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SURFACE WATER QUALITY DIVISION
CADILLAC DISTRICT OFFICE

June 26, 2002

VIA US MAIL

Ms. Janice Heuer
MDEQ-WMD
Cadillac District Office
120 W. Chapin
Cadillac, Michigan 49601-2158

Ms. Sy Paulik
MDEQ-SWQD
Cadillac District Office
120 W. Chapin
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Re: Permit # M00836
Williamsburg Receiving & Storage
Williamsburg, Michigan
ISE Project # 02399084-02E

Re: Permit # MI0044741
Williamsburg Receiving & Storage
Williamsburg, Michigan
ISE Project # 02399084-02E

Dear Ms. Heuer and Paulik:

This communication is intended to provide Michigan Department of Environmental Quality (DEQ) staff a progress report regarding efforts to improve operating practices at the referenced site and to provide DEQ staff with a preliminary proposal for Permit modifications as suggested during our conference call on May 15, 2002.

NPDES PERMIT AND COOLING PAD WATER REDIRECTION

During this call we discussed the cessation of surface water discharges and the plugging of Outfall #001. Related to that topic was the perceived imminent need to route the cherry cooling pad water from its normal NPDES destination to a ground water discharge scenario. While this seasonal discharge normally occurs from July to mid-August, the paucity of fruit crop this year suggests that the cooling pad will not operate at the Williamsburg Receiving & Storage (WRS) plant this season. WRS intends to maintain the NPDES permit and compliance with its conditions until such a time as it is apparent that a NPDES discharge is no longer necessary for its operations.

STORMWATER MANAGEMENT ENGINEERING AND PLANNING

Beginning June 10th, Inland Seas Engineering, Inc. (ISE) dispatched surveyors to WRS to conduct a topographic and boundary survey for the purpose of supporting stormwater engineering design. The survey is nearly complete. Included in the survey field acquisition phase is a boundary survey for WRS-owned property, non-owned property north of Angell Road included as permitted discharge areas, the WRS-owned property immediately south of Angell Road where a stormwater retention structure was recently erected. Recorded easements related to all these properties will also be integrated into Site Plans

Topographic surveying has been conducted with sufficient detail for design work in the area surrounding the WRS Plant and out-buildings, including cherry brining areas and the wastewater irrigation pond. Current surveying efforts include topographic surveying of the pond interior. Soundings will be performed below liquid level as part of wastewater engineering efforts described below. Similarly, dye testing of plant piping will be undertaken in accordance with plant wastewater engineering efforts as indicated below and the attached schedule.

Field proofing preliminary survey plot(s) will be initiated today, including determination of "excluded areas", "materials handling areas" and "use areas" as these terms are defined or used in 40 CFR Part 122 and Part 5 Rules promulgated under Part 31 of 1994 PA 451, the Natural Resources and Environmental Protection Act (NREPA). Computer-aided Drafting (CAD) work is being performed concurrent with field acquisition to ensure maximum effectiveness of field data acquisition. It is anticipated that a final Survey Plot will be available for design engineering on or before July 5th.

The proposed stormwater engineering work is intended to mitigate the potential for discharge of pollutants or injurious substances to the waters of the State. Efforts will focus upon segregating flows (to the extent practical) from "excluded" and materials handling areas. Stormwater management planning will include:

- Illicit Discharge Identification and Elimination Plan
- Stormwater Pollution Prevention Plan
  - Structural Controls
  - Operational Controls
- Spill Prevention and Response Plan
- Operator Education and Training

Since NPDES discharges are not anticipated to resume at this site, the goal of stormwater engineering is to develop a stormwater management plan that allows for discharge of stormwater at the site in accordance with Michigan Administrative Code (MAC) R323.2210(c) and MAC R323.2204.

WASTEWATER ENGINEERING

Proposal for Interim Treatment and Groundwater Discharge Measures

The Q1-02 CMR submittal identified suspected exceedances of certain wastewater monitoring parameters. WRS's compliance with MAC R323.2227 evaluation procedures resulted in confirmation of the suspected Q1-02 exceedances. That finding supports the conclusion that wastewater chemistry of the irrigation pond has been affected by the introduction of new processes at the WRS plant. **Cherry finishing and cherry packing operations were introduced at the plant beginning in January 2002** according to WRS staff. The wastewater generated from these processes does not possess the same chemistry as wastewater analyses submitted in support of the Permit Application for "pitting" operations. The chemistry of the new process wastewater requires characterization, which will be undertaken in accordance with procedures established under MAC R323.2220.

Interim wastewater discharge measures are proposed for a limited period to ensure compliance with MAC R323.2204 while allowing continued operation of the plant. The interim period proposed will allow for new process wastewater characterization and assembly of a Permit modification application, consistent with Part 31 of NREPA.

Interim treatment and discharge measures are proposed below. Specifically, these measures are proposed to:

- maintain discharge of wastewater in conformance with existing Permit limitations
- allow drainage of the irrigation pond, facilitating solids removal (if any)
- apply wastewater in discharge areas permitted under existing discharge Permit

Chemical Characteristics

It is proposed that the effluent limitations set in the existing Permit be met during the interim period. The table below provides a current assessment of the nature of the pond effluent. Also included are the existing Permit Limits and statistics related to dilution of the pond wastewater. The "Ratio" statistic is the quotient between the "Average" pond concentration of Permit monitoring parameters and the Permit "Limit". Applying a conservative factor of safety (1.5) to the "Ratio", one can arrive at a Dilution Factor (DF) that can be used to proportion wastewater in the pond with well water, thereby diluting the pond concentrations to levels below Permit Limits. When the pond chemistry can be shown to fall below Permit Limits, then it may be safely discharged at hydraulic loading rates proposed below.

Parameter	Units	Limit	15-Mar-02	27-Apr-02	Average	Ratio	DF
Sodium	mg / L	150	**291**	**202**	247	1.64	2.5
Chloride	mg / L	250	**650**	**598**	624	2.50	3.7
Tot. Phosphorus	mg / L	1	**3.16**	**3.85**	3.50	3.50	5.3
TIN	mg / L	5	4.37	**6.55**	5.46	1.09	1.6
Sulfate	mg / L	250	NR	**252**	252	1.01	1.5
Specific Conductance	µmhos/cm	N / A	NR	3,360	3,360	N / A	N / A

Notes: **Bold** type indicates value exceeds limit. NR=Not Reported N / A= Not Applicable DF= Dilution Factor

It is noted from the table above that a Dilution Factor of 4 will provided dilution sufficient to lower monitoring parameter concentrations in pond effluent to levels below Permit Limits. Further characterization of Phosphorus species in pond wastewater is required to ensure that the appropriate dilution factor is applied to pond wastewater during the proposed interim period.

Additional chemical evaluation of pond wastewater will be undertaken prior to discharge in concert with process wastewater characterization efforts described below. This is proposed to allow conclusive characterization of pond wastewater prior to fixing the proposed Dilution Factor. Evaluation of well water chemistry is also necessary to account for background concentrations of the Permit monitoring parameters that occur naturally in groundwater sources. Phosphorus sorption evaluation of soils within the permitted discharge areas will be undertaken in accordance with the hydrogeologic study described below.

Monitoring of pond effluent during each land application event of the interim period is also proposed to support compliance with MAC R323.2204. Monitoring for Sodium, Chloride and Total Phosphorus during each land application event is proposed to demonstrate that pond

effluent chemistry meets Permit Limitations and the appropriate DF has been established. This monitoring is proposed in addition to monthly monitoring requirements set forth in Section A.1. of the Permit.

Hydraulic Limitations

It is proposed that the hydraulic production and loading limitations set in the existing Permit be met during the interim period. The addition of well water to the plant or pond effluent requires evaluation of hydraulic production to ensure that Permit Limits are not exceeded. The table below summarizes the hydraulic bases of design for the proposed interim discharge period.

	Daily	Weekly	Annual
Permit Limits	**42,000**	N / A	**1.53E+07**
OPERATIONS			
Nominal	10,200	61,200	3,121,200
Peak	21,000	126,000	6,426,000
Average	15,600	93,600	4,773,600
RATIOS			
Nominal	**4.1**	4.8	4.9
Peak	2.0	2.3	2.4
Average	2.7	3.1	3.2
DIFFERENTIALS			
Nominal	31,800	232,800	12,178,800
Peak	21,000	168,000	**8,874,000**
Average	26,400	200,400	**10,526,400**

Note: All values above are in gallons, except Ratios which are dimensionless.

From the above it is clear that WRS has significant hydraulic capacity within existing Permit Limits to dilute their wastewater. At the initially proposed DF of 4.0, between 8 and 10 million gallons of dilution water could safely be added to wastewater annually without exceeding current hydraulic production rates set in the Permit. WRS's plant flow estimates will be independently verified prior to establishing the proposed daily dilution volume.

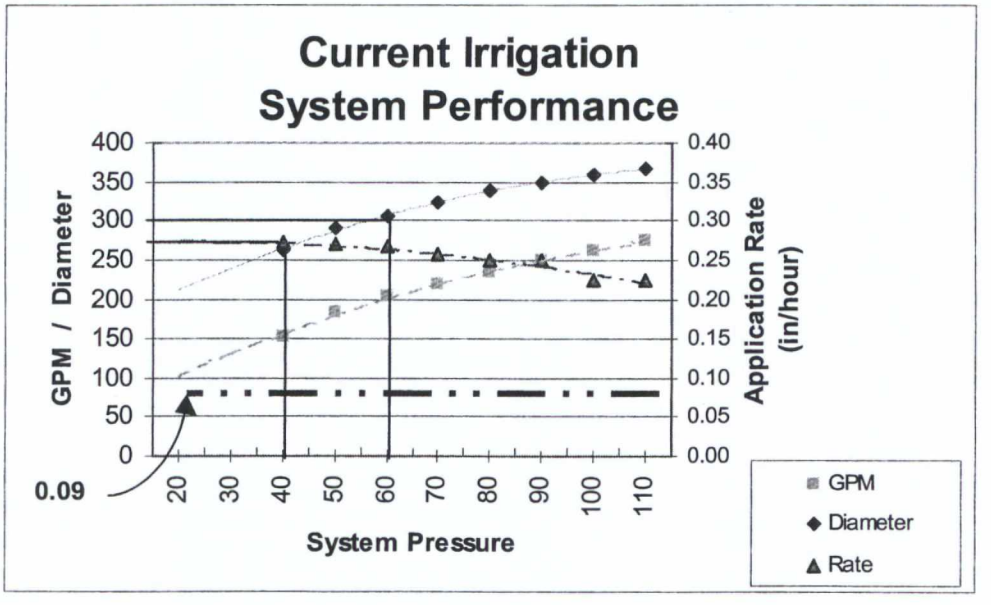
Application rates bases of design for proposed interim measures are summarized in the table below. It is not clear how the existing daily application rate was established for WRS's Permit Limitation for hydraulic loading rate. It is suspected that the individual drafting the Permit Application arrived at the 0.09 inches per day (in/day) limit by dividing the average annual precipitation statistic (approximately 32 inches annually) by 365 days (0.09 x 365 = 32.7). Without regard to the actual hydraulic capacity of the application area soils, the interim measures proposed will comply with existing Permit Limits for application rate. Evaluation of alternate application rates and soil vertical permeability may be undertaken during the interim period to enhance permit modification efforts.

	APPLICATION AREA		APPLICATION (Gals.)		OWNERSHIP
	Acres	SQFT	@0.09 in/day	@0.25in/day	
ON-SITE					
Spray A1	3.8	165,528	9286	25,795	Chris&Janet Hubbell or WRS Holdings LLC
Spray A2	2.3	100,188	5621	15,613	Chris&Janet Hubbell or WRS Holdings LLC
OFF-SITE					
Spray A3	28.9	1,258,884	70,623	196,176	Nagy Orchards
Drip A1	19.3	840,708	***47,164***	131,010	Kieth Hubbell Trust
Drip A2	27.3	1,189,188	***66,713***	185,315	Kieth&Roseanne Hubbell
Drip A3	45	1,960,200	109,967	305,465	Kieth Hubbell Trust
Totals	126.6	5,514,696	309,374	859,373	
Drip	91.6	3,990,096	223,844	621,790	
Spray	35	1,524,600	**85,530**	237,584	
Spray On-site	6.1	265,716	14,907	41,407	

Notes: See attached figure from existing Permit for locations of permitted application areas.

As is shown above (**bold**) for the 0.09 in/day Permit application rate, sufficient area exists within permitted spray application areas for discharge of the daily maximum permitted flows. Also shown (***bold/italic***) is the permitted drip irrigation areas that are proximal to the permitted on-site spray application areas. WRS proposes to utilize select drip irrigation areas for spray irrigation, in accordance with Permit Conditions, Section J. Flexibility between irrigation modes will likely be incorporated into Permit re-application in the future. Drip (Trickle) irrigation was reported to suffer operational limitations and requires further evaluation as to its efficacy.

The current irrigation equipment is ill suited to provide the requisite application control as shown by the system performance graph below.



At 0.09 in/hour, the existing irrigation system performance is not defined. The equipment cannot operate at sufficient pressure to distribute water over large enough areas to operate even for one hour before surpassing the daily limitation. Other components for distribution of wastewater will be specified to allow reasonable operating modes. The selection of components will be based upon several factors including; the availability of drip areas for spray application, the availability of a right-of-way permit or easement to cross beneath Angell Road with irrigation piping and the availability of pump(s) and distribution components in the market on short delivery time frames. Incidental revisions to the Operations and Maintenance Manual will be drafted to reflect modified equipment.

Monitoring of the application areas will be conducted for each application event until it can be demonstrated that the selected components are functioning properly and that the operator has received sufficient training to operate and monitor the application system. Operator training will include contingency procedures to address potential upset conditions so that Permit Limitations are not exceeded. Any requisite modification to the Irrigation Management Plan will be undertaken to address any changes that result from DEQ-approved interim measures.

Finishing and Packing Process Wastewater Characterization

Verification of Plant Flows

Water is apparently supplied to the plant by four (4) water supply wells. Each will be inspected to determine its entry point into the plant or plant wastewater system. Supply piping materials of construction and dimensions will be noted as will any appurtenance that could provide significant head losses. Pump curves will be obtained where ever possible to ascertain well performance and comparison will be undertaken between theoretical performance and actual flow observed from fixtures within the plant. This will be undertaken to establish firm bases of design for flow limitations related to subsequent Permit modification or potential process modifications.

A comprehensive review of plant piping network will be undertaken through dye testing. Currently, it is understood that one (1) outfall exists from the processing plant. This outfall discharges all combined wastewater from the plant to the hydroseive feed sump, located in the maintenance building to the north of the plant. Dye testing will be conducted at every drain within the plant to identify if undocumented connections exist. Visual affirmation of fluids from each drain will be substantiated by reconciling flows rates between point of entry and the outfall. Any anomalous network connection will be identified for subsequent engineering evaluation or corrective action.

Process flow evaluation will be undertaken following review of process operations by ISE engineering staff. ISE technical staff will reside within the plant during processing to establish the process flow schematic for each process in operation. All additives and by-products within each process will be identified and masses/volumes will be recorded over sufficient period of time to document nominal operating conditions. Process evaluation will also include observations in support of pollution prevention planning.

Process Effluent Characterization

When sufficient observations have been recorded to identify "nominal" process operating conditions, wastewater characterization will be undertaken. Characterization for each process will follow guidance provided in DEQ Guidesheet III utilizing mass balance and/or chemical analysis methods to characterize each process waste stream. Analytical parameters that may be included will generally be those subject to current Permit Limitations.

Surrogate analyses may also be undertaken, where appropriate, to reduce analytical costs and to support mass balance evaluations. Surrogate and/or general analyses may reasonably include; specific conductance, pH, dissolved oxygen, redox potential, specific gravity and temperature. Similarly, chemical specific and surrogate analyses may be conducted in the field in support of analyses at an independent laboratory. All laboratory analyses will conform with methods approved by DEQ, pursuant to Rule 2220.

Wastewater Engineering

All the above described evaluations of hydraulic and chemical characteristics will be used in construction of new process flow schematics that include hydraulic flow and mass flow. This schematic will include sufficient narrative to convey the essential process wastewater information to DEQ staff. If other processes not currently in practice are contemplated for future growth of production at the plant, these processes will also be characterized in accordance with guidelines established by DEQ. Process waste flows and wastewater quality characterization will be identified from mass balance estimates and from industry literature that typifies the prospective process wastewater hydraulics and composition. Engineering economic evaluation of alternatives will be based upon the validated process schematics and will support any decisions for aggregating or segregating process waste flows.

Permit Modification

Based upon the above, it is anticipated that the WRS Permit may be modified in accordance with MAC R323.2218, subsection (3)(d) or (3)(e). All submittals required under Rule 2218(3) will be tendered to DEQ-WMD staff for their review.

HYDROGEOLOGIC INVESTIGATION

The data acquired from the Q1-2002 CMR and MAC R323.2227 indicate that the concentration of the conservative tracer anion "Chloride" exceeded Permit Limits by a factor of 2½ times. Since Chloride is not reactive and is completely soluble at the levels detected, it serves as an ideal tracer for determining the depth to which irrigated wastewater has infiltrated. Dissolved solids constituents were introduced into wastewater with the addition of the cherry finishing process in January 2002.

Review of available hydrogeologic information for this site indicates that wastewater applied in Q1-2002 may not have infiltrated to the depth of the water table. The water table within the discharge area is at least 50 feet below ground surface (see September 1988 Hydrogeologic Study, Nordlund and Associates). Limiting vertical permeabilities (saturated) for the soil series subject to application are on the order of 14 inches per day (Grand Traverse County Soil Survey). If saturated conditions are not present, then the effective permeability is, theoretically, reduced from this limiting value due to capillary tension. This suggests that the hydrogeologic investigation focus first upon the concentrations of select Permit monitoring parameters in soil.

The proposed hydrogeologic investigation will be conducted using a phased approach with the findings from each phase being integrated into sampling and analysis plans for appropriate subsequent investigation. The proposed hydrogeologic work plan will focus upon spray irrigation areas where Q1-2002 irrigation practices applied wastewater that exceeded Permit Limits. The phased work plan includes:

Task # 1	Estimating Infiltration Depth of Applied Q1-2002 Wastewater
Task # 2	Soil Sampling and Field Screening
Task # 3	Soil Sample Analyses (Total) for Chloride
Task # 4	Analyses for Sodium and Phosphorus
Task # 5	Evaluation of Potential Impact from Applied Q1-2002 Wastewater
Task # 6	Contingent Monitoring Well Installation
Task # 7	Groundwater Monitoring
Task # 8	Evaluation of Impact from Applied Q1-2002 Wastewater
Task # 9	Hydrogeologic Investigation Report

Task #1 Infiltration Rate and Depth Estimation

Infiltration rate will be estimated from available data and used to develop the minimum sampling depth for soil samples. Soil sampling will occur below this depth, based upon conservative application of input variables used in the infiltration rate equation given below. Lower limits of sampling will consider the proximity of the reasonable maximum soil sampling depth to the water table. If it is apparent from initial infiltration rate estimates that applied wastewater may have reached the water table, then monitoring wells (included as a contingency under Task #6) may be installed.

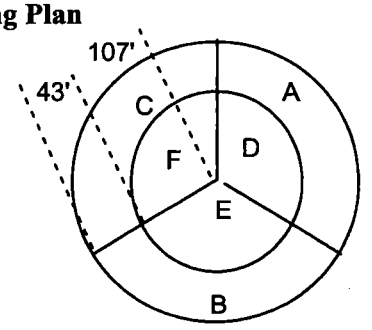
Infiltration Rate [in/day] = application rate + (precipitation – evapotranspiration – runoff)
Infiltration Depth [feet] = Infiltration Rate X Elapsed Time

Task #2 Soil Sampling and Field Screening

Soil sampling will be conducted in the Q1-2002 irrigation areas with one soil boring situated within the application area for each of the five (5) heads utilized during Q1. The location of the boring will be selected randomly, since the applied wastewater was distributed evenly beneath each head. The randomly selected locations were determined by casting lots as identified below. The head numbering sequence is given in order, proximal to distal from the irrigation pond. For purposes of random selection, each head's application area is divided into two equal areas which are, in turn divided into equal areas about the azimuth as shown below. The diameter of the target areas is determined from the Irrigation System Performance Graph above for the 60 psi operating condition.

Equal Area Random Sampling Plan

Head	Cast	Sector
1	1st	F
2	5th	F
3	2nd	E
4	4th	D
5	3rd	A



Soils from each boring will be acquired through use of discrete sampling tools, such as driven or direct-push lined-barrel samplers. Borings will be logged by a qualified geologist, engineer or technician in accordance with ASTM Standard D-2488. All sampled soils within each sampling domain will be screened in the field for moisture content and conductivity. All samples will be contained in appropriate sample containers pending decisions on analyses.

Task #3 Chloride Analyses

For a given soil textural class, the sample yielding the greatest conductivity represents the sample with the greatest concentrations of electrolyte within its pore waters. Samples demonstrating maximum field conductivity (dry weight basis) from each soil textural class will be selected for analysis of the tracer anion, Chloride. One or more soil samples beneath the field-selected maximum conductivity sample may also be analyzed to demonstrate the Chloride concentration gradient beneath the field-screened target interval. In addition, other samples may be analyzed if visual or field screening methods suggest its analysis is warranted. Through these biased (toward detection) evaluation methods, the maximum infiltration depth will be identified.

Task #4 Analyses for Sodium and Phosphorus

Based upon Chloride results from soil samples, other analyses will be undertaken for those Permit monitoring parameters which are considered reactive and which were exceeded to a significant degree. These parameters include Sodium and Total Phosphorus. Only select samples at or above the sample representing the maximum infiltration depth will be subjected to analysis for Chloride, Sodium or Total Phosphorus. These samples will be analyzed using applicable SW-846 methodology with samples being prepared by EPA Method 1312A, the Synthetic Precipitation Leaching Procedure (SPLP).

Select samples from each boring may also be subjected to analyses for Total Phosphorus in accordance with Permit Conditions under Section A.1. and may also be utilized to evaluate Phosphorus adsorption capacity (PAC) by analyses in accordance with Rule 2233(4)(b)(iii) and DEQ Guidesheets. This may be undertaken to support interim wastewater treatment and discharge measures proposed above and assure compliance with Rule 2204 and/or Rule 2222 for Total Phosphorus.

Task #5 Evaluation of Potential Impact from Applied Wastewater

SPLP results will be used to evaluate the potential impact of Permit exceedances from Q1-2002 wastewater irrigation on groundwater in accordance with MAC R323.2227. Fate and Transport evaluation may also be undertaken as a predictive tool to identify the long-term potential for impact if analyses indicate that Sodium, Phosphorus or Chloride may enter the groundwater system at unacceptable levels.

Contingent Task #6 through Contingent Task #8

Monitoring wells will be installed if warranted, based upon field screening results from soil sampling. If uncertainty exists as to the proximity of the infiltrating wastewater to the water table, then monitoring wells may be completed in boreholes advanced for soil sampling. Similarly, if laboratory analyses and evaluation of impact indicates that monitoring of groundwater is necessary, then wells will be installed. Well locations and screen completion intervals will be determined following evaluation of soil sampling field and laboratory data.

Task #9 Hydrogeologic Investigation Report

A report will be prepared to document the Methods, Findings and Conclusions of the above described hydrogeologic investigation. Reporting will be undertaken in general conformance with the content requirements set forth under Rule 2221

COMPLIANCE PLAN FOR PART 5 RULES

It is currently understood that WRS is required to develop and operate under a Pollution Incident Prevention Plan (PIPP) that conforms to recently revised Part 5 Rules (MAC 324.2001 through 324.2009, et seq.) within 24 months after the effective date (August 31, 2001) of Part 5 Rules, in accordance with R 324.2006. The development of the PIPP has commenced with the detailed surveying described above. The surveying and ground control work following it is designed to satisfy PIPP requirements established under 324.2006(1)(e). The schedule for attainment of Part 5 Rules' timetable is shown on the attached Gantt Chart.

Development of secondary containment plans in compliance with Rule 2005 is also depicted on the attached Gantt Chart. Alternative secondary containment systems will be evaluated in context with WRS's business plans and with the results of Wastewater Engineering described above. Wastewater flow segregation may prompt the need for storage of a portion of the plant wastewater. This additional volume demand could alter the economics of any given secondary containment alternative evaluated.

Sincerely,

INLAND SEAS ENGINEERING, INC.

Andrew Smits, P.E.
Environmental Engineering
Department Manager

enc. Attachment #2 (WRS Permit)
Gantt Chart

cc: Mr. Joseph Quandt
Mr. Edgar Roy III

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