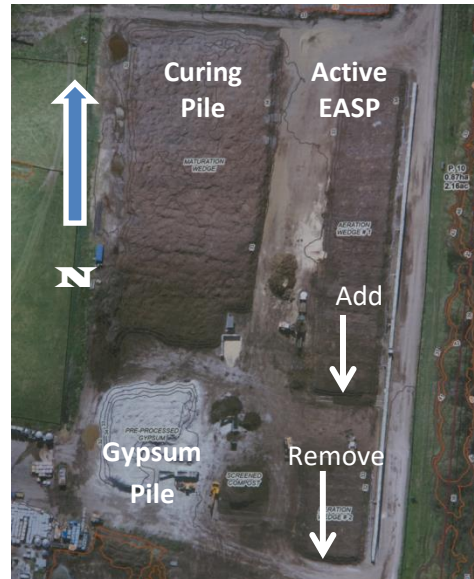


## Appendix B – Continuous Flow Compost Wedge Method Envirofert Tuakau Facility, Auckland New Zealand

**Photo 1: Aerial View of Active and Curing Composting Areas.**

The Extended Aerated Static Pile (or “Wedge”) is constructed over aeration pipes that are connected to a series of high pressure / high volume electric blowers. After ~8 weeks on air in the active pile, the composted material is transferred to the adjoining non-aerated curing pile where it resides for an additional 8 weeks. Neither the active pile nor the curing pile is turned during the 16 weeks of composting.

The gypsum pile is not associated with the composting process, although screened gypsum is used as an additive to some of the finished compost as a “soil sweetener”.



**Photo 2: Ground View of the Wedge**

Oblique view of the Wedge, looking southeast, from the northwest corner. The total length of the pile is ~200 meters and the width is ~20 meters. The height of the pile starts at ~3 meters and the total volume of the Wedge is ~12,000 m<sup>3</sup>.

The residence time of the material in the Wedge is about 8-weeks, resulting in 6 – 7 cycles per year.



**Photo 3: Line of Aeration Blowers**

Between the concrete block wall (left) and the EASP Wedge (right), there is a line of eleven electric blowers. Each blower is operated by an adjustable cycle timer, with On/Off times set to deliver air into the compost pile under positive pressure and maintain aerobic conditions. Each blower constitutes an “aeration zone”, with 10 aeration zones on-line at any point in time.



**Photo 4: Advancing & Retreating Faces**

With the EASP Wedge Method, the operator maintains a gap in the pile, as shown in this picture. Freshly shredded material is added to the advancing face (left) while an equivalent amount of material is removed from the retreating face (right). At the present time, it takes approximately 8 weeks for the gap to migrate across the site, from north to south. Once completed, the process is repeated, resulting in 6 – 7 cycles per year.



**Photo 5: Oblique View of Advancing Face**

Freshly shredded green waste is added to the advancing face using front-end loaders. An appropriate amount of food waste and carbon rich bulking material is also added to the mix prior to delivery to the advancing face. Perforated pipe (as seen in the foreground) is placed beneath the fresh material and connected to the aeration manifold as part of pile construction.



**Photo 6: Shaping the Newly Shredded Green Waste at the Advancing Face using an Excavator.**

Toward the end of each day, the green waste mix is shaped with a track mounted excavator to provide a uniform pile height, length and width. During this process it is important to avoid compaction and to maintain high porosity to optimize airflow throughout the pile. Some settling does occur during the first 48 hours.



**Photo 7: Adding screened compost on top of the newly shredded green waste.**

Immediately following pile shaping, screened compost is added to the top of the pile to a minimum depth of 20 cm. The cover material serves to: 1) insulate the underlying materials to ensure that time/temperature criteria are met for pathogen and plant seed destruction; and 2) significantly reduce emissions of VOC's (volatile organic compounds) and other odourous gasses.



**Photo 8: Removing and “fluffing” composted material using an excavator with rake attachment.**

Following completion of work at the advancing face, the excavator bucket is exchanged with a rake device and an equivalent amount of material is removed (and “fluffed”) from the retreating face. This material is then transferred by front-end loader to the advancing face of the adjoining curing pile.



**Photo 9: Oblique view of curing pile, looking southwest.**

Following ~8 weeks of aeration, the compost is transferred from the active area to the curing area. The curing process is non-aerated, and serves to further stabilize the compost before screening and delivery to market. As with the EASP Wedge, the curing pile is constructed sequentially with an advancing face, gap and retreating face. The residence time for curing is also ~8 weeks.



**Photo 10: Star screen, dividing the compost into three size fractions.**

Following ~8 weeks of curing, the compost is then screened into three fractions using a “Star Screen”. The finest fraction is sold and used as a soil amendment product and the middle fraction (Mid’s) are reused as the cover material for the EASP Wedge. The course material (“Screen Overs”) are stockpiled and later rescreened, or discarded off-site.



**Photo 11: Idealized continuous flow of materials.**

The schematic drawing to the right shows an idealized flow of materials across the compost site. The “A” row represents active composting on air; the “C” row represents non-aerated curing; and the “S” row represents the screened material in storage. When kept in balance, these three concurrent operations represent the most efficient use of available land, equipment and manpower.

