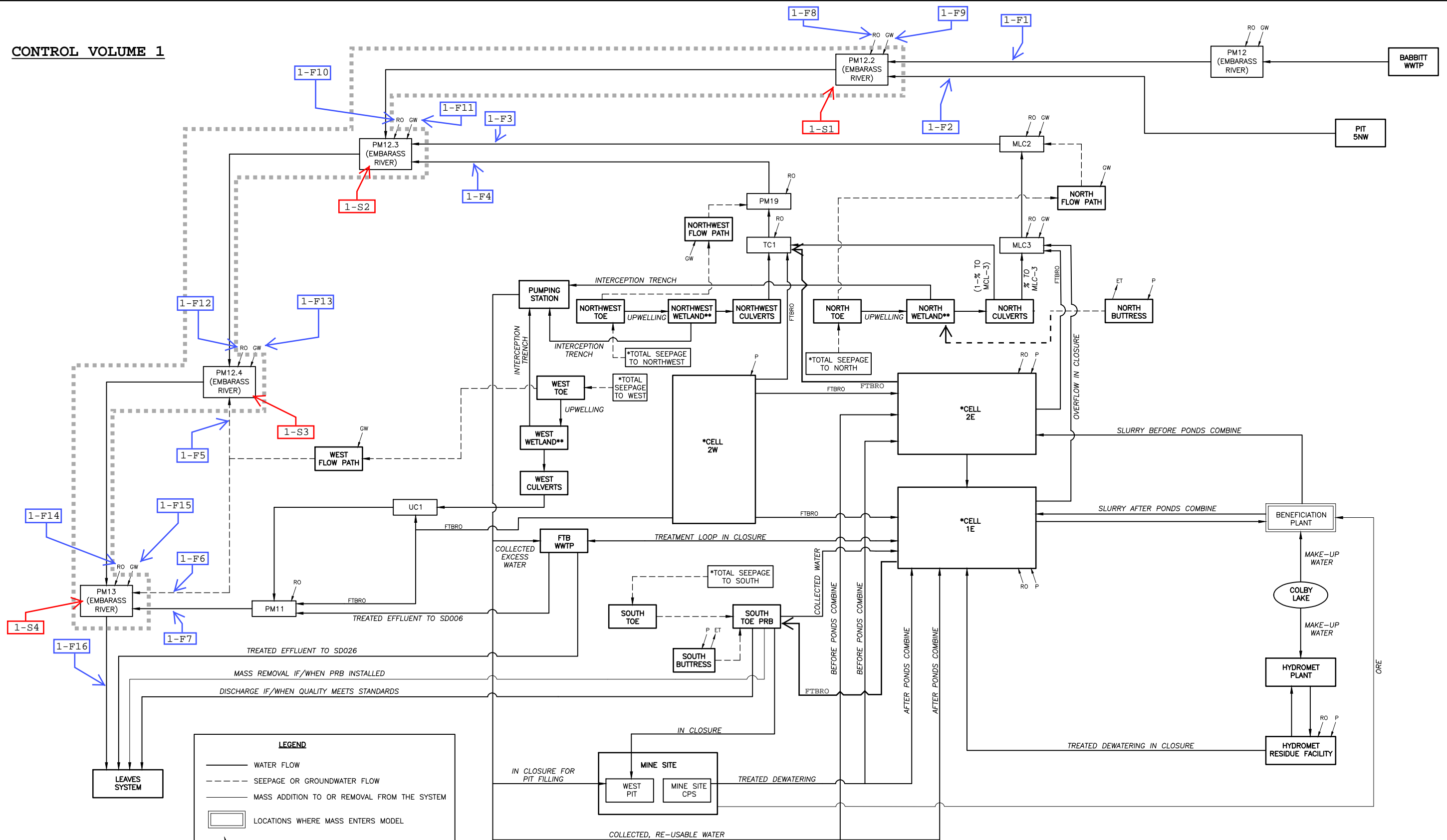


CONTROL VOLUME 1

CADD USER: Rick Cushman FILE: M:\DEPT\WORK\PLANT SITE WQ MODEL FLOWCHART.DWG PLOT SCALE: 1:2 PLOT DATE: 8/14/2012 9:23 AM



LEGEND

- WATER FLOW
- - - SEEPAGE OR GROUNDWATER FLOW
- · · MASS ADDITION TO OR REMOVAL FROM THE SYSTEM
- ▭ LOCATIONS WHERE MASS ENTERS MODEL
- ↖ RO BACKGROUND RUNOFF INPUT (FLOW AND LOAD)
- ↙ GW BACKGROUND GROUNDWATER INPUT (FLOW AND LOAD)
- ⬆ P PRECIPITATION INPUT (FLOW)
- ⬆ ET EVAPOTRANSPIRATION OUTPUT (FLOW)
- FTBRO FLOTATION TAILINGS BASIN RUNOFF (FLOW)

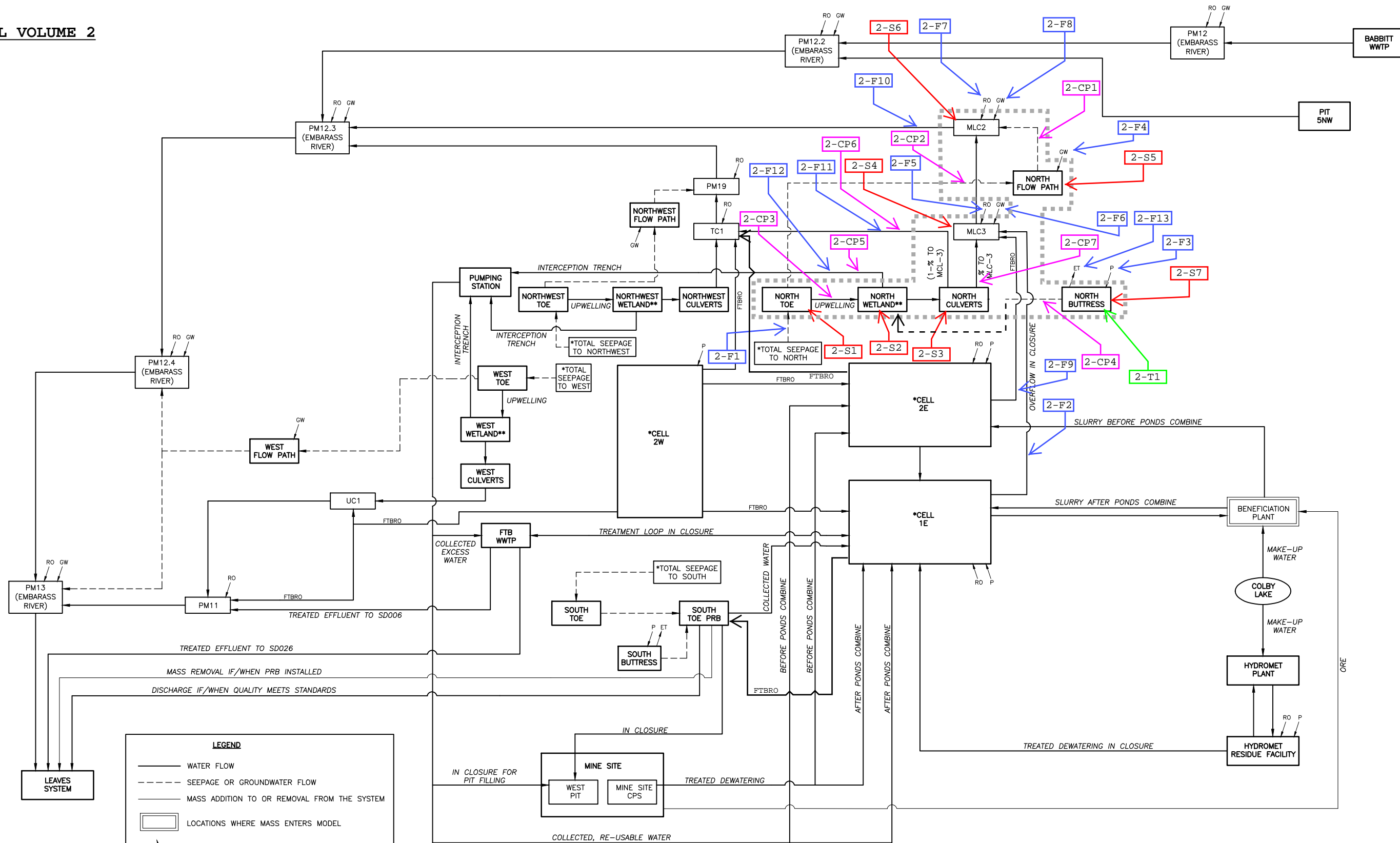
* SEE DRAFT MODEL DETAILED FLOW CHART.
 ** WETLAND IS ONLY EFFECTIVE WHEN THE INTERCEPTION TRENCH CEASES COLLECTION.

STORAGE NODE
FLOW LINE
MASS TRANSFER LINE
CALCULATION POINT

NORTHMET PLANT SITE WATER QUALITY MODEL
 DRAFT MODEL FLOWCHART
 GOLDSIM MODEL VERSION 3
 AUGUST 6, 2012

CONTROL VOLUME 2

CADD USER: Rick Cushman FILE: M:\DEPT\WORK\PLANT SITE WQ MODEL FLOWCHART.DWG PLOT SCALE: 1:2 PLOT DATE: 8/14/2012 9:23 AM



LEGEND

- WATER FLOW
- - - SEEPAGE OR GROUNDWATER FLOW
- MASS ADDITION TO OR REMOVAL FROM THE SYSTEM
- ▭ LOCATIONS WHERE MASS ENTERS MODEL
- RO BACKGROUND RUNOFF INPUT (FLOW AND LOAD)
- GW BACKGROUND GROUNDWATER INPUT (FLOW AND LOAD)
- P PRECIPITATION INPUT (FLOW)
- ET EVAPOTRANSPIRATION OUTPUT (FLOW)
- FTBRO FLOTATION TAILINGS BASIN RUNOFF (FLOW)

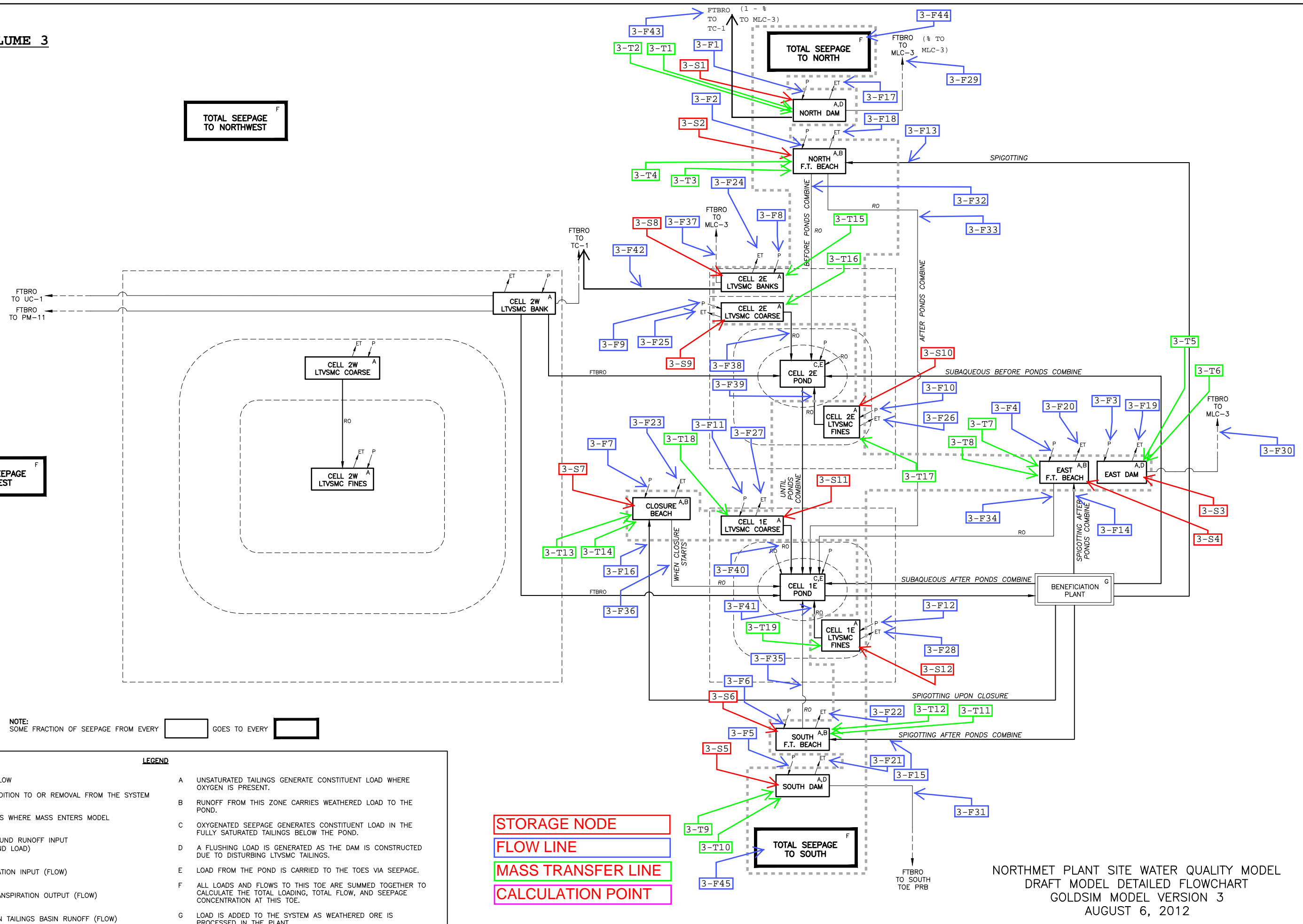
* SEE DRAFT MODEL DETAILED FLOW CHART.
 ** WETLAND IS ONLY EFFECTIVE WHEN THE INTERCEPTION TRENCH CEASES COLLECTION.

STORAGE NODE
FLOW LINE
MASS TRANSFER LINE
CALCULATION POINT

NORTHMET PLANT SITE WATER QUALITY MODEL
 DRAFT MODEL FLOWCHART
 GOLDSIM MODEL VERSION 3
 AUGUST 6, 2012

CONTROL VOLUME 3

CADD USER: Rick Gauthier FILE: M:\DEPT\WORK\RLUG\236986200_NORTHMET SITE PLANT WQ MODEL DETAILED FLOWCHART.DWG PLOT SCALE: 1:2 PLOT DATE: 8/6/2012 11:51 AM



LEGEND

	WATER FLOW	A	UNSATURATED TAILINGS GENERATE CONSTITUENT LOAD WHERE OXYGEN IS PRESENT.
	MASS ADDITION TO OR REMOVAL FROM THE SYSTEM	B	RUNOFF FROM THIS ZONE CARRIES WEATHERED LOAD TO THE POND.
	LOCATIONS WHERE MASS ENTERS MODEL	C	OXYGENATED SEEPAGE GENERATES CONSTITUENT LOAD IN THE FULLY SATURATED TAILINGS BELOW THE POND.
	BACKGROUND RUNOFF INPUT (FLOW AND LOAD)	D	A FLUSHING LOAD IS GENERATED AS THE DAM IS CONSTRUCTED DUE TO DISTURBING LTVSMC TAILINGS.
	PRECIPITATION INPUT (FLOW)	E	LOAD FROM THE POND IS CARRIED TO THE TOES VIA SEEPAGE.
	EVAPOTRANSPIRATION OUTPUT (FLOW)	F	ALL LOADS AND FLOWS TO THIS TOE ARE SUMMED TOGETHER TO CALCULATE THE TOTAL LOADING, TOTAL FLOW, AND SEEPAGE CONCENTRATION AT THIS TOE.
	FLOTATION TAILINGS BASIN RUNOFF (FLOW)	G	LOAD IS ADDED TO THE SYSTEM AS WEATHERED ORE IS PROCESSED IN THE PLANT.

STORAGE NODE

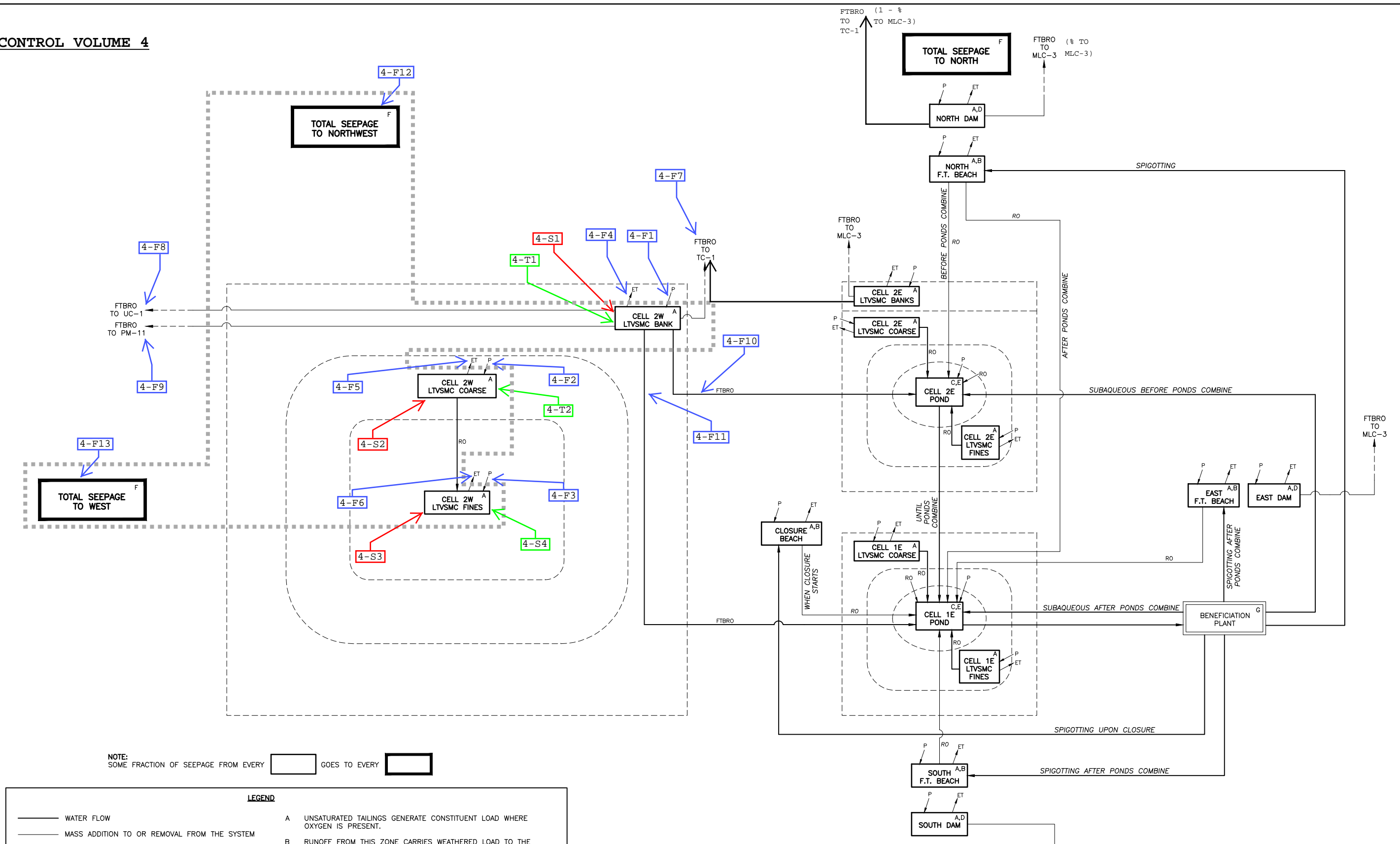
FLOW LINE

MASS TRANSFER LINE

CALCULATION POINT

NORTHMET PLANT SITE WATER QUALITY MODEL
 DRAFT MODEL DETAILED FLOWCHART
 GOLDSIM MODEL VERSION 3
 AUGUST 6, 2012

CONTROL VOLUME 4



NOTE: SOME FRACTION OF SEEPAGE FROM EVERY [] GOES TO EVERY []

LEGEND

	WATER FLOW	A	UNSATURATED TAILINGS GENERATE CONSTITUENT LOAD WHERE OXYGEN IS PRESENT.
	MASS ADDITION TO OR REMOVAL FROM THE SYSTEM	B	RUNOFF FROM THIS ZONE CARRIES WEATHERED LOAD TO THE POND.
	LOCATIONS WHERE MASS ENTERS MODEL	C	OXYGENATED SEEPAGE GENERATES CONSTITUENT LOAD IN THE FULLY SATURATED TAILINGS BELOW THE POND.
	BACKGROUND RUNOFF INPUT (FLOW AND LOAD)	D	A FLUSHING LOAD IS GENERATED AS THE DAM IS CONSTRUCTED DUE TO DISTURBING LTVSMC TAILINGS.
	PRECIPITATION INPUT (FLOW)	E	LOAD FROM THE POND IS CARRIED TO THE TOES VIA SEEPAGE.
	EVAPOTRANSPIRATION OUTPUT (FLOW)	F	ALL LOADS AND FLOWS TO THIS TOE ARE SUMMED TOGETHER TO CALCULATE THE TOTAL LOADING, TOTAL FLOW, AND SEEPAGE CONCENTRATION AT THIS TOE.
	FLOTATION TAILINGS BASIN RUNOFF (FLOW)	G	LOAD IS ADDED TO THE SYSTEM AS WEATHERED ORE IS PROCESSED IN THE PLANT.

STORAGE NODE

FLOW LINE

MASS TRANSFER LINE

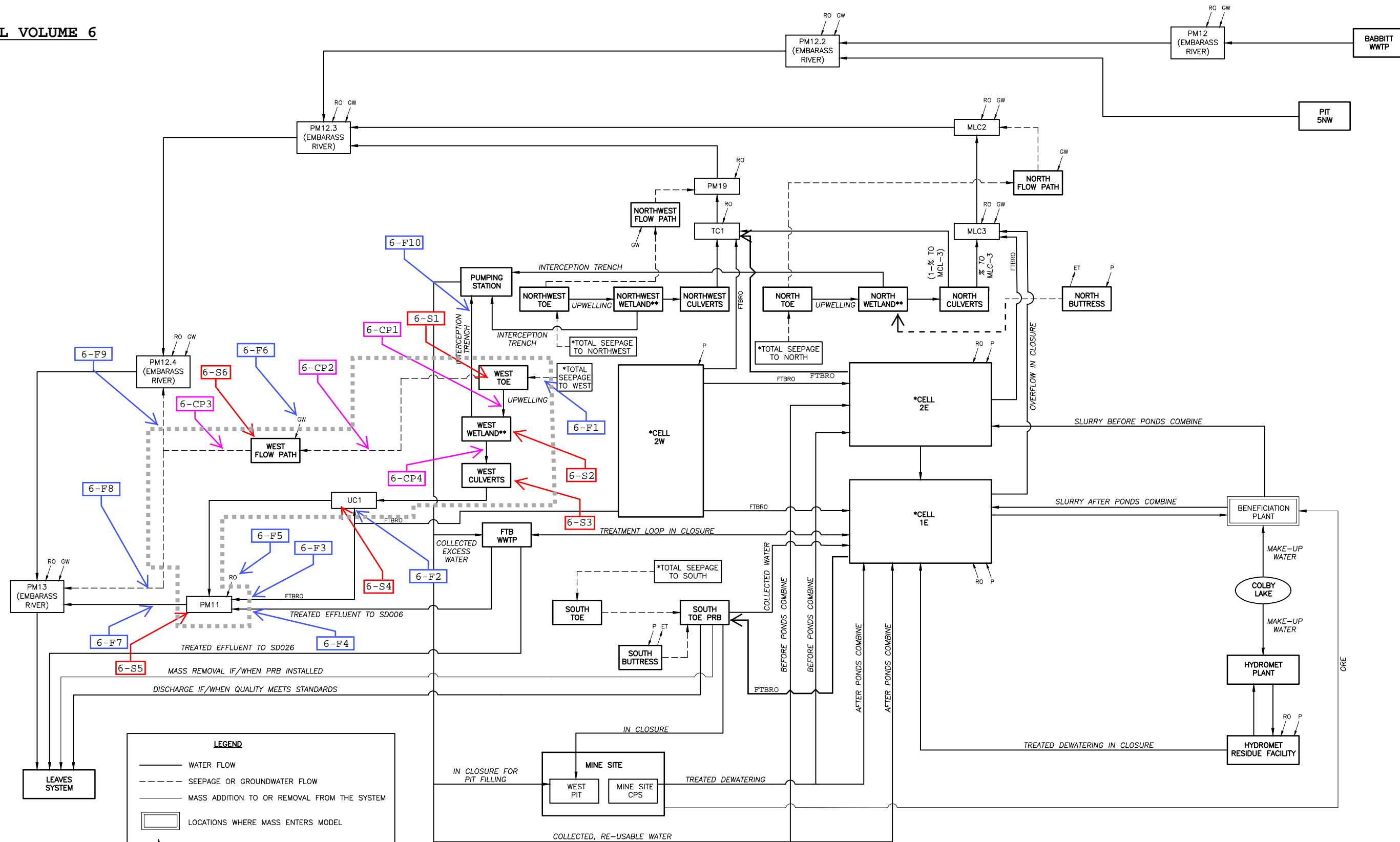
CALCULATION POINT

NORTHMET PLANT SITE WATER QUALITY MODEL
 DRAFT MODEL DETAILED FLOWCHART
 GOLDSIM MODEL VERSION 3
 AUGUST 6, 2012

CADD USER: Rick Gushner FILE: M:\DEPT\WORK\RLUG\236986200_NORTHMET SITE PLANT WQ MODEL DETAILED FLOWCHART.DWG PLOT SCALE: 1:2 PLOT DATE: 8/6/2012 11:51 AM

CONTROL VOLUME 6

CADD USER: Rick Cushman FILE: M:\DEPT\WORK\PLANT SITE WD MODEL FLOWCHART.DWG PLOT SCALE: 1:2 PLOT DATE: 8/14/2012 9:23 AM



* SEE DRAFT MODEL DETAILED FLOW CHART.
 ** WETLAND IS ONLY EFFECTIVE WHEN THE INTERCEPTION TRENCH CEASES COLLECTION.

STORAGE NODE

FLOW LINE

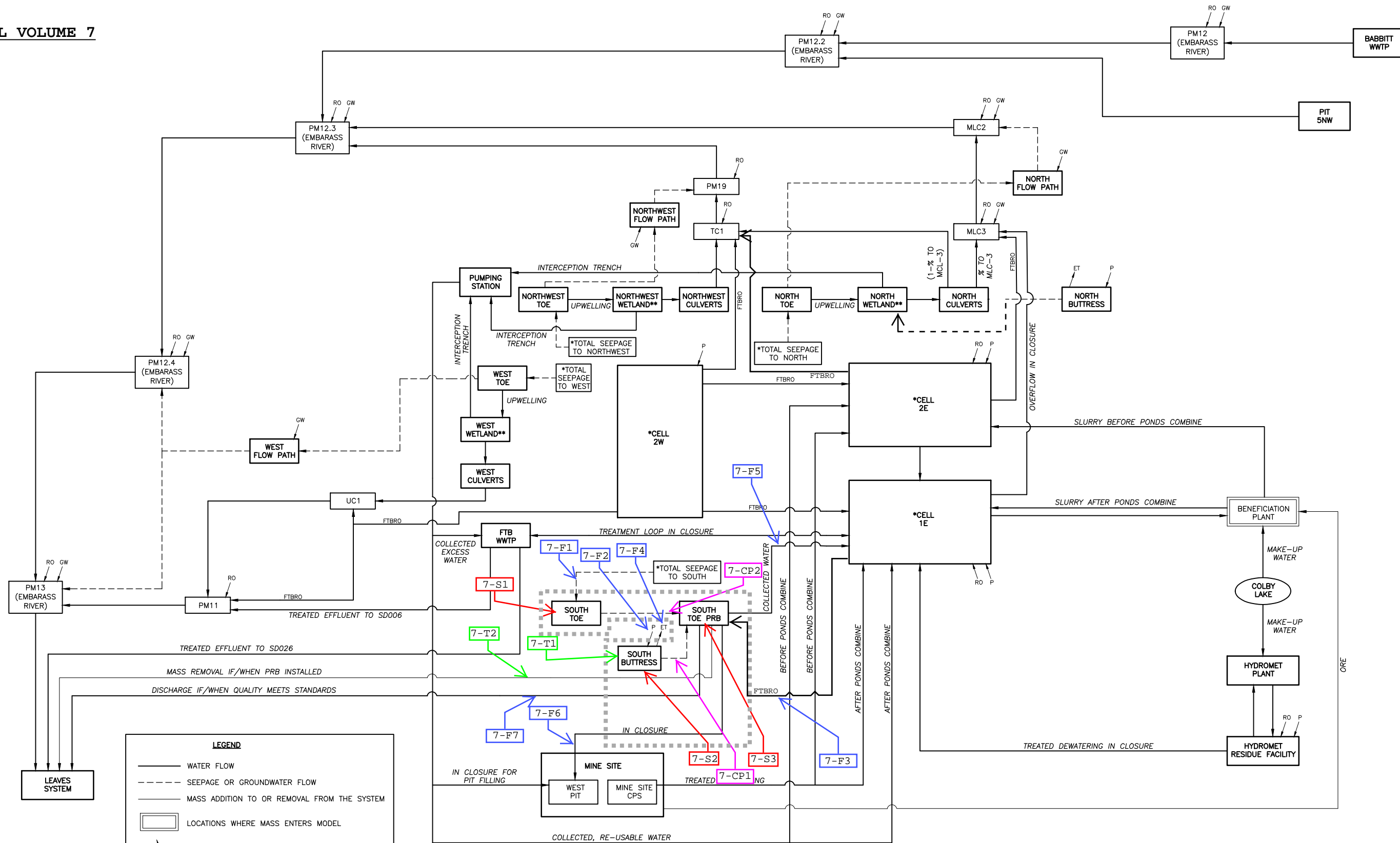
MASS TRANSFER LINE

CALCULATION POINT

NORTHMET PLANT SITE WATER QUALITY MODEL
 DRAFT MODEL FLOWCHART
 GOLDSIM MODEL VERSION 3
 AUGUST 6, 2012

CONTROL VOLUME 7

CADD USER: Rick Cushman FILE: M:\DEPT\WORK\PLANT SITE WD MODEL FLOWCHART.DWG PLOT SCALE: 1:2 PLOT DATE: 8/14/2012 9:23 AM



LEGEND

- WATER FLOW
- - - SEEPAGE OR GROUNDWATER FLOW
- MASS ADDITION TO OR REMOVAL FROM THE SYSTEM
- ▭ LOCATIONS WHERE MASS ENTERS MODEL
- RO BACKGROUND RUNOFF INPUT (FLOW AND LOAD)
- GW BACKGROUND GROUNDWATER INPUT (FLOW AND LOAD)
- P PRECIPITATION INPUT (FLOW)
- ET EVAPOTRANSPIRATION OUTPUT (FLOW)
- FTBRO FLOTATION TAILINGS BASIN RUNOFF (FLOW)

* SEE DRAFT MODEL DETAILED FLOW CHART.
 ** WETLAND IS ONLY EFFECTIVE WHEN THE INTERCEPTION TRENCH CEASES COLLECTION.

STORAGE NODE

FLOW LINE

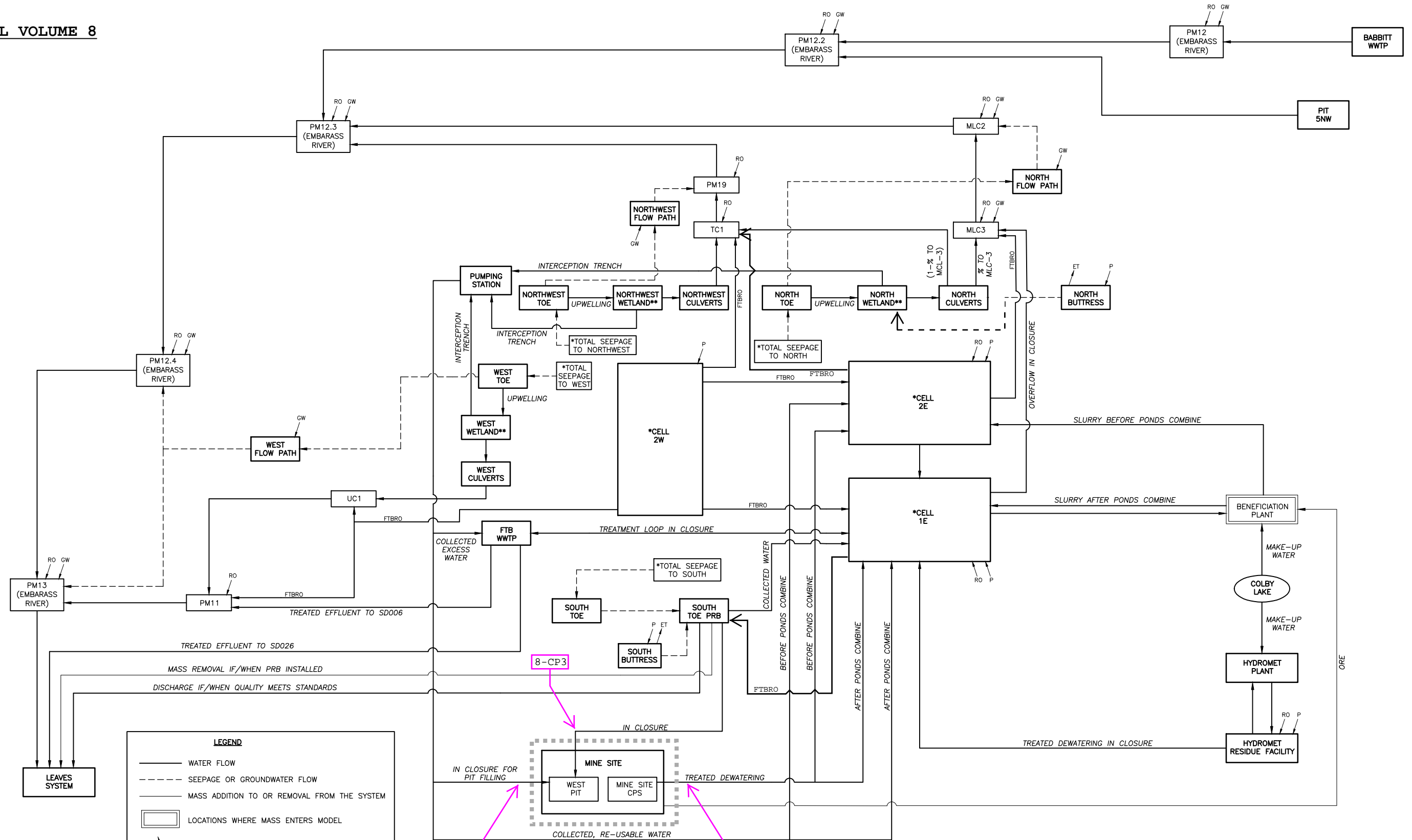
MASS TRANSFER LINE

CALCULATION POINT

NORTHMET PLANT SITE WATER QUALITY MODEL
 DRAFT MODEL FLOWCHART
 GOLDSIM MODEL VERSION 3
 AUGUST 6, 2012

CONTROL VOLUME 8

CADD USER: Rick Cushman FILE: M:\DEPT\WORK\PLANT SITE WQ MODEL FLOWCHART.DWG PLOT SCALE: 1:2 PLOT DATE: 8/14/2012 9:23 AM



LEGEND

- WATER FLOW
- - - SEEPAGE OR GROUNDWATER FLOW
- MASS ADDITION TO OR REMOVAL FROM THE SYSTEM
- ▭ LOCATIONS WHERE MASS ENTERS MODEL
- RO BACKGROUND RUNOFF INPUT (FLOW AND LOAD)
- GW BACKGROUND GROUNDWATER INPUT (FLOW AND LOAD)
- P PRECIPITATION INPUT (FLOW)
- ET EVAPOTRANSPIRATION OUTPUT (FLOW)
- FTBRO FLOTATION TAILINGS BASIN RUNOFF (FLOW)

8-CP2 * SEE DRAFT MODEL DETAILED FLOW CHART.
 8-CP1 ** WETLAND IS ONLY EFFECTIVE WHEN THE INTERCEPTION TRENCH CEASES COLLECTION.

STORAGE NODE

FLOW LINE

MASS TRANSFER LINE

CALCULATION POINT

NORTHMET PLANT SITE WATER QUALITY MODEL
 DRAFT MODEL FLOWCHART
 GOLDSIM MODEL VERSION 3
 AUGUST 6, 2012