**Table 1. Subsurface technical parameters for Tuscarora in Morgantown, WV.**

|  |  |  |
| --- | --- | --- |
| **Parameter** | **Vertical** | **Horizontal**  **(500 m Lateral length)** |
| Reservoir Model | **User-provided TOUGH2 temperature data** | **User-provided TOUGH2 temperature data** |
| Reservoir Depth (km) | 2.9 | 2.9 |
| Reservoir Water Loss Rate | 0% | 0% |
| Reservoir Heat Capacity (J/kg/K) | 1000 | 1000 |
| Reservoir Density (kg/m3) | 2500 | 2500 |
| Reservoir Thermal Conductivity (W/m/K) | 2.0 | 2.0 |
| Geothermal Gradient (°C/km) | 26 | 26 |
| Well Configuration (-) | Doublet | Doublet |
| Well Inner Diameter (inch) | 8.0 | 8.0 |
| Production Wellbore Heat Transfer | Ramey’s Model | Ramey’s Model |
| Reinjection Temperature (°C) | **Based on Surface Analysis** | **Based on Surface Analysis** |
| Reservoir Impedance (GPa.s/m3) | **TOUGH2 Output** | **TOUGH2 Output** |

**Table 2. Surface Technical parameters showing both GEOPHIRES default values and values used in WVU study**

|  |  |  |
| --- | --- | --- |
| **Parameter** | **Default** | **WVU Study** |
| End-Use Option | Direct-Use | Direct-Use |
| Circulation Pump Efficiency | **0.75** | **0.80** |
| Utilization Factor | **0.9** | **0.95** |
| End-Use Efficiency Factor | 0.90 | 0.90 |
| Ambient Temperature (°C) | 13.5 | 13.5 |

**Table 3. Financial parameters, default values are used in WVU study**

|  |  |
| --- | --- |
| **Parameter** | **WVU Study (Default)** |
| Plant Life time (years) | 30 |
| Economic Model | 3 (BICYCLE) |
| Fraction of Investment in Bonds | 0.50 |
| Inflated Bond Interest Rate | 0.05 |
| Inflated Equity Interest Rate | 0.10 |
| Inflation Rate | 0.02 |
| Combined Income Tax Rate | 0.30 |

**Table 4. Capital and O&M parameters showing both GEOPHIRES default values and values used in WVU study**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | **Default** | **WVU Study** | | |
| Well Drilling and Completion Capital Cost Adjustment Factor | **1.0 (vertical)**  **1.5 (horizontal)** | **1.0 (vertical)**  **1.5 (horizontal)** | | **-** |
| Well Drilling Cost Correlation | **1.0 (vertical small dia)** | **1.0 (vertical small dia)** | | **-** |
| Well Drilling and Completion Capital Cost (M$/Well) | **-** | **-** | **2.1 (Vertical)**  **3.8 (Horizontal)** | |
| Reservoir Stimulation Capital Cost | 0.0 | 0.0 | | |
| Exploration Capital Cost Adjustment Factor | 1.0 | 1.0 | | |
| Field Gathering System Capital Cost Adjustment Factor | 1.0 | 1.0 | | |
| Wellfield O&M Cost Adjustment Factor | 1.0 | 1.0 | | |
| Water Cost Adjustment Factor | 1.0 | 1.0 | | |
| **Surface Plant Capital Cost (M$)** | **Variable** | **Variable (10-40)** | | |
| **Surface Plant O & M Cost (M$/Yr)** | **Variable** | **Variable (2-4)** | | |
| Electricity Rate ($/kWh) | **0.07** | **0.067** | | |
| Heat Rate ($/kWh) | **0.02** | **0.0512 ($15/MMBTU)** | | |