INTISARI

Pembangunan Sistem Penyediaan Air Minum (SPAM) Regional terus diusahakan oleh pemerintah guna mencapai target akses air minum layak 100% dan akses air minum aman 15% pada tahun 2024. SPAM Kamijoro merupakan salah satu SPAM regional yang dikembangkan untuk memenuhi kebutuhan air minum di Kabupaten Kulon Progo dan Kabupaten Bantul. Sumber air yang digunakan berasal dari Sungan Progo dengan bangunan pengambilan (*intake*) berkapasitas 0,5 m^3/detik di Bendung Kamijoro.

Tahapan perancangan Instalasi Pengolahan Air Minum (IPAM) Kamijoro meliputi analisa kualitas air baku, pemilihan dan perhitungan unit pengolahan air minum, serta pembuatan gambar kontruksi. Data yang digunakan adalah data primer berupa hasil pengujian *jar test* sampel air baku dan data sekunder berupa data kualitas air baku di *intake* Bendung Kamijoro dari tahun 2020-2021 dan data perencanaan SPAM Kamijoro.

Pemilihan unit pengolahan pada IPAM Kamijoro berdasarkan kualitas air baku yang tidak memenuhi baku mutu air minum pada Peraturan Menteri Kesehatan Nomor 492/MENKES/PER/IV/2010 tentang Persyaratan Kualitas Air Minum yakni kekeruhan, *chemical oxygen demand* (COD), detergen, dan *dissolved oxygen* (DO). Oleh karena itu, unit pengolahan air minum yang dipilih yakni *cascade aerator*, prasedimentasi, koagulasi mekanis (pedal) menggunakan aluminium sulfat atau tawas, *flocculator baffle channel*, sedimentasi, filtrasi pasir cepat dengan media filter berupa antrasit dan pasir silika, desinfeksi gas klor, dan *sludge drying bed*. Efisiensi pengolahan IPAM Kamijoro mencapai 95% sedangkan 5% lainnya merupakan kehilangan air di perjalanan sehingga debit air yang diolah pada unit produksi sebesar 0,475 m^3/detik. Lumpur yang dihasilkan dari unit prasedimentasi (63,905 m^3/hari), sedimentasi (19,171 m^3/hari), dan *backwash* filtrasi pasir cepat (514,5 m^3/hari) dikumpulkan pada *sludge drying bed* untuk dikeringkan. Air yang terpisah dari padatan diresirkulasi menuju bak sedimentasi sebesar 0,006 m^3/s sehingga debit air yang diolah pada bak sedimentasi dan seterusnya menjadi 0,481 m^3/s. Sedangkan air yang sudah diolah dikumpulkan pada bak penampungan air atau reservoir.

Kata kunci: *air minum, kualitas air, instalasi pengolahan air minum, resirkulasi*

ABSTRACT

The government continues to pursue the development of a Regional Drinking Water supply system (DWSS) in order to achieve the target of 100% access to proper drinking water and 15% access to safe drinking water in 2024. Kamijoro DWSS is one of the regional DWSSs developed to meet the needs of drinking water in Kulon Regency, Progo, and Bantul Regency. The water source used is the Progo River, with an intake building with a capacity of 0,5 m^3/second at the Kamijoro Dam.

The design stages of the Kamijoro Drinking Water Treatment Plant (DWTP) include raw water quality analysis, selection and calculation of drinking water treatment units, and construction drawings. The data used is primary data in the form of raw water sample jar test results and secondary data in the form of raw water quality data at the Kamijoro Weir intake from 2020–2021 and Kamijoro DWSS planning data.

The selection of treatment units at Kamijoro DWTP is based on raw water quality that does not meet drinking water quality standards in Minister of Health Regulation Number 492/MENKES/PER/IV/2010 concerning Drinking Water Quality Requirements, namely turbidity, chemical oxygen demand (COD), detergent, and dissolved oxygen (DO). Therefore, the selected drinking water treatment units are cascade aerators, pre-sedimentation, mechanical coagulation (paddle) using aluminum sulfate or alum, baffle channel flocculators, sedimentation, quick sand filtration with filter media in the form of anthracite and silica sand, chlorine gas disinfection, and sludge drying beds. The processing efficiency of the Kamijoro IPAM reaches 95%, while the other 5% is water loss on the way, so that the water discharge processed at the production unit is 0,475 m^3/second. Sludge produced from pre-sedimentation units (63,905 m^3/day), sedimentation (19,171 m^3/day), and fast sand filtration backwash (514,5 m^3/day) was collected in sludge drying beds to be dried. Water separated from the solids is recirculated to the sedimentation tank at 0,006 m^3/s so that the water discharge treated in the sedimentation tub and so on becomes 0,481 m^3/s. While the treated water is collected in a water tank or reservoir.

Keywords: *drinking water, water quality, drinking water treatment plant, recirculation*