Let N be the number of grid points.

$$\psi_{N-1} - 2\psi_N + \psi_{N+1} = -\frac{\rho_N (\Delta x)^2}{\epsilon_0} \tag{1}$$

The charge density at the last grid point (ρ_N) has a known value, made from a contribution of the plasma near the last grid point and particles that have deposited their charge on exiting the system. The grid point N+1 is not part of the system but it's potential (ψ_{N+1}) is assumed to have the same value as the potential at the wall (ψ_N) for a perfect conductor.

$$\psi_{N+1} = \psi_N \tag{2}$$

Therefore

$$\psi_{N-1} - \psi_N = -\frac{\rho_N (\Delta x)^2}{\epsilon_0} \tag{3}$$

In solving the matrix equation

$$\begin{pmatrix} B_1 & C_1 & & & \\ A_2 & B_2 & C_2 & & \\ & A_3 & B_3 & C_3 & \\ & & \ddots & \ddots & \ddots \\ & & & A_N & B_N \end{pmatrix} \begin{pmatrix} \psi_1 \\ \psi_2 \\ \psi_3 \\ \vdots \\ \psi_N \end{pmatrix} = \begin{pmatrix} \rho_1 \\ \rho_2 \\ \rho_3 \\ \vdots \\ \rho_N \end{pmatrix} \tag{4}$$

$B_1 = 1, C1 = 0, \rho_1 = 0$ to fix the potential on the left hand side to be 0V. And on the right hand side $A_N = 1, B_N = -1$ and ρ_N is the charge deposited by particles in the last grid cell as well as the charge that has been deposited on the wall.