# ANALISIS KUALITAS AIR BUANGAN DAN EFEKTIVITAS KINERJA INSTALASI PENGOLAHAN AIR BUANGAN (IPAB) BUDIDAYA UDANG VANAME (*Litopenaeus vannamei*) DI BPIU2K KARANGASEM

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## ABSTRAK

Penelitian ini bertujuan untuk mengetahui kualitas air buangan budidaya udang vaname *(Litopenaeus vannamei)* dan efektivitas kinerja IPAB di BPIU2K Karangasem berdasarkan parameter fisika dan kimia. Sampel air diambil pada inlet dan outlet sebanyak tiga kali ulangan. Parameter yang diukur yaitu TSS, kekeruhan, pH, BOD, fosfat, $H_2S$, nitrat, nitrit, dan amonoia. Data dianalisis dan dibandingkan dengan Kepmen KP Nomor 28 tahun 2004. Efektivitas kinerja IPAB dihitung mengacu pada Juknis IPAL Pembesaran Udang DJPB. Berdasarkan hasil penelitian, kualitas air outlet IPAB minggu pertama hingga minggu ketiga untuk parameter fosfat (5,5 mg/L; 1,3 mg/L; 1,94 mg/L); $H_2S$ (0,13 mg/L; 0,06 mg/L; 0,04 mg/L), nitrit (5,75 mg/L; 1,27 mg/L; 3,48 mg/L); dan amonia (0,85 mg/L; 0,33 mg/L; 0,34 mg/L) tidak memenuhi baku mutu. Untuk parameter TSS (50 mg/L; 29 mg/L; 22 mg/L); kekeruhan (8 mg/L; 29 mg/L; 26 mg/L); pH (7,8; 7,4; 7,2); BOD (6,05 mg/L; 2,02 mg/L; 5,65 mg/L); dan nitrat (5,6 mg/L; 3 mg/L; 6,8 mg/L) memenuhi baku mutu. Efesiensi removal unit pengolahan digunakan untuk mengetahui efektivitas dari IPAB dan efektif apabila nilai efesiensinya berada pada rentang 60% < x = 80%. Pada minggu pertama IPAB BPIU2K Karangasem efektif untuk parameter BOD (78,57%); dan nitrat (72,00%). Pada minggu kedua efektif untuk parameter BOD (74,94%); fosfat (78,33%); nitrat (75,00%); dan amonia (70,54 %). Pada minggu ketiga efektif untuk parameter TSS (75,56%); BOD (76,64%); fosfat (73,96%); dan $H_2S$ (73,33%). Efektivitas IPAB masing-masing parameter berbeda setiap minggu karena air buangan berasal dari berbagai unit kegiatan di BPIU2K Karangasem.

**Kata Kunci:** Air Buangan, IPAB, Kualitas Air, Baku Mutu, Efektivitas

# ANALYSIS OF WASTEWATER QUALITY AND PERFORMANCE EFFECTIVENESS OF WASTEWATER TREATMENT PLANT (WWTP) ON VANAME SHRIMP (*Litopenaeus vannamei*) CULTURE IN BPIU2K KARANGASEM

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## ABSTRACT

This study aims to determine the quality of wastewater from vaname shrimp (*Litopenaeus vannamei*) cultivation and the effectiveness of WWTP performance in BPIU2K Karangasem based on physical and chemical parameters. Water samples were taken at the inlet and outlet with three repetitions. Parameters measured were TSS, turbidity, pH, BOD, phosphate, H2S, nitrate, nitrite and ammonia. The data were analyzed and compared with Ministerial Decree KP number 28 of 2004. The effectiveness of WWTP performance was calculated referring to the DJPB Shrimp Growing WWTP Technical Manual. The results showed that the water quality of WWTP outlet from the first week to the third week for phosphate (5.5 mg/L; 1.3 mg/L; 1.94 mg/L); $H_2S$ (0.13 mg/L; 0.06 mg/L; 0.04 mg/L), nitrite (5.75 mg/L; 1.27 mg/L; 3.48 mg/L); and ammonia (0.85 mg/L; 0.33 mg/L; 0.34 mg/L) did not reach the quality standard. While for the other parameters like, TSS (50 mg/L; 29 mg/L; 22 mg/L); turbidity (8 mg/L; 29 mg/L; 26 mg/L); pH (7.8; 7.4; 7.2); BOD (6.05 mg/L; 2.02 mg/L; 5.65 mg/L); and nitrate (5.6 mg/L; 3 mg/L; 6.8 mg/L) have reached the quality standard. Removal efficiency in processing units can be used to determine the effectiveness of WWTP and will be effective if the efficiency value is in the range of 60% < x = 80%. In the first week, WWTP in BPIU2K Karangasem showed its effectiveness on several parameters such as BOD (78.57%); and nitrate (72.00%). In the second week, the effectiveness was shown for the BOD (74.94%); phosphate (78.33%); nitrate (75.00%); and ammonia (70.54%). While in the third week, the effectiveness was shown for TSS (75.56%); BOD (76.64%); phosphate (73.965); and $H_2S$ (73.33%). The effectiveness of WWTP for each parameter differs every week due to the cultivation waste water coming from various activity units in BPIU2K Karangasem.

**Keywords:** Wastewater, WWTP, Water Quality, Quality Standards, Effectiveness