NOTE: This information is an excerpt from the February 2007 Application for NPDES/SDS Permits, submitted by Minnesota Steel.

B. Water Management

1. Potable Water Consumption, Sanitary Discharge

a) Potable Water Supply

Potable water for the plant and administrative buildings will be obtained by connection to the City of Nashwauk water supply.

b) Sanitary Wastewater

Sanitary wastewater generated at the plant and mine site will be sent to the City of Nashwauk wastewater treatment facility via a force main along CSAH 58.

2. Water Sources, Losses, and Recycling

a) General

The proposed project will require significant amounts of water. A complete water balance is in Attachment A [not included in Appendix J, but included in the NPDES Permit Application]. Minnesota Steel proposes to use the groundwater and surface water which flows into Pits 1, 2, 5 and 6 as the primary supply of water for the project. Once Pit 5 has been initially dewatered, ongoing maintenance pumping from Pit 5 and from Pit 6 will be pumped directly to the processes or to the two old natural ore pits north of Pits 1 and [2], as will stormwater runoff from operations and stockpiles. (Alternatively, stormwater may also be reused directly in the operations.) See Figure 4 for water supply routes. Under normal climate conditions, water levels in Pits 1 and 2 will fluctuate between elevation 1290 and 1355 feet above mean sea level (MSL). Pits 1 and 2 will also supply approximately 700 gpm for flow augmentation in Ox Hide Lake and Creek. See Figure 5 for projected pit water levels under normal and wet climate conditions.

During wetter than normal conditions, excess water in Pits 1 and 2 will be pumped to the Ox Hide Stilling Basin and Ox Hide Lake for stream augmentation. See Figure [5] for projected pit water levels under wet climate conditions.

During dry conditions, water from upper Ox Hide Creek and from the Hawkins/Halobe pits will be supplied to Pits 1 and 2. When the water elevation in Pits 1 and 2 falls below elevation 1250 feet MSL, stream augmentation flows to Ox Hide Lake and Creek will be reduced to 100 gpm. See Figure 6 for projected pit water levels during dry climate conditions.

The plant will use all of the treated and recycled process water, and will require an additional 2,134 gpm in the early years (with only Line 1 operating) and an additional 4,007 gpm when at full production capacity (Lines 1 and 2 operating).

The concentrator and portions of the pellet plant have internal circulating loops that use water to transport crushed ore, concentrate, and tailings. Flow in these loops may be as high as 10,000 gallons per minute (gpm). However, these uses do not consume water but simply move it in large quantities. This water will need to be continuously supplemented at a rate of approximately 1,611 gpm from Pits 1 and 2 to make up for evaporative losses and other water losses.

b) Water Sources

Plant Site Runoff. The plant site and stockpile area occupies portions of the Pit 5 watershed, as well as the Little Sucker Lake, Little McCarthy Lake, and Snowball Lake watersheds. Runoff from the plant site and associated ore processing stockpiles (i.e., pellet, concentrate, fine and coarse ore) will be captured and treated in primary settling basins. From there, water will be used in the plant or sent to the two old natural ore pits north of Pits 1 and 5 (see Section 4 "Stormwater" below).

Mine Pit Water. Since the closure of Butler Taconite, groundwater and surface water have filled Pits 1, 2 and Pit 5. Pits 1 and 2 will be drawn down by 5 feet. Water levels in the Hawkins, Harrison, and adjacent pits also will be drawn down because they are connected to Pits 1 and 2. The water level in Pits 1 and 2 will be lowered using vertical turbine pumps on a floating barge. Water will be transferred to the Ox Hide Stilling Basin which drains to Swan Lake via Ox Hide Lake and Ox Hide Creek. The initial dewatering of Pits 1 and 2 and the upper pits will be regulated under an appropriations permit from the MN DNR.

The two old natural ore pits north of Pits 1 and 5 are isolated and will remain isolated from all downstream waters. Pits 5 and 6 will serve as the primary sources of water to the plant, along with stormwater runoff and water from Pits 1 and 2. Modeling studies (see Water Balance and Watershed Yield Study, Barr Engineering, 2006) that indicate that Pits 1, 2, 5 and 6 and local runoff will be capable of providing enough water for the plant under all climate conditions, including extremely dry years.

The initial dewatering of Pit 5 will isolate it from Ox Hide Lake and Ox Hide Creek. The initial dewatering of Pit 5 will be regulated under an appropriations permit from the MN DNR. During this period, stormwater from mining on the surrounding shoulders of Pit 5 and from stripping operations of Pits 5 and 6 will be routed away from Pit 5 to the old natural ore pit north of Pit 5, so that no pollutants are added to the water in Pit 5…

Once Pit 5 has been isolated from downstream waters, water from the maintenance dewatering of Pit 5 will be used for plant operation or pumped to the two old natural ore pits north of Pits 1 and 5. Between 2008 and 2012, the mine development plan shows that Pit 6 will be expanded to include the former Draper Annex Pit. The Draper Annex Pit is much smaller than Pits 5 or 6, but dewatering of the Draper Annex Pit will cause a small increase in available flow at that time. This water will be transferred to Snowball Lake.

Maintenance Dewatering. While Pit 5 is being mined, pumping will be required to control groundwater inflow. The newly created Pit 6 will be mined to approximately the same size and depth as Pit 5 and will also require maintenance dewatering. It is proposed to pump this water from sumps in Pits 5 and 6 either directly to the processes or to the two old natural ore pits north of Pits 1 and 5. The pit sumps will also serve to remove solids. In the two natural ore pits north of Pits 1 and 5, the water will be stored, will undergo additional clarification, and will be used for plant operations.

Tailings Basin Water. The tailings basin will receive water from the discharge of the tailings slurry from the concentrator. After solids settling, excess water from the tailings basin will be returned and reused in the concentrator. Minnesota Steel will construct collection systems, which will collect seepage through the dike and at the toes of the dike and will return the collected water to the tailings basin. These collection systems will be composed of a series of trenches, wells, and pumping devices. Some seepage will continue to discharge to groundwater through the bottom of the tailings basin.

c) Water Losses

Evaporative Losses. There will be evaporative losses in the production facility resulting from wet scrubbing, direct and indirect cooling, and from the use of water in boilers. Water losses from the plants will be 3,466 gpm.

Tailings Basin Losses. Water will be lost in the tailings basin due to entrapment of water in the pore space of the deposited tailings ("voids loss") as well as to seepage and evaporation. Estimates are that approximately 972 gpm will be lost due to voids loss and 233 gpm of seepage through the dikes be captured and returned to the tailings basin. Between 158 and 798 gpm of seepage will occur to the groundwater.

d) Stream and Lake Flow Augmentation.

MN DNR has requested augmentation of Ox Hide Creek and Snowball Creek to replace the current overflows from Pits 1, 2 and 5 and the Draper Pit. Minnesota Steel proposes to use water from Pits 1 and 2 for augmentation of Ox Hide Lake and water from the Hill Annex Mine Pit (in the event that water becomes available) for augmentation of Snowball Creek under an appropriation permit from the MN DNR.

3. Cooling Water

Non-contact and contact cooling water will be used in the DRI plant, the meltshop, and the hot strip mill. Water that circulates as non-contact and contact cooling water will not be discharged but will be cooled in the facility's cooling towers. The cooling towers will have a blowdown stream that will be elevated in temperature and dissolved solids and will be treated by the lime softening, reverse osmosis, crystallization, and evaporation, with the water returned to the plant water system.

4. Stormwater

Once processing operations have commenced, site runoff will be used in the plant, so Minnesota Steel intends that there will be very little runoff from the site. The intent is to capture runoff from the plant site and stockpiles and direct these flows to the two old natural ore pits north of Pits 1 and 5. The tailings basin and pits will receive stormwater from their local watersheds and will serve as reservoirs in the plant water system.

Specific areas for stormwater management are:

a) Crusher, Concentrator and Stockpiles

Because Minnesota Steel plans to capture and reuse all stormwater, stormwater basins will be permanent features at the site and will be constructed before most other grading is completed. These include:

- Crushers and Concentrator: Stormwater will flow by gravity to the old Patrick B tailings basin. Dikes will be restored up to a few feet (less than 5 feet) to contain storm surges and provide for solids settling. Stormwater will then flow by gravity to a stormwater pond that will be constructed (Patrick B South). Stormwater will be pumped to an existing natural ore pit north of Pit 5. This pit has sufficient capacity, with the Patrick B South and Patrick B tailings basin to hold two years of precipitation (assuming the wettest two years in the last 70 years). There is also sufficient capacity to store the 100-year frequency, 24-hour duration storm event. Water will be pumped to the crusher concentrator for reuse or to the old natural ore pit north of Pit 1 for use in the processing plant. As a contingency plan, some stormwater could also be pumped to the new Stage 1 tailings basin via the tailings line…

Ultimately, the old Patrick B tailings basin will be covered with Stockpile A, and the Patrick B South and Patrick B East basin will be encompassed by the expansion of Pit 5. At that point, however, Pit 5 will be emptied and isolated from downstream waters. Stormwater from the crushers and concentrator will be allowed to flow into Pit 5, and then be pumped to the old natural ore pits north of Pits 1 and 5.

- Stockpiles: Stormwater from Stockpile A and a portion of Stockpile C will flow by gravity to the Patrick B tailings basin, as does the stormwater from the crushers and concentrator. That stormwater will follow the route described above. A portion of the stormwater from Stockpile C will flow by gravity to the LL North area, and then by gravity to the LL East, LL West and the Patrick B East stormwater basin. Dikes will be restored (less than 5 feet in height) to provide for retention of storm surges and to provide settling in the LL North, LL East and LL West areas.

  Ultimately, Stockpile C will cover the LL North, LL West and a portion of the LL East stormwater ponds. The stockpile will be designed to allow continued drainage by gravity to the Patrick B East stormwater pond, until that pond is encompassed by the expansion of Pit 5.

  Stockpile B, southwest of the crushers, will be designed with its own stormwater pond and pumping station. Stormwater will be pumped either to the Patrick B tailings basin, where it will follow the same route as the stormwater from the crushers and concentrator, or to the LL North basin, where it will follow the same route as stormwater from Stockpile C.

b) Production Plant

Pellet plant, DRI plant, Meltshop and Hot Strip Mill: Runoff from roof drains, parking lots and other impervious surfaces will be collected and directed to a settling pond southeast of the processing plant and east of the slag pile, in a pond that is a remnant of the old upper Ox Hide Creek Diversion to Little and Big Sucker Lake and Mud Lake. (That diversion is cutoff, and will continue to be cutoff by the construction of the project. Stormwater will be directed to the settling pond by surface conveyances or storm sewers. Stormwater from the settling pond will be pumped to the old natural ore pit just north of Pit 1. There is sufficient capacity to store two years of precipitation (assuming the wettest two years in the last 70 years). There is also sufficient capacity to store the 100-year frequency, 24-hour duration storm event. Stormwater will be pumped to the headwater tank in the production area.

5. Process Wastewater

a) Tailings Basin Chemistry

By treating and reusing all of the process wastewater from the pellet plant, DRI, melt shops and steel mill, the only water entering the tailings basin will be precipitation and the water used to convey fine tailings to the tailings basin from the concentrator. The only water leaving the tailings basin will be that which is returned to the plant, evaporates or seeps to groundwater. (There will also be which is trapped in voids between tailings particles as the basin fills with tailings.

The concentrations of chemicals in the tailings basin water, including that which seep to groundwater will be determined by the rate at which chemicals dissolve out of the fine tailings.

However, concentrations in the tailings basin water will ultimately reach equilibrium, and the concentrations will stabilize. Many chemicals of concern (e.g. metals) are known to precipitate out as sulfates, through studies at other taconite tailings basins. Sulfur compounds in the tailings (predominantly as sulfides) are also oxidized to sulfates.

Based on these studies and on operations at other taconite facilities on the Mesabi range, and on a model of flow and chemistry in the tailings basin it is anticipated that, without any process water going to the tailings basin (e.g. scrubber water, cooling tower and water treatment blowdown, and contact cooling water), and with return of collected seepage water to the basin, the water leaving the basin through seepage to groundwater will meet groundwater quality standards…

b) Process Wastewater Treatment

Minnesota Steel is committed to total reuse and recycling of process wastewater generated by the pellet plant, DRI, EAF and steel mill operations [see Figure 3]. A comprehensive treatment system consisting of lime softening, reverse osmosis, crystallization, and evaporation will be used, with water returned to the processes and crystallized solids disposed of in permitted waste disposal facilities. A complete description is provided in "Water Utility System Basis of Design Memorandum", October 26, 2006 by NALCO, submitted separately to the MPCA.

Minnesota Steel reserves the right, if regulatory or other conditions change in the future (e.g. TMDL plans are developed, waters are no longer impaired) to apply for an NPDES permit to discharge water from the production plant and/or tailings basin, complying with the regulatory and environmental review requirements in effect at that time.

Figure 1 – Block Flow Diagram of water supply

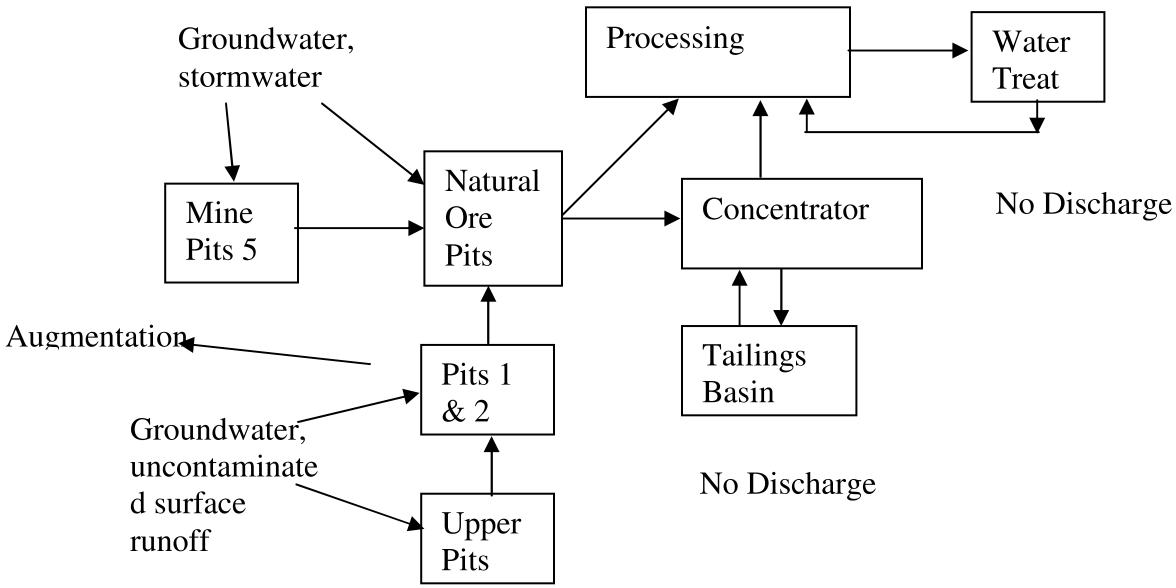
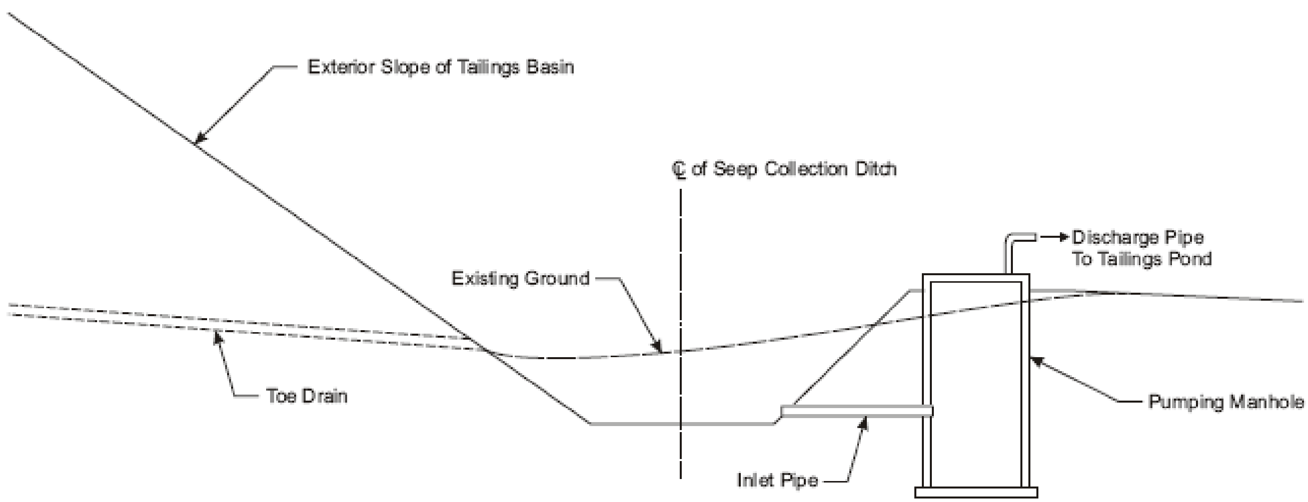


Figure 2 – Conceptual Tailings Basin Seep Collection

P:\23\31\286\tailings Basin Seep Collection System.CDR RLG 11-09-06



CONCEPTUAL PLAN - TYPICAL CROSS SECTION
TAILINGS BASIN SEEP COLLECTION SYSTEM

Figure 3 – Block flow diagram of water treatment

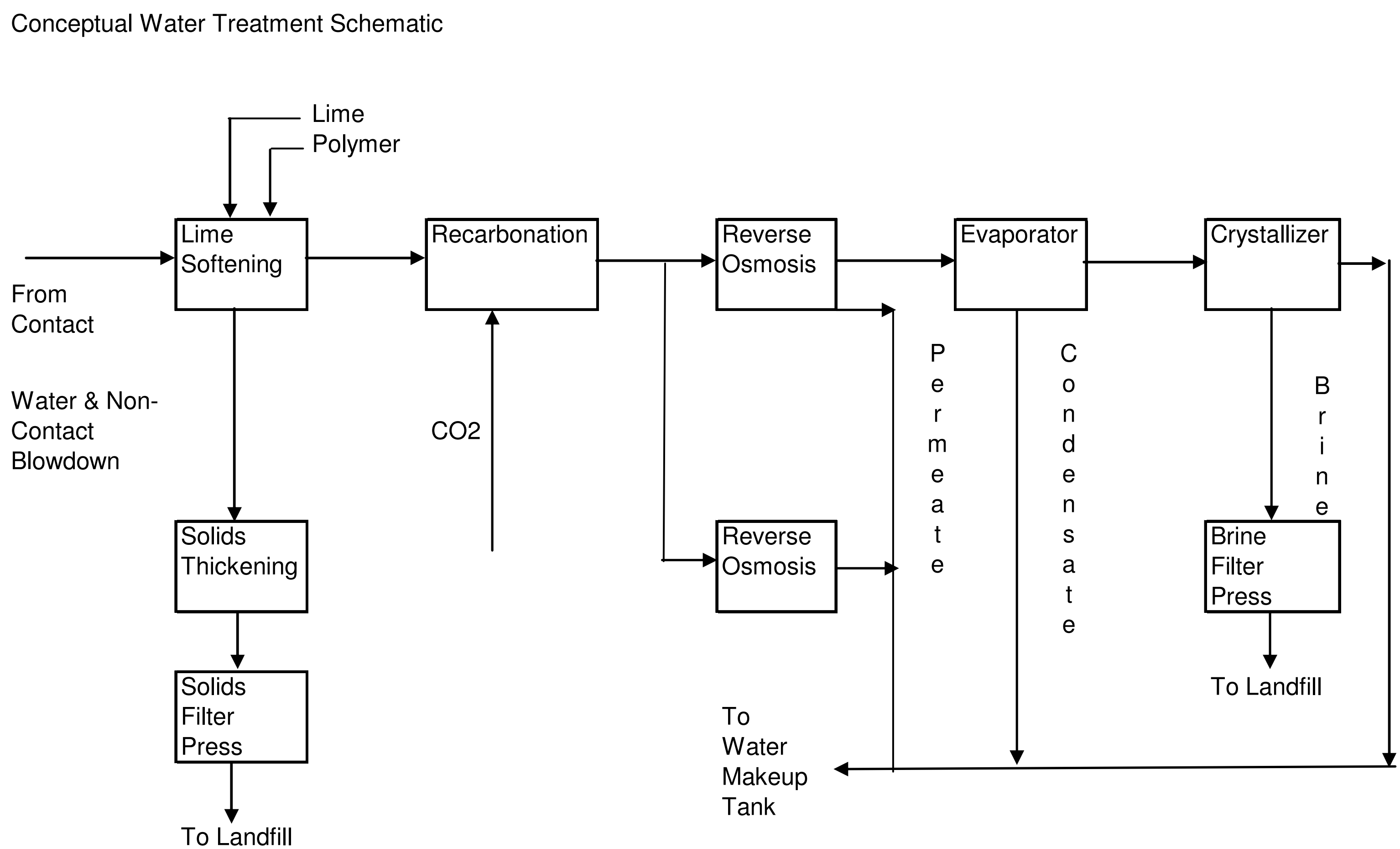


Figure 4 – Water Supply Routing

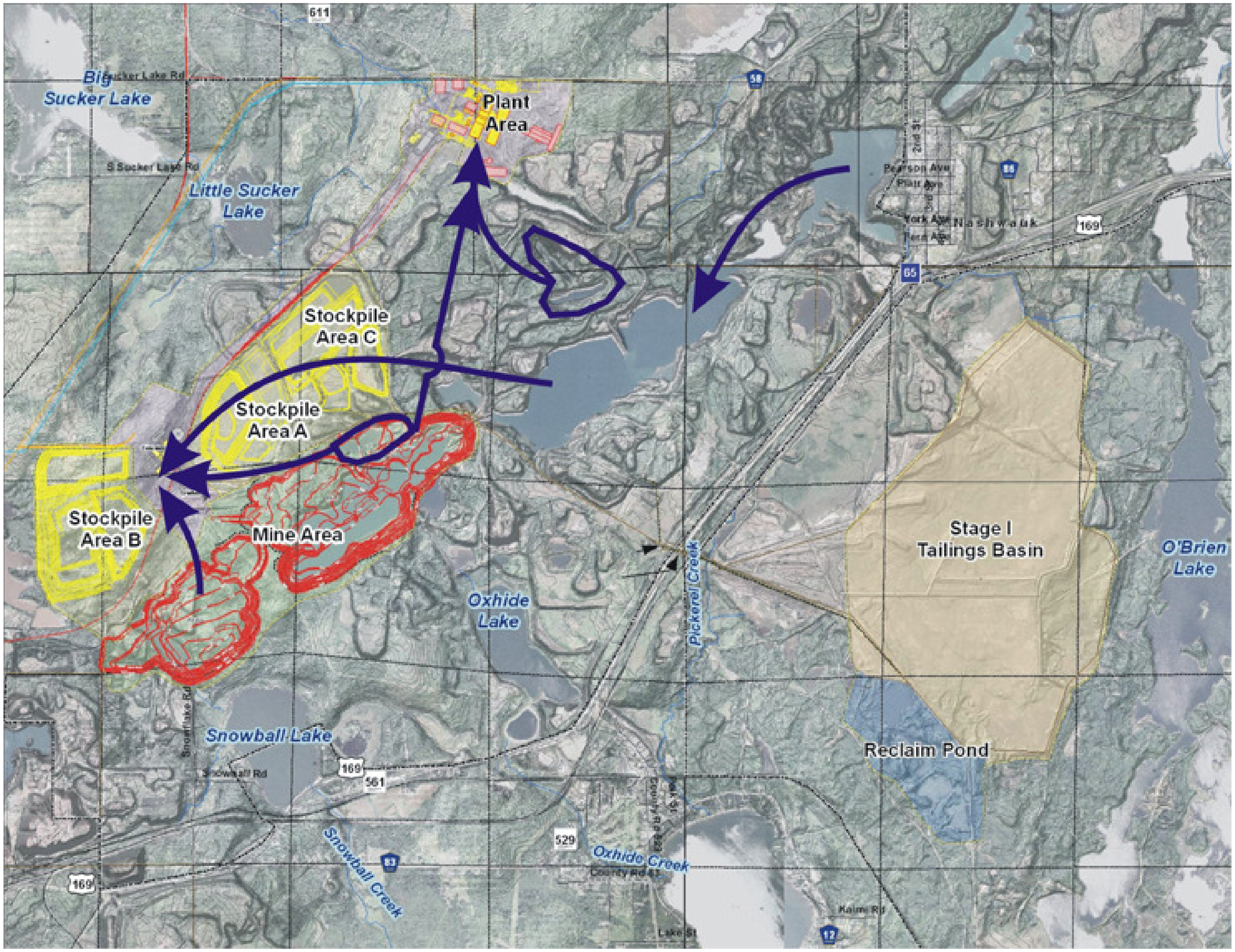


Figure 5 – Pit Elevations – normal and wet climate

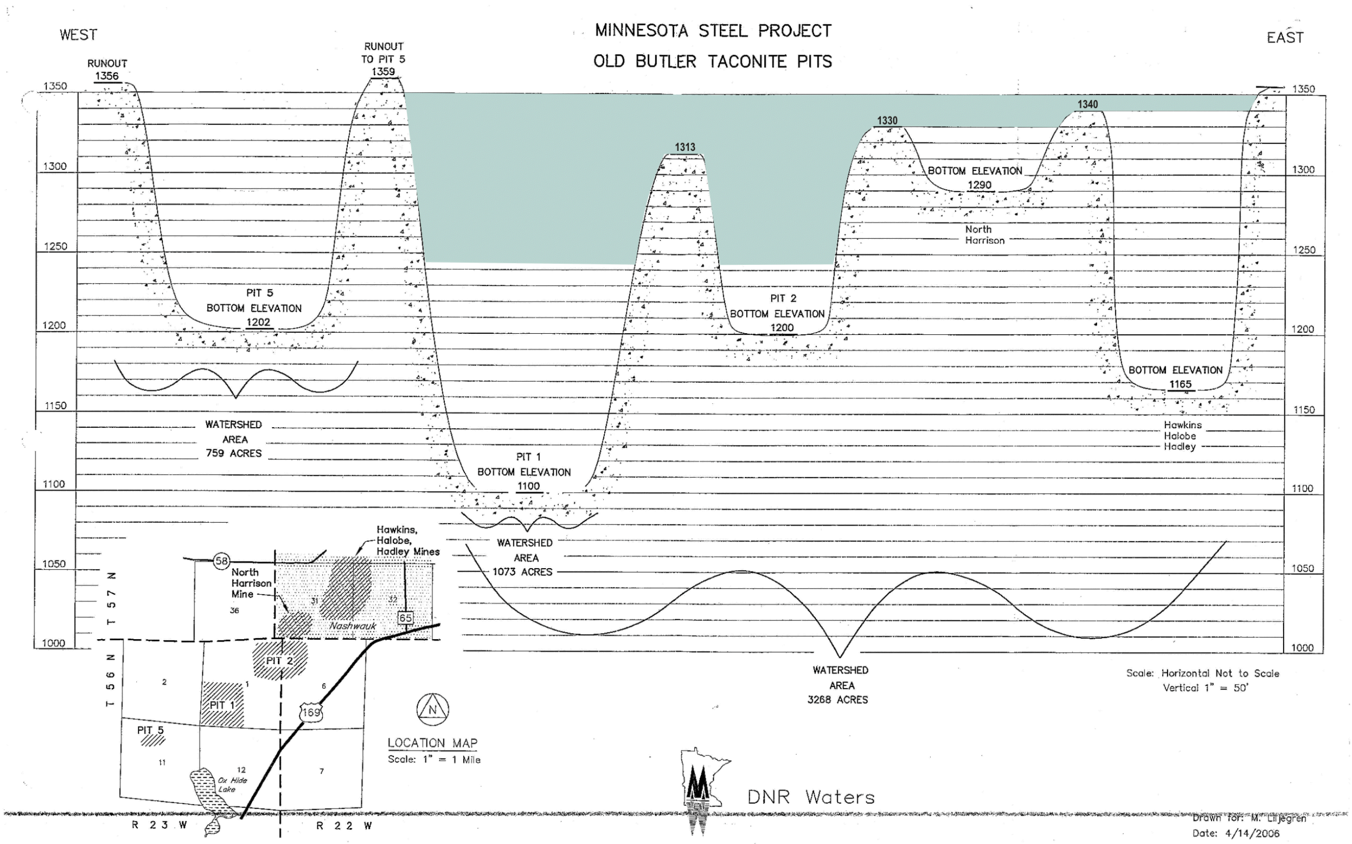


Figure 6 – Pit Elevations – dry climate