

! The Water Supply Index (WSI) for the SWP is the sum of the beginning of months storages
 ! (BOM) for Lake Oroville (S6) and SWP-San Luis Reservoir (S12) and the Forecast of Runoff
 ! for the Feather River.

! Forecast of Runoff for SWP is defined as: Feather River component of the Sacramento
 ! River Index (SRI) - Sum of Oroville Lake Inflows (I6) since 1-OCT.

! Forecast of Feather River Runoff into Lake Oroville for REMAINDER of WATER YEAR

```
define frcst_fea {
  case JantoMay {
    condition month >= JAN .and. month <=MAY
    select     frcst_fea
    from       feather_runoff_forecast
    where      wateryear=wateryear, month=month }
  case other {
    condition  always
    value      0.0 }
}
```

! Water Supply Index for State Water Project

```
define co_final_dv {std kind 'carryover' units 'taf'}
define co_available_dv {std kind 'carryover' units 'taf'}
define co_correction {
  case Jan {
    condition month == jan
    value      max(0.,co_final_dv(-1) - max(0., co_final_dv(-1) -
(S12(-1) - 42.) - SIO_SWP(-1)))
  }
  case FebToMarFullSL {
    condition month >= feb .and. month <= mar .and. S12(-1) >= 1067
    value      max(0.,co_available_dv(-1) - swp_co_total(-
1)*cfs_taf(-1) - min(max(0.,co_available_dv(-1) - swp_co_total(-
1)*cfs_taf(-1) - SIO_SWP(-1)), swp_IN_total(-1)*cfs_taf(-1) +
max(0.,6680.-D419(-1)) * cfs_taf(-1)))
  }
  case FebToMarOth {
    condition month >= feb .and. month <= mar
    value      max(0.,co_available_dv(-1) - swp_co_total(-
1)*cfs_taf(-1) - min(max(0.,co_available_dv(-1) - swp_co_total(-
1)*cfs_taf(-1) - SIO_SWP(-1)), swp_IN_total(-1)*cfs_taf(-1)))
  }
  case otherwise {
    condition  always
    value      0.
  }
}
define co_correction_ {alias co_correction kind 'carryover' units 'taf'}
```

```

define S12effective {case JantoMar {
    condition range(month, jan, mar)
    value max(S12(-1) - co_correction, 0.0)}
case Rest {
    condition always
    value S12(-1)}}

define WSI_SWP {
    case JantoApr {
        condition month >= JAN .and. month <= APR
        value S6(-1) - S6_WTS(-1) + S12effective /*- swp_co_1*/ +
        frcst_fea } ! Previous month storage plus
forecast inflow
    case May {
        condition month == MAY
        value S6(-1) - S6_WTS(-1) + S12(-1) +
        min(perdel_cvpag_s*100.,37.5)*SWPShastaSwitch /*-
swp_co_1*/ +
        frcst_fea } ! Previous month storage plus
forecast inflow
    case other {
        condition always
        value 0.0 }
}

define WSI_SWP_dv {alias WSI_SWP kind 'water-supply-index' units 'taf'}

define WSI_SWP_io {
    case JantoApr {
        condition month >= JAN .and. month <= APR
        value S6(-1) - S6_WTS(-1) + S12effective /*- swp_co_1*/ +
        frcst_fea + min(SIO_SWP(-1),max_return_swp2) } !
Previous month storage plus forecast inflow
    case May {
        condition month == MAY
        value S6(-1) - S6_WTS(-1) + S12(-1) +
        min(perdel_cvpag_s*100.,37.5)*SWPShastaSwitch /*-
swp_co_1*/ +
        frcst_fea + min(SIO_SWP(-1),max_return_swp2) } !
Previous month storage plus forecast inflow
    case other {
        condition always
        value 0.0 }
}

define WSI_SWP_io_ {alias WSI_SWP_io kind 'water-supply-index' units
'taf'}

! Do another version of WSI that includes NODOS SWP component
contribution

! have found that this is a reasonable limit on how much water can be
drawn from NODOS based on new pipeline release capacity only
define lmtWSIS31_conv {value 500.*upperC17603/1500.}

```

```

! don't rely on S31 if can't access the supply because of release limits
define lmtWSIS31_DryCap {
  case ShastaColdOffRamp {
    condition S1(-1) + S4(-1) + S44(-1) < ColdStorTarg
    value lmtWSIS31_conv} ! only release
pipe in driest conditions
  case CritCondOffRamp {
    condition wyt_NODOS + prev_wyt_SAC >= 8
    value lmtWSIS31_conv}
  case otherwise {
    condition always
    value 99999.0 }
}

/*
! use NODOS to top off SWP Storage first (scale use of Sites according to
Oroville condition)
define lmtWSIS31_OroStr {
  case Low {
    condition S6(-1) < 2000. .or. wyt_SAC >= 5.
    value 200.}
  case Medium {
    condition S6(-1) < 2500. .or. wyt_SAC >= 4.
    value 400.}
  case otherwise {
    condition always
    value 99999.0 }
}

define lmtWSIforS31 {value min(lmtWSIS31_OroStr,lmtWSIS31_drycap)}
*/
define lmtWSIforS31 {value lmtWSIS31_drycap}

define WSI_SWP_NDS {
  case JantoMay {
    condition month >= JAN .and. month <= MAY
    value WSI_SWP + min(S31(-1),lmtWSIforS31)}
  case other {
    condition always
    value 0.0 }
}

define WSI_SWP_NDS_dv {alias WSI_SWP_NDS kind 'water-supply-index' units
'taf'}

```