ABSTRAK

Kristianto, 2020, Penurunan TDS, Kekeruhan, Kesadahan, Khlorida, Logam Besi (Fe), dan E.Coli Pada Air Sungai di Surabaya menggunakan Treatment Koagulan, Filtrasi, Ferrolite, Manganese Greensand dan Resin, Tugas Akhir, Program Studi : Teknik Lingkungan, Fakultas Teknik Sipil dan Perencanaan, Universitas PGRI Adi Buana Surabaya.

Dosen Pembimbing Drs. Setyo Purwoto, ST., MT.

Alternatif pengolahan air baku dengan kadar kekeruhan, TDS, kesadahan, khlorida, logam besi, dan E. Coli tinggi adalah dengan kombinasi koagulan, filtrasi, ferrolite, manganese greensand dan resin. Adapun tujuan penelitian ini adalah: 1) Mengetahui besarnya pengaruh treatment koagulan, filtrasi, ferrolite, *manganese greensand* dan resin dalam upaya dalam penurunan kandungan TDS, Kekeruhan, Kesadahan, Khlorida, Logam Besi (Fe), dan E. Coli Pada Air Sungai Kali Avur Wonorejo Surabaya, 2) Mengetahui besarnya pengaruh penambahan koagulan Sucolite SP 210 (16,4 ppm, 21,4 ppm dan 26,4 ppm) terhadap penurunan TDS, Kekeruhan, Kesadahan, Khlorida, Logam Besi (Fe), dan E. Coli Pada Air Sungai Kali Avur Wonorejo Surabaya. Metode Pengumpulan data dalam penelitian ini adalah melakukan pengolahan air Sungai Kali Avur Wonorejo menggunakan treatment koagulan, filtrasi, ferrolite, *manganese greensand* dan resin dalam menurunkan konsentrasi parameter TDS, Kekeruhan, Kesadahan, Khlorida, Logam Besi (Fe), dan E. Coli. Hasil penelitian menunjukkan besarnya pengaruh treatment Koagulan, Filtrasi, Ferrolite, *Manganese Greensand* dan Resin dalam upaya penurunan konsentrasi TDS, Kekeruhan, Kesadahan, Khlorida, Logam Besi (Fe), dan E. Coli Air Sungai Kali Avur Wonorejo Surabaya, terjadi penurunan konsentrasi maksimal pada waktu pengambilan air baku pk. 09.00 dengan penambahan koagulan Sucolite SP 210 sebesar 26,4 ppm. Dengan penurunan konsentrasi TDS sebesar 62%, Kekeruhan 96%, Kesadahan 47%, Khlorida 35%, Logam Besi (Fe) 87% dan E.Coli 89%. Dalam penelitian ini dengan variasi dosis Koagulan Sucolite SP 210 26.4 ppm parameter E.Coli mengalami penurunan konsentrasi maksimal pada air baku yang diambil pk. 09.00 sebesar 790 CFU/100 mL (89%) dari konsentrasi inlet sebesar 886 CFU/100 mL, karena besarnya konsentrasi inlet maka penurunan parameter E.Coli ini masih belum dapat memenuhi baku mutu yang ditetapkan.

Kata Kunci: Air Sungai, Filtrasi, Koagulasi, *Manganese Greensand*, Resin, Sucolite.

ABSTRACT

Kristianto, 2020, Decreasing TDS, Turbidity, Hardness, Chloride, Iron Metal (Fe), and E. Coli in River Water in Surabaya using Coagulant, Filtration, Ferrolite, Manganese Greensand and Resin Treatment, Final Project, Study Program: Environmental Engineering, Faculty of Civil Engineering and Planning, Universitas PGRI Adi Buana Surabaya.

Supervisor Drs. Setyo Purwoto, ST., MT.

Alternative treatment of raw water with high levels of turbidity, TDS, hardness, chloride, ferrous metal, and E. Coli is a combination of coagulant, filtration, ferrolite, manganese greensand and resin. The objectives of this study were: 1) To determine the effect of coagulant treatment, filtration, ferrolite, manganese greensand and resin in an effort to reduce the content of TDS, Turbidity, Hardness, Chloride, Metal Iron (Fe), and E. Coli in Kali Agur River Water. Wonorejo Surabaya, 2) To determine the effect of the addition of the coagulant Sucolite SP 210 (16.4 ppm, 21.4 ppm and 26.4 ppm) on the decrease in TDS, Turbidity, Hardness, Chloride, Iron Metal (Fe), and E. River Water Avur Wonorejo Surabaya. The method of data collection in this study is to treat the water of the Avur River Wonorejo using coagulant treatment, filtration, ferrolite, manganese greensand and resin in reducing the concentration of parameters TDS, Turbidity, Hardness, Chloride, Metal Iron (Fe), and E. Coli. The results showed the magnitude of the effect of Coagulants, Filtration, Ferrolite, Manganese Greensand and Resin treatments in an effort to reduce the concentration of TDS, Turbidity, Hardness, Chloride, Ferrous Metal (Fe), and E. Coli Water from Kali Avur Wonorejo Surabaya, there was a maximum decrease in concentration at raw water intake time pk. 09.00 with the addition of a coagulant Sucolite SP 210 of 26.4 ppm. With a decrease in the concentration of TDS by 62%, Turbidity 96%, Hardness 47%, Chloride 35%, Metal Iron (Fe) 87% and E.Coli 89%. In this study, with variations in the dose of Coagulant Sucolite SP 210 26.4 ppm, the E.Coli parameter decreased the maximum concentration in the raw water taken pk. 09.00 CFU/100 mL (89%) of the inlet concentration of 886 CFU/100 mL, due to the large inlet concentration, the decrease in E.Coli parameters still cannot meet the specified quality standards.

Keyword : River Water, Filtration, Coagulation, Manganese Greensand, Resin, Sucolite