	<0.17	<0.26	12/14/01
Riff Out	12/05/01	9:00	080	**8.1**	**0.83**	<0.17	<0.26	12/17/01
Riff Out	12/06/01	11:00	101	**6.3**	**0.28**	**0.22**	<0.26	12/21/01
Riff Out	12/07/01	10:00	113	**10**	**0.29**	**0.21**	<0.26	12/21/01
Riff Out	12/08/01	8:00	129	**8.8**	<0.13	<0.17	<0.26	12/26/01
Riff Out	12/09/01	8:00	141	**7.4**	<0.13	**0.17**	<0.26	12/27/01
Stripper Feed Tank	12/07/01	13:00	118	**3.4**	<1.06	<1.36	<2.06	12/28/01
Method Blank #1				<0.09	<0.13	<0.17	<0.26	12/03/01
Method Blank #2				<0.09	<0.13	<0.17	<0.26	12/05/01
Method Blank #3				<0.09	<0.13	<0.17	<0.26	12/06/01
Method Blank #4				<0.09	<0.13	<0.17	<0.26	12/07/01
Method Blank #5				<0.09	<0.13	<0.17	<0.26	12/10/01
Method Blank #6				<0.09	<0.13	<0.17	<0.26	12/11/01
Method Blank #7				<0.09	<0.13	<0.17	<0.26	12/12/01
Method Blank #8				<0.09	<0.13	<0.17	<0.26	12/13/01
Method Blank #9				<0.09	<0.13	<0.17	<0.26	12/14/01
Method Blank #10				<0.09	<0.13	<0.17	<0.26	12/17/01
Method Blank #11				<0.09	<0.13	<0.17	<0.26	12/18/01
Method Blank #12				<0.09	<0.13	<0.17	<0.26	12/19/01
Method Blank #13				<0.09	<0.13	<0.17	<0.26	12/20/01
Method Blank #14				<0.09	<0.13	<0.17	<0.26	12/21/01
Method Blank #15				<0.09	<0.13	<0.17	<0.26	12/22/01
Method Blank #16				<0.09	<0.13	<0.17	<0.26	12/26/01
Method Blank #17				<0.09	<0.13	<0.17	<0.26	12/27/01
Method Blank #18				<0.09	<0.13	<0.17	<0.26	12/28/01
Method Blank #19								01/02/02

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Service Request 01-3322

Prelimanry Report
Pine Hill TRS Field Study
Units in % Recovery

Client ID	Sample Date Time	Lab ID	Hydrogen sulfide 624-92-0	Methyl mercaptan 74-93-1	Dimethyl sulfide 75-18-3	Dimethyl disulfide 624-92-0	Date Analyzed
Lab Control Spike #1			137%	NA	NA	NA	12/03/01
Lab Control Spike #2			80%	NA	NA	NA	12/05/01
Lab Control Spike #3			99%	NA	NA	NA	12/06/01
Lab Control Spike #4			78%	NA	NA	NA	12/07/01
Lab Control Spike #5			103%	NA	NA	NA	12/10/01
Lab Control Spike #6			64%	NA	NA	NA	12/11/01
Lab Control Spike #7			112%	NA	NA	NA	12/12/01
Lab Control Spike #8			105%	NA	NA	NA	12/13/01
Lab Control Spike #9			107%	NA	NA	NA	12/14/01
Lab Control Spike #10			129%	NA	NA	NA	12/17/01
Lab Control Spike #11			126%	NA	NA	NA	12/18/01
Lab Control Spike #12			120%	NA	NA	NA	12/19/01
Lab Control Spike #13			110%	NA	NA	NA	12/20/01
Lab Control Spike #14			127%	NA	NA	NA	12/21/01
Lab Control Spike #15			127%	NA	NA	NA	12/22/01
Lab Control Spike #16			100%	NA	NA	NA	12/26/01
Lab Control Spike #17			129%	NA	NA	NA	12/27/01
Lab Control Spike #18			118%	NA	NA	NA	12/28/01
Lab Control Spike #19			88%	NA	NA	NA	01/02/02

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