1. Purpose:
   1. This data frame outlines the probability of levee failures for leveed areas in the RAND model
   2. Each island contains combinations of various scenarios to determine the levee failure probabilities
      1. I am not too sure on these exact scenarios from the code but it appears to be a function of:
         1. Climate change scenarios:
            1. Affects water level, represented by SR\_Curve (I believe)
         2. Investment strategies:
            1. Affects levee fragility curve
            2. Others?
   3. Data columns
      1. islandID: index value of each island in the RAND model
      2. Island.or.Tract: name of the leveed area
      3. Year: no clue, can only take on 3 values, 2012, 2030, and 2050
         1. 2012 is likely baseline scenario, conditions for that year as baseline
         2. 2030 and 2050 are likely simulated time points
      4. GF\_Year: no clue
      5. SR\_Curve: stage-recurrence curve. Probability curve of a specific water level occurring to gauge flood risk
      6. PGAR\_Curve: Peak Ground Acceleration (PGA) recurrence curve. Used to estimate probability of seismic events
      7. LF\_Curve: levee fragility curve. Relationship between levee probability of failure and other risks, such as flood risk or seismic risk. Appears to have 4 scenarios, 4, 5, 6

| **Scenarios** | | |
| --- | --- | --- |
| **strTable** | **lngScenario** | **strDescription** |
| FragilityCurveHydro | 4 | DLIS 2015 |
| FragilityCurveHydro | 5 | DLIS 2015 + PL84-99 |
| FragilityCurveHydro | 6 | DLIS 2015 with 10 improved |

* + 1. SF\_Curve: seismic fragility curve. Relationship between levee failure and seismic events. This is constant across RAND scenarios.
    2. DD\_Curve: no clue. Doesn’t change across RAND scenarios though.
    3. SLR\_Condition: Sea-level rise scenarios: 5 scenarios

| **Scenarios** | | |
| --- | --- | --- |
| **strTable** | **lngScenario** | **strDescription** |
| Stage\_Recurrence | 0 | 2012 Average |
| Stage\_Recurrence | 1 | SLR 2030 Average |
| Stage\_Recurrence | 2 | SLR 2050 Average |
| Stage\_Recurrence | 3 | SLR 2030 High |
| Stage\_Recurrence | 4 | SLR 2050 High |

* + 1. Discount\_rate: no clue, economic metric. Likely have to deal with the various investment scenarios
    2. C4CCA\_Percentile: no clue, it’s NA for all
    3. Levee\_Fragility\_Description: no clue, it’s NA for all
    4. C4CCA\_SLR: no clue NA for all
    5. hydrologicFailure: levee failure probability based on water conditions
    6. seismicFailure: levee failure probability based on seismic conditions
    7. leveeFailure: summation of the hydrologicFailure and seismicFailure excluding the probability that both occurs. See “doc/RANDExploration.docx” for a more detailed description.