(A)

ESTIMATING DOMESTIC WATER CONSUMPTION

drinking & cooking

$$V^{(capita)}_{drink} \approx \frac{8\ glasses}{day} \times \frac{f \times 10^{-1}\ L}{glass} \approx f\ L\ /\ day$$

$$V^{(capita)}_{cooking} \approx V^{(capita)}_{drink} \approx f\ L\ /\ day$$

$$V^{(total)}_{drinking\ \&\ cooking} \approx 8 \times 10^{9}\ people \times \frac{10\ L}{day \times person} \times \frac{365\ days}{year}$$

$$\approx f \times 10^{13}\ L\ /\ year$$

sanitation

$$V^{(capita)}_{toilet} \approx \frac{f\ L}{flush} \times \frac{f\ flushes}{day} \approx 10\ L\ /day$$

$$V^{(capita)}_{shower} \approx \frac{f\ L}{min} \times \frac{10\ min}{1\ shower} \times \frac{f\ showers}{week} \times \frac{1\ week}{7\ days}$$

$$\approx 10\ L\ /\ day$$

$$V^{(capita)}_{laundry} \approx \frac{10^{2}\ L}{load} \times \frac{1\ load}{2\ weeks} \times \frac{1\ week}{7\ days} \approx f\ L\ /\ day$$

$$V^{(total)}_{sanitation} \approx 8 \times 10^{9}\ people \times \frac{f \times 10\ L}{day \times person} \times \frac{365\ days}{year}$$

$$\approx 10^{14}\ L\ /\ year$$

(B)

$$V^{(total)}_{consumed} \approx V^{(total)}_{cooking\ \&\ drinking} + V^{(total)}_{sanitation} \approx 1.f \times 10^{14}\ L\ /\ year$$