HEAP LEACH PAD

INTERIM FLUID MANAGEMENT (IFM)

March 18, 2010

INTERIM FLUID MANAGEMENT (IFM)

IFM FUNDS ARE NEEDED TO:

- Maintain the area of operations in compliance with applicable environmental requirements while third-party contracts are developed and executed. 43 CFR 3809.552
- Reimburse the fund established for short-term fluid management for the amount used at the site while the process for forfeiture of a surety is pending. NAC 519A.392

IFM COMPONENTS

- Develop and Implement Health and Safety Plan
- Develop and Implement IFM Closure Plan
- Develop (*or refine*) Final Permanent Closure Plan
- Recirculation (pumping) of process fluids 24/7 to prevent overtopping of process ponds during a shutdown (no routing of fluids to tailings impoundments)
  - Remains at operational heap drain-down rate
  - No evaporation (active or passive) assumed
  - Not to be combined with PFS drain-down curve
  - Separate from PFS bond amounts
  - Time frame 6 months

IFM COMPONENTS - LABOR

- On-Site Labor coverage 24/7 for pumping, maintenance, and security
  - General Laborers (2 persons per shift) (2, 12 hr shifts/day, 7 days/wk)
  - Security (1 person per shift) (2, 12 hr shifts/day, 7 days/week)
  - Mechanic/Welder/Electrician, etc. (1 person) 40 hrs/wk
  - Supervisor (1 person) 40 hrs/wk
- EMAR Contractor Reporting and Oversight
  - Labor (Engineer, Technician, Administrative)
  - Travel time
  - Mileage
  - Per diem
  - Miscellaneous Administrative Costs

IFM COMPONENTS - EQUIPMENT

- Full time rental equipment costs (6 months)
  - Pumps
  - Backhoe
  - Portable Generator (5 KW)
  - Pickup Trucks (2)
  - Welding Equipment
  - Office Trailer
  - Portable Toilet
- Part time rental equipment costs
  - Motor Grader (if site requires snow removal) – 3 months
  - Fusion Welder (for liner) – 1 month
- Maintenance, parts, and supplies
- Electrical costs to run pumps
- Sampling costs
- Hazardous waste disposal
- Other misc. contract costs

HEAP LEACH PAD

PROCESS FLUID STABILIZATION (PFS)

March 18, 2010

HEAP LEACH PAD PFS BONDING ASSUMPTIONS

Assumes an operator default has occurred and the agencies must manage the site by:

- Hiring third-party contractors
- Renting or purchasing all equipment such as
  - Recirculation pumps
  - Evaporation Equipment
  - Support Equipment

HEAP LEACH PAD PFS BONDING ASSUMPTIONS

The method of closure assumed used by the agencies in an operator default situation may differ from what the operator intended to do if it were to close the site itself since:

- Original labor crews may be no longer available
- Original equipment may be no longer available

HEAP LEACH PAD
PROCESS FLUID STABILIZATION (PFS)

The closure process of a heap leach pad is defined by the following steps or phases:

- Phase I – Recirculation and Active Evaporation
- Phase II – Active Evaporation
- Phase III – ET Cell Construction
- Phase IV – Passive Evaporation

BOND RELEASE

IFM & PFS BOND RELEASE

When the closure process of a heap leach pad is undertaken in a controlled manner by the operator; bond release may occur for:

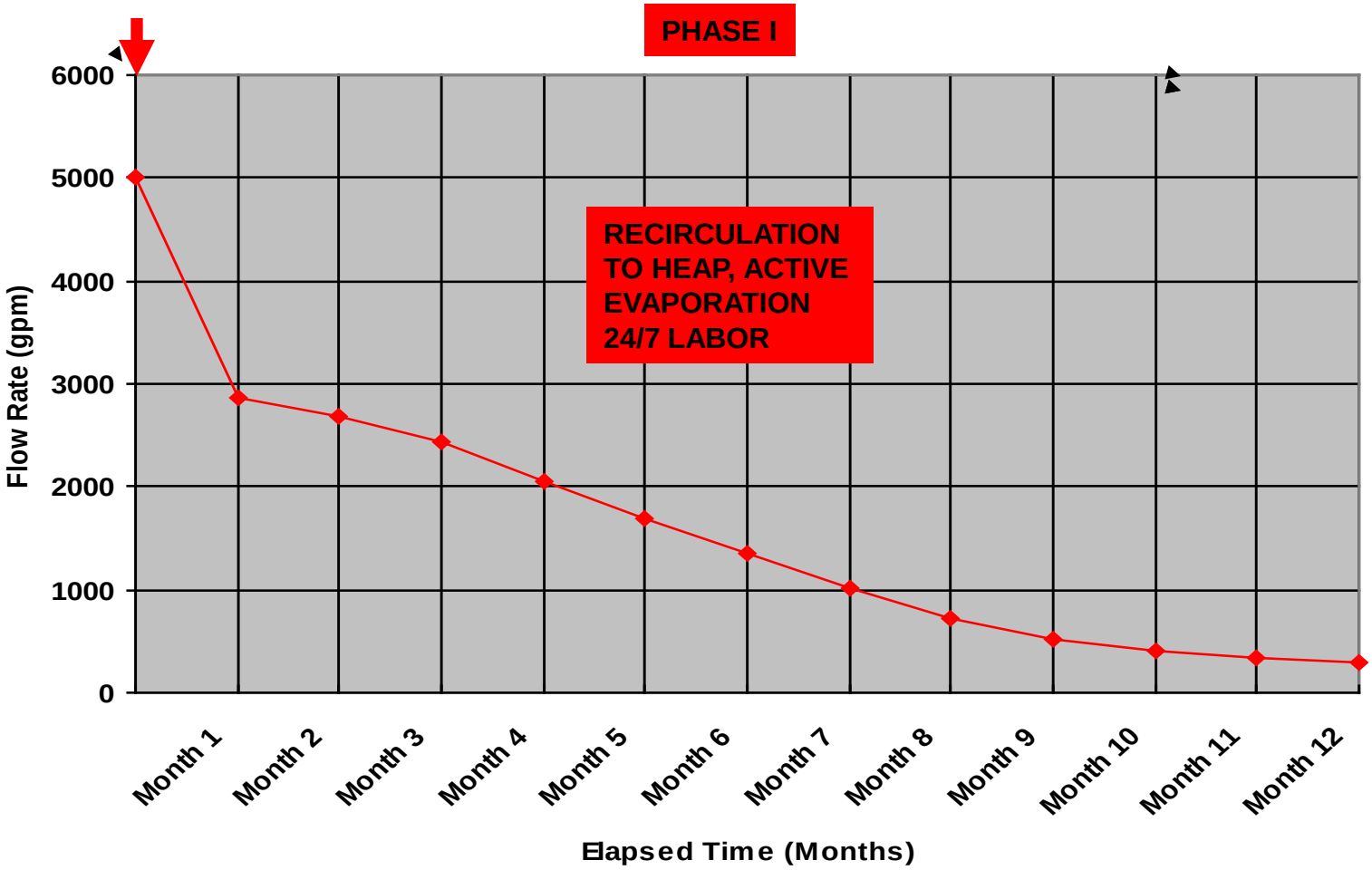
- IFM – at end of Phase I (i.e. once recirculation of fluids to the heap is no longer required to prevent pond overtopping)
- Phase I – 12 months after actual recirculation to heap ends
- Phase II – after E or ET ponds have been constructed and it is demonstrated that forced evaporation is no longer necessary
- Phase III – 12 months after E or ET ponds have been constructed and it is demonstrated that they are performing as designed to passively evaporate remaining heap leach draindown.

The operator may submit an “Attachment A” for bond release and a bond update for periodic review that documents and supports the remaining PFS liability

PFS PHASE DESCRIPTIONS

PROCESS FLUID STABILIZATION
PHASES I-IV
CONCEPTUAL HEAP LEACH DRAIN DOWN CURVE

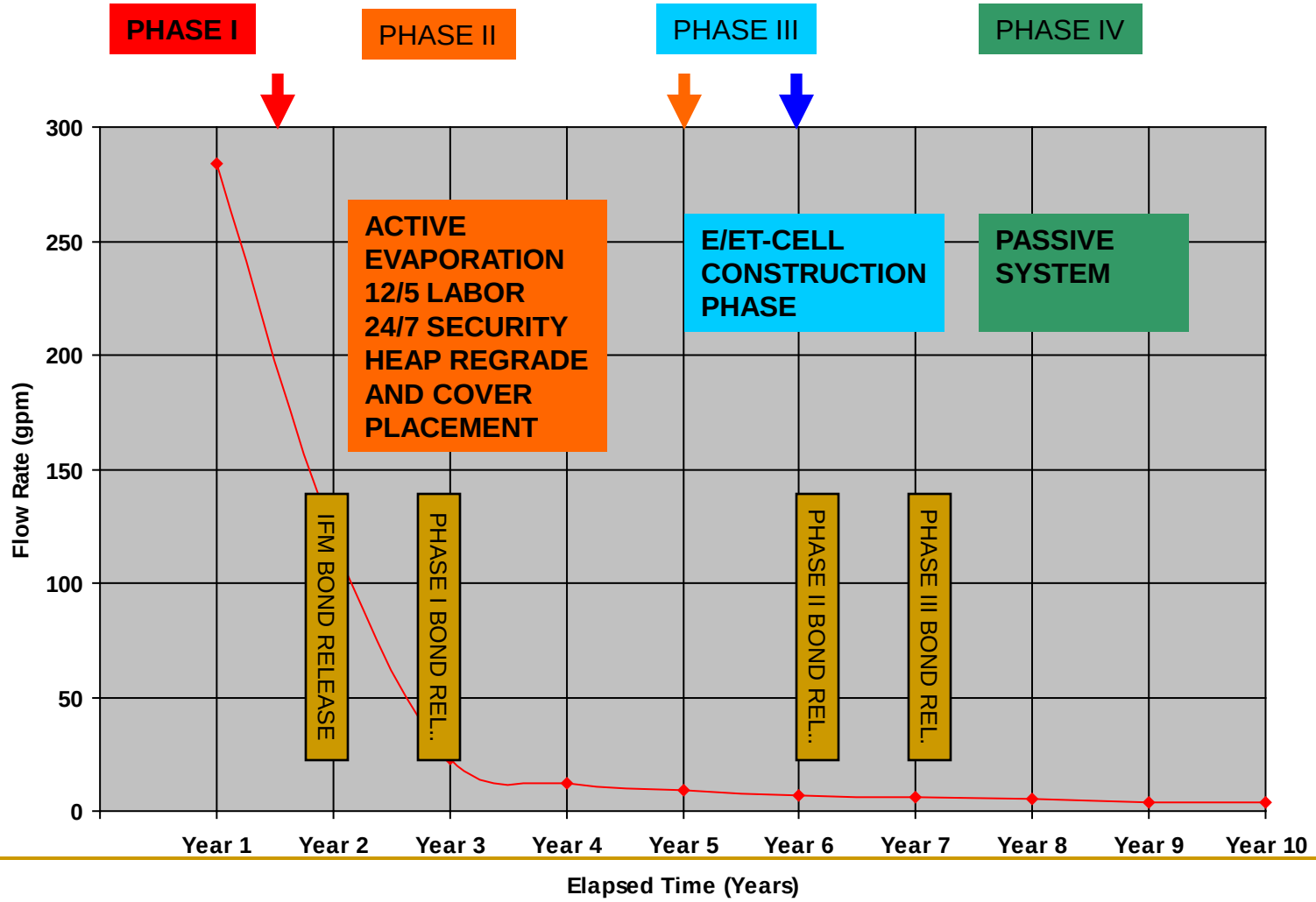
YEAR 1



PROCESS FLUID STABILIZATION
PHASE I-IV

CONCEPTUAL HEAP LEACH DRAIN DOWN CURVE

YEARS 2-10



PHASE I

- Recirculation (pumping) of process fluids 24/7 to heap is required for a period of time after heap leaching operations cease to prevent overtopping of ponds (no routing of fluids to tailings impoundments)
  - Begins at heap leach operational drain-down rate
  - Drain-down rate decreases over time as heap drains down and fluid evaporates
  - Time frame determined by draindown curve
- Active evaporation with industrial evaporation equipment (i.e. TurboMisters) employed 12 hrs/day, 7 months/year
  - Must be on approved containment
  - 500 foot minimum clearance for evaporator overspray

PHASE I COMPONENTS - LABOR

- On-Site Labor coverage 24/7 for pumping, evaporation, maintenance, and security
  - General Laborers (2 persons per shift)
    (2, 12 hr shifts/day, 7 days/wk)
  - Security (1 person per shift)
    (2, 12 hr shifts/day, 7 days/week)
  - Mechanic/Welder/Electrician, etc. (1 person) 40 hrs/wk
  - Supervisor (1 person) 20 - 40 hrs/wk
    - 20 hrs/wk if reclamation site supervisor present

PHASE I COMPONENTS - EQUIPMENT

- Full time rental equipment costs
  - Pumps
  - Backhoe
  - Portable Generator (5 KW)
  - Pickup Trucks (2)
  - Welding Equipment
  - Office Trailer
  - Portable Toilet
- Part time rental equipment costs
  - Motor Grader (if site requires snow removal) – 3 months/year
  - Fusion Welder (for liner) – 1 month/year
- Maintenance, parts, and supplies
- Electrical costs to run pumps
- Sampling costs
- Hazardous waste disposal
- Other misc. contract costs

PHASE II

- Phase II begins when process fluids can be managed completely with active evaporation (recirculation of excess process fluids is no longer required)
  - Storm event pond capacity not to be considered
  - Process fluids are actively evaporated
  - Drain-down rate less than active evaporation rate
  - Time frame determined by draindown curve
- Active evaporation with industrial evaporation equipment (i.e. TurboMisters) employed 12 hrs/day, 7 months/year
- During Phase II, the heap cover is completed

PHASE II COMPONENTS - LABOR

- On-Site Labor coverage 12/7 for pumping, evaporation, maintenance, and security
  - General Laborers (2 persons per shift)
    (1, 12 hr shifts/day, 5 days/wk)
  - Security (1 person per shift)
    (2, 12 hr shifts/day, 7 days/week)
  - Mechanic/Welder/Electrician, etc. (1 person) 16 hrs/wk
  - Supervisor (1 person) 16 hrs/wk

PHASE II COMPONENTS - EQUIPMENT

- Full time rental equipment costs
  - Pumps
  - Backhoe
  - Portable Generator (5 KW)
  - Pickup Trucks (2)
  - Welding Equipment
  - Office Trailer
  - Portable Toilet
- Part time rental equipment costs
  - Motor Grader (if site requires snow removal) – 3 months/year
  - Fusion Welder (for liner) – 1 month/year
- Maintenance, parts, and supplies
- Electrical costs to run pumps
- Sampling costs
- Hazardous waste disposal
- Other misc. contract costs

PHASE III

- Phase III begins when the process ponds are empty and the steady-state heap drain-down rate can be managed entirely within the existing process ponds *without* active evaporation
  - Heap drain down rate generally less than passive evaporation rate
  - Limited active evaporation may be required after seasonal or storm events – 1 month labor and equipment included
  - Event pond capacity not to be considered for water balance

PHASE III

- Construction of E/ET Cells takes place
- Phase III ends when E/ET Cells are constructed and steady state heap drain-down can be managed entirely within the E/ET Cells

PHASE IV

- Phase IV begins when E/ET Cells are constructed and steady state heap drain-down can be managed entirely by utilizing passive evaporation within the E/ET Cells
  - Heap drain down rate is less than passive evaporation rate
  - Heap cover is completed to mitigate seasonal and storm events
  - Time frame indefinite
  - Long term periodic maintenance required

TAILINGS FACILITY

INTERIM FLUID MANAGEMENT (IFM)

May 18, 2011

INTERIM FLUID MANAGEMENT (IFM)

IFM FUNDS ARE NEEDED TO:

- Maintain the area of operations in compliance with applicable environmental requirements while third-party contracts are developed and executed. 43 CFR 3809.552
- Reimburse the fund established for short-term fluid management for the amount used at the site while the process for forfeiture of a surety is pending. NAC 519A.392

IFM COMPONENTS

- Develop and Implement Health and Safety Plan
- Develop and Implement IFM Closure Plan
- Develop (*or refine*) Final Permanent Closure Plan
- Recirculation (pumping) of process fluids 24/7 to prevent overtopping of ponds during a shutdown
  - Remains at operational tailings drain-down rate
  - No evaporation (active or passive) assumed
  - Not to be combined with PFS drain-down curve
  - Separate from PFS bond amounts
  - Time frame 6 months

IFM COMPONENTS - LABOR

- On-Site Labor coverage 24/7 for pumping, maintenance, and security
  - General Laborers (2 persons per shift) (2, 12 hr shifts/day, 7 days/wk)
  - Security (1 person per shift) (2, 12 hr shifts/day, 7 days/week)
  - Mechanic/Welder/Electrician, etc. (1 person) 40 hrs/wk
  - Supervisor (1 person) 40 hrs/wk
- EMAR Contractor Reporting and Oversight
  - Labor (Engineer, Technician, Administrative)
  - Travel time
  - Mileage
  - Per diem
  - Miscellaneous Administrative Costs

IFM COMPONENTS - EQUIPMENT

- Full time rental equipment costs (6 months)
  - Pumps
  - Backhoe
  - Portable Generator (5 KW)
  - Pickup Trucks (2)
  - Welding Equipment
  - Office Trailer
  - Portable Toilet
- Part time rental equipment costs
  - Motor Grader (if site requires snow removal) – 3 months
  - Fusion Welder (for liner) – 1 month
- Maintenance, parts, and supplies
- Electrical costs to run pumps
- Sampling costs
- Hazardous waste disposal
- Other misc. contract costs

TAILINGS FACILITY

PROCESS FLUID STABILIZATION (PFS)

May 18, 2011

TAILINGS FACILITY PFS BONDING ASSUMPTIONS

Assumes an operator default has occurred and the agencies must manage the site by:

- Hiring third-party contractors
- Renting or purchasing all equipment such as
  - Recirculation pumps
  - Evaporation Equipment
  - Support Equipment

TAILINGS FACILITIES PFS BONDING ASSUMPTIONS

The method of closure assumed used by the agencies in an operator default situation may differ from what the operator intended to do if it were to close the site itself since:

- Original labor crews may be no longer available
- Original equipment may be no longer available

TAILINGS FACILITIES
PROCESS FLUID STABILIZATION (PFS)

The closure process of a tailings facility is defined by the following steps or phases:

- Phase I – Recirculation and Active Evaporation
- Phase II – Active Evaporation
- Phase III – Draindown Treatment Facility Construction
- Phase IV – Passive Draindown Treatment

BOND RELEASE

IFM & PFS BOND RELEASE

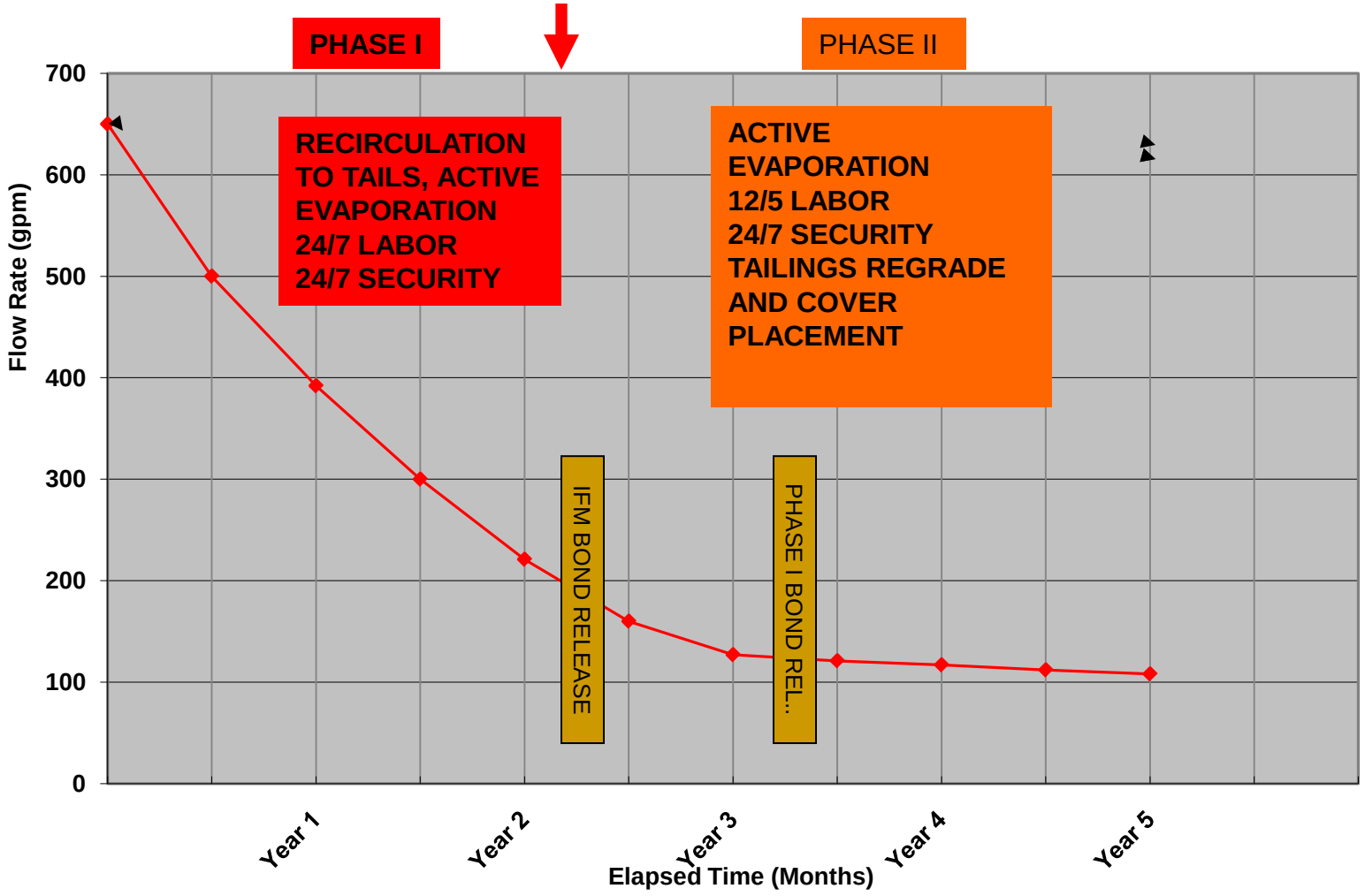
When the closure process of a tailings facility is undertaken in a controlled manner by the operator; bond release may occur for:

- IFM – at end of Phase I (i.e. once recirculation of fluids to the tailings is no longer required to prevent pond overtopping)
- Phase I – 12 months after actual recirculation to tailings ends
- Phase II – after draindown treatment facilities have been constructed and it is demonstrated that forced evaporation is no longer necessary
- Phase III – 12 months after draindown treatment facilities have been constructed and it is demonstrated that they are performing as designed to passively evaporate remaining tailings facility draindown.

The operator may submit an “Attachment A” for bond release and a bond update for periodic review that documents and supports the remaining PFS liability

PFS PHASE DESCRIPTIONS

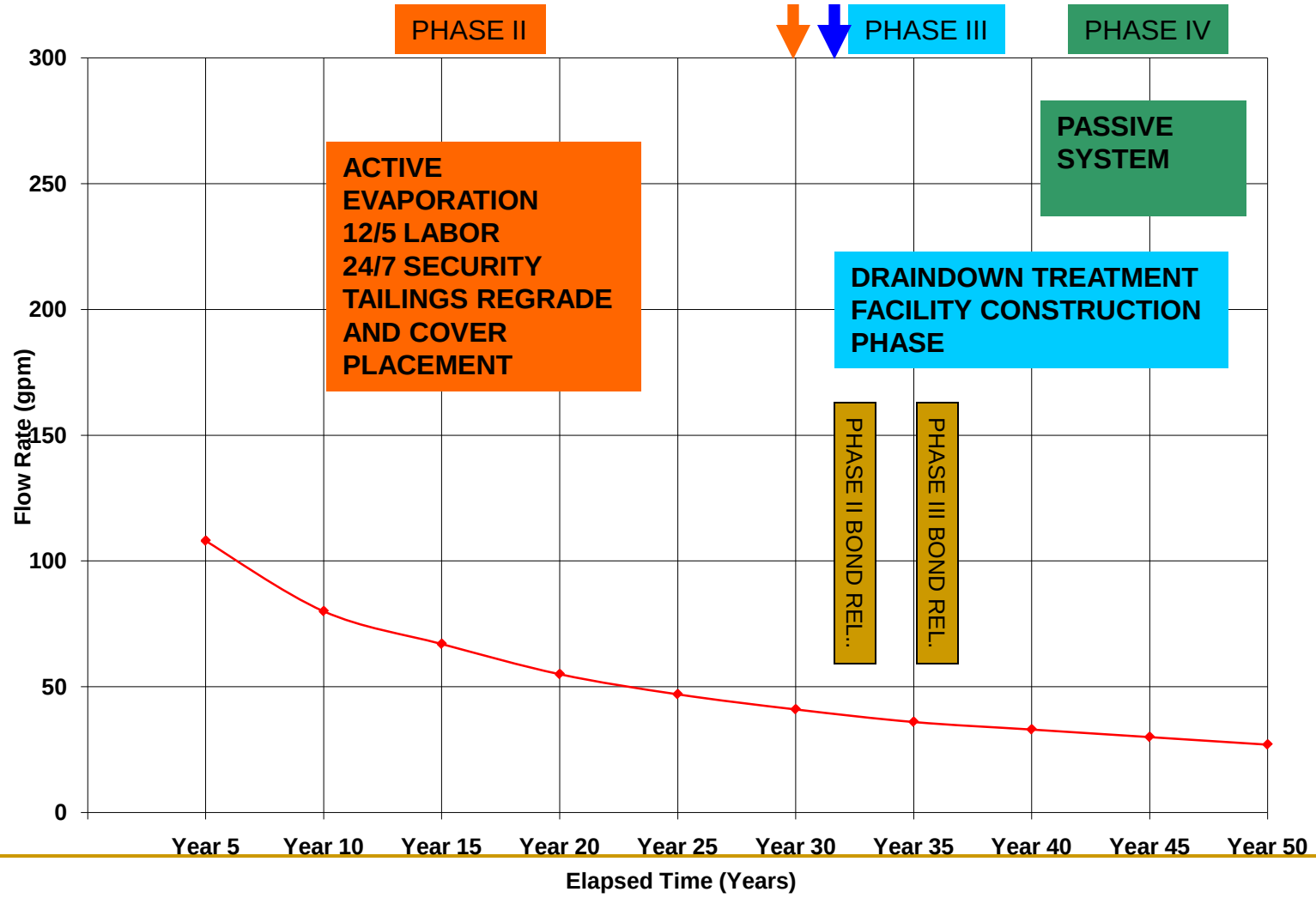
PROCESS FLUID STABILIZATION
PHASES I-IV
CONCEPTUAL TAILINGS FACILITY DRAIN DOWN CURVE



PROCESS FLUID STABILIZATION
PHASE I-IV

CONCEPTUAL TAILINGS FACILITY DRAIN DOWN CURVE

YEARS 5-50



PHASE I

- Recirculation (pumping) of process fluids 24/7 to tailings is required for a period of time after operations cease to maintain free-board regulatory requirements
  - Begins at tailings facility operational drain-down rate
  - Drain-down rate decreases over time as tailings drains down and fluid evaporates
  - Time frame determined by draindown curve
- Active evaporation with industrial evaporation equipment (i.e. TurboMisters) employed 12 hrs/day, 7 months/year
  - Must be on approved containment
  - 500 foot minimum clearance for evaporator overspray

PHASE I COMPONENTS - LABOR

- On-Site Labor coverage 24/7 for pumping, evaporation, maintenance, and security
  - General Laborers (2 persons per shift)
    (2, 12 hr shifts/day, 7 days/wk)
  - Security (1 person per shift)
    (2, 12 hr shifts/day, 7 days/week)
  - Mechanic/Welder/Electrician, etc. (1 person) 40 hrs/wk
  - Supervisor (1 person) 20 - 40 hrs/wk
    - 20 hrs/wk if reclamation site supervisor present

PHASE I COMPONENTS - EQUIPMENT

- Full time rental equipment costs
  - Pumps
  - Backhoe
  - Portable Generator (5 KW)
  - Pickup Trucks (2)
  - Welding Equipment
  - Office Trailer
  - Portable Toilet
- Part time rental equipment costs
  - Motor Grader (if site requires snow removal) – 3 months/year
  - Fusion Welder (for liner) – 1 month/year
- Maintenance, parts, and supplies
- Electrical costs to run pumps
- Sampling costs
- Other misc. contract costs

PHASE II

- Phase II begins when process fluids can be managed completely with active evaporation (recirculation of excess process fluids is no longer required)
  - Storm event pond capacity not to be considered
  - Process fluids are actively evaporated
  - Drain-down rate less than active evaporation rate
  - Time frame determined by draindown curve
- Active evaporation with industrial evaporation equipment (i.e. TurboMisters) employed 12 hrs/day, 7 months/year
- Additional passive draindown treatment facility may be constructed

PHASE II COMPONENTS - LABOR

- On-Site Labor coverage 24/7 for pumping, evaporation, maintenance, and security
  - General Laborers (2 persons per shift)
    (1, 12 hr shifts/day, 5 days/wk)
  - Security (1 person per shift)
    (2, 12 hr shifts/day, 7 days/week)
  - Mechanic/Welder/Electrician, etc. (1 person) 16 hrs/wk
  - Supervisor (1 person) 16 hrs/wk

PHASE II COMPONENTS - EQUIPMENT

- Full time rental equipment costs
  - Pumps
  - Backhoe
  - Portable Generator (5 KW)
  - Pickup Trucks (2)
  - Welding Equipment
  - Office Trailer
  - Portable Toilet
- Part time rental equipment costs
  - Motor Grader (if site requires snow removal) – 3 months/year
  - Fusion Welder (for liner) – 1 month/year
- Maintenance, parts, and supplies
- Electrical costs to run pumps
- Sampling costs
- Other misc. contract costs

PHASE III

- Phase III begins when the tailings drain-down rate can be managed entirely within the draindown treatment facilities
  - Tailings drain down rate generally less than passive evaporation rate
  - Limited active evaporation may be required after seasonal or storm events – 1 month labor and equipment included
  - Event pond capacity not to be considered for water balance

PHASE III

- Construction of draindown treatment facilities takes place
- Phase III ends when draindown treatment facilities are constructed and steady state tailings drain-down can be managed entirely within the draindown treatment facilities

PHASE IV

- Phase IV begins when draindown treatment facilities are constructed and steady state tailings drain-down can be managed entirely by utilizing passive evaporation within the draindown treatment facilities
  - Tailings drain down rate is less than passive evaporation rate
  - Tailings cover is completed to mitigate seasonal and storm events
  - Time frame indefinite
  - Long term periodic maintenance required