$$\phi = V_\infty x + \frac{\Lambda}{4\pi} \ln\left((x-d)^2 + y^2\right)$$

a) $$u = \frac{\partial \phi}{\partial x} = V_\infty + \frac{\Lambda}{2\pi} \frac{x-d}{(x-d)^2 + y^2}$$
$$v = \frac{\partial \phi}{\partial y} = \frac{\Lambda}{2\pi} \frac{y}{(x-d)^2 + y^2}$$

at $x, y = 0, 0$, require $u = 0$

or $$V_\infty - \frac{\Lambda}{2\pi d} = 0$$
$$2\pi V_\infty d = \Lambda \qquad (1)$$

at $x, y = d, \sqrt{Cd}$, require $\frac{v}{u} = \frac{dY}{dx}$, where $\frac{dY}{dx} = \frac{1}{2}\sqrt{\frac{C}{x}}\Big|_{x=d} = \frac{1}{2}\sqrt{\frac{C}{d}}$

or $$\frac{1}{V_\infty} \frac{\Lambda}{2\pi} \frac{\sqrt{Cd}}{Cd} = \frac{1}{2}\sqrt{\frac{C}{d}}$$
$$\boxed{\Lambda = \pi V_\infty C} \qquad (2)$$

Combine (1) & (2) $\rightarrow$ $C = 2d$ $\rightarrow$ $\boxed{d = C/2}$

b) For $C = 500\,m$, $V_\infty = 15\,m/s$, $\rightarrow$ $d = 250\,m$, $\Lambda = 7500\pi\ m^2/s$

Maximum radius where $v = 1\,m/s$

or $$v = \frac{\Lambda}{2\pi} \frac{y}{r^2} = \frac{\Lambda}{2\pi} \frac{\sin\theta}{r} = 1\,m/s$$

$$\rightarrow \boxed{r_{max}(\theta) = \frac{\Lambda}{2\pi \cdot 1\,m/s} \sin\theta = 3750\,m \cdot \sin\theta}$$

circle of diameter 3750 m above source.