CASE STUDY

HOEDSPRUIT FRUIT JUICE

Industry – Food and Beverages

Location	Hoedspruit, SA
Client	Hoedspruit Fruit Juice
Year	2020
Application	Fruit Juice Production
Contaminants	TSS, Turbidity, COD, BOD
Solution	Hydramix

Synopsis

Hoedspruit fruit juice discharges 100 m3/day into the wetland, of which an unquantifiable amount flows to the farms and used for irrigation. Aqua Horizon Technologies have developed a water treatment solution to handle such effluent water and embarked on experimental work to test the concept and effectiveness. Two technologies were proposed, primary treatment by Microscreen and secondary treatment by Hydramix, the case study was based on the secondary treatment. From the chemical analysis obtained, Turbidity, Chemical Oxygen Demand (COD) and Biochemical Oxygen Demand (BOD) reduced by 99%, 56% and 81% respectively.

Site visit

Figure 1: Visuals of the Hoedspruit site.

Results

Table 1: Results of the treated sample.

RESULTS			
Analyses in mg/ℓ (Unless specified otherwise)	**Sample Identification**		**% Reduction**
	Raw	**Treated**	
pH – Value at 25°C	3.8	5.1	-
Total Dissolved Solids at 180°C	548	706	-
Turbidity in N.T.U	625	5.8	99%
Biochemical Oxygen Demand as O_2 *	4 563	2 024	56%
Chemical Oxygen Demand as O_2 (Total)	3 617	699	81%

Figure 2: Experimental work of the samples.

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Table 2: Lab results of the Hoedspruit samples.

WATERLAB (Pty) Ltd
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WATERLAB

sanas Testing Laboratory T0391

CERTIFICATE OF ANALYSES
GENERAL WATER QUALITY PARAMETERS

Date received: 2020 - 06 - 24 **Date completed:** 2020 - 07 – 03
Project number: 1000 **Report number: 92548** **Order number: -**
Client name: African Horizon Technologies **Contact person: Mr. J. Steyn**
Address: Postnet Suite 394 Private Bag x10 Elarduspark 0047 **e-mail: jsteyn@ahtech.co.za**
Telephone: 012 940 8474 **Facsimile: 086 616 4207** **Mobile:**

Analyses in mg/ℓ (Unless specified otherwise)	Method Identification	Sample Identification	
		Raw	Treated
Sample Number		97897	97898
pH – Value at 25°C	WLAB001	3.8	5.1
Total Dissolved Solids at 180°C	WLAB002	548	706
Turbidity in N.T.U	WLAB004	625	5.8
Biochemical Oxygen Demand as O_2 *	WLAB020	4 563	2 024
Chemical Oxygen Demand as O_2 (Total)	WLAB018	3 617	699

***Lab results are not indicative of what the system does, only the reduction from the bench test, as an illustration as per a client request.**

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Table 3: Lab results.

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Analyses in mg/ℓ (Unless specified otherwise)	Method Identification	Sample Identification	
		Raw	Treated
Sample Number		97897	97898
pH – Value at 25°C	WLAB065	3.8	5.1
Total Dissolved Solids at 180°C	WLAB027	548	706
Turbidity in N.T.U	WLAB005	625	5.8
Biochemical Oxygen Demand as O_2 *	WLAB020	4 563	2 024
Chemical Oxygen Demand as O_2 (Total)	WLAB018	3 617	699

***Lab results are not indicative of what the system does, only the reduction from the bench test, as an illustration as per a client request.**

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* = Not SANAS Accredited
Tests marked "Not SANAS Accredited" in this report are not included in the SANAS Schedule of Accreditation for this Laboratory.

Conclusion

The Hydramix solution was capable of obtaining a reduction of Turbidity, Chemical Oxygen Demand (COD) and Biochemical Oxygen Demand (BOD) by 99%, 56% and 81% respectively. Improved pH from 3.8 to 5.1. The process was capable of 1) Breaking the oil water emulsion and 2) reducing the organic and inorganic. On the proposal two technologies were initially recommended, but only one was used during trial, which lead to significant reduction and indicate that by using two technologies combined will lead to enormous decrease of pollutants and preferable water quality that will meet the discharge standards.