

Save time with the Waste Dump Sequencer

Unlike any other product, MineSight Haulage is a complete solution for storing and maintaining your haulage network, equipment sets and destination information. It allows planning engineers to route mining cuts to mapped destinations while honoring user defined rules and overrides.

Frequently, MineSight Haulage destinations for material are simply a nominated location (point in space). This would be sufficient for cases where either, a) the actual tipping location will vary little during the schedule period (e.g. Short Term Planning); or b) an approximate centroid of a destination is sufficient for the scale of the work (e.g. high level scheduling); or c) it is a fixed location (e.g. crusher).

But for most other cases the lift and subzone details of a destination (waste dump or stockpile), and the associated fill sequence during the scheduling process, are required by the planning engineer. This is where MineSight Haulage surpasses its competitors. It allows you to build a table of destination details, including the fill sequence (Figure 1).

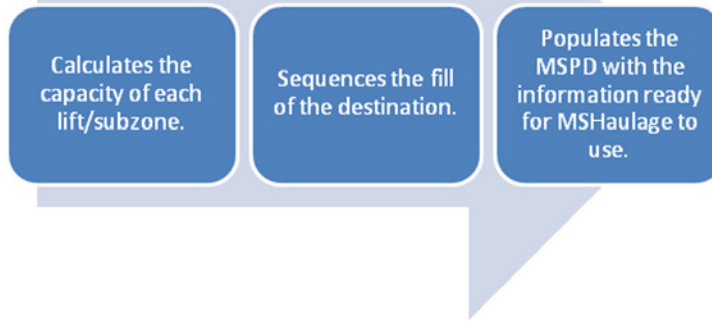
Lift	Subzon	Capacity	Cumm	Capacity	Cumm	Elevation	Easting	Northing	H Dist(Mete)	Prox Dist(M)	Prox Speed	Roll Resist	Precedenc
2675	1	0	0	317868.1	0	2675	2414.61	4992.97	0	100	10	4	1
2675	2	0	0	287301.0	0	2675	2381.62	5045.57	62.09	100	10	4	2
2675	3	0	0	289795.3	0	2675	2468.73	4930.75	82.46	100	10	4	3
2675	4	0	0	218219.8	0	2675	2340.98	5108.08	136.65	100	10	4	4
2675	5	0	0	310118.9	0	2675	2484.38	4869.5	145.68	100	10	4	5
2675	6	0	0	215482.7	0	2675	2330.81	5174.64	203.98	100	10	4	6
2675	7	0	0	341156.8	0	2675	2478.58	4808.92	206.53	100	10	4	7
2675	8	0	0	257922.3	0	2675	2476.76	4758.46	257.03	100	10	4	8

↑ Figure 1. MineSight Haulage Network Editor summarizes and edits destination information.

For a simple bottom up destination design, the planning engineer can manually build the lift table with subzones, or import from a CSV file.

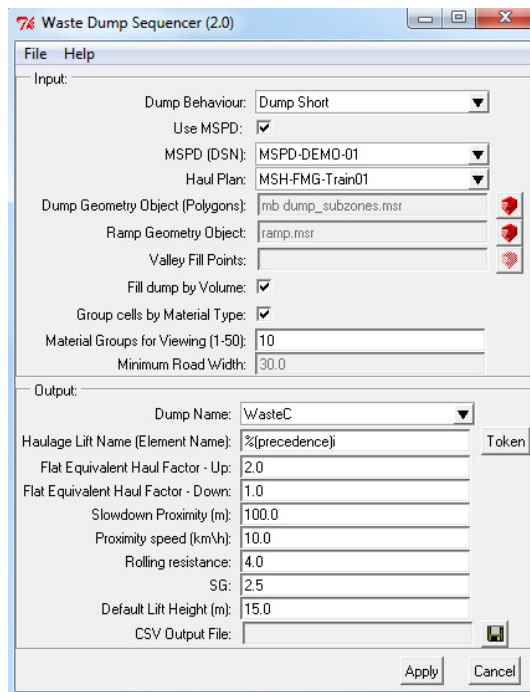
To assist the process of sequencing the fill of the destination when using the lift/subzone approach, Mintec has developed a utility, the **Waste Dump Sequencer** (*em-WasteDumpSequencer.pyz*), which works directly with the design geometry to optimally populate the lift table, with the approach shown in Figure 2.

Waste Dump Sequencer



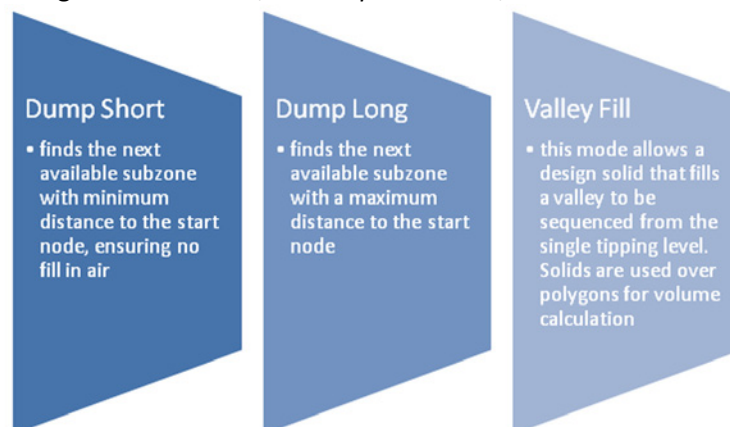
↑ Figure 2. The **Waste Dump Sequencer** approach.

The **Waste Dump Sequencer** has a simple single input panel for specifying all the input and output parameters (Figure 3). It also allows destination defaults to be entered, such as *Rolling Resistance*, that are populated into the MSHaulage table.



↑ Figure 3. The **Waste Dump Sequencer** interface panel.

Methods available for sequencing the destination, or *Dump Behaviors*, are described in Figure 4.

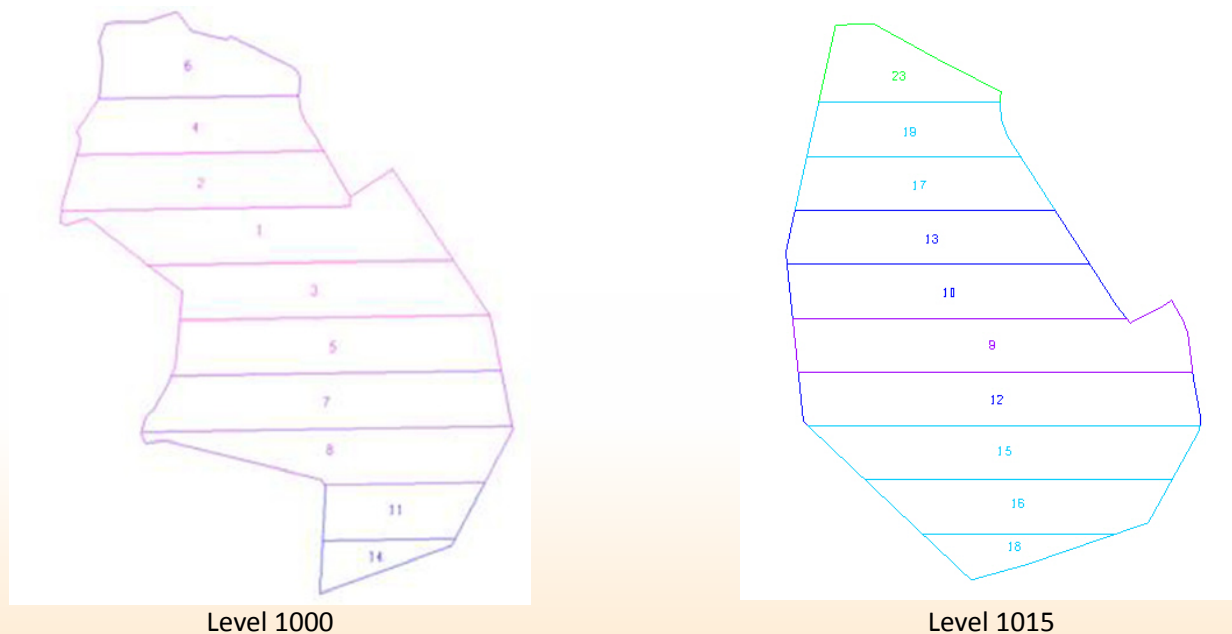


↑ Figure 4. Available methods of sequencing, or *Dump Behaviors*.

The fill sequence of a destination can be either by the shortest (*Dump Short*) or longest path (*Dump Long*) from the destination's origin. To accommodate the ramp slope the utility uses an *Equivalent Flat Haul (EFH)* factor to penalize the ramp component. For the *Dump Short* approach this may result in the first lift of a waste dump being 80% completed, then the sequencing moving to part of the second lift (as this EFH distance is now less than the horizontal first lift distance) before returning to complete the first lift. The utility ensures that material is not dumped into air. It must have a material below it.

Equivalent or Effective Flat Haul (EFH) is a relative distance from one location to another where road sections with grade are factored, in order to reduce the profile to nominal flat distance. Other road conditions can be included. This allows the relative comparison of two alternate routes. An EFH factor is usually applied by grade bin to each haul route segment. An EFH is useful for comparisons at a high level. More detailed haulage calculations using full cycle times provide more reliable truck requirements.

For example, consider the two lifts in Figure 5. The lower lift (Level 1000) is sequenced to subzone 8. Then the sequencing moves to the next lift (Level 1015) before returning again to lower lift.



↑ Figure 5. Destination fill sequence using EFH factors. Note how the sequence moves to the upper level before returning to finish off the lower level.

The Waste Dump Sequencer utility will either tag the geometry with sequence identification, or additionally populate the table in MSPD referenced by MSHaulage. Figure 1 demonstrates a destination populated via the utility. MSHaulage must be closed while running the utility. And be aware that the destination is appended, therefore it may be necessary to delete any pre-existing records.

So, if you need to sequence the fill of a destination, want to quickly calculate the capacity of all the subzones, and plan to use MSHaulage, then use the **Waste Dump Sequencer** to do all three in a single run.