ATTACHMENT 3

MATERIAL HANDLING, TREATMENT AND RECORDS

ADEQ Revisions:

Section 3.1.7: The secondary containment for the treatment container must be around the container with the sulfuric acid solution and the first rinse tank to prevent acid solution from dripping directly on the HWMU as debris is transferred from the acid solution to the first rinse tank.

Section 3.1.7: For debris separated from hazardous waste, the date that the hazardous waste (and debris) was accepted by the facility must be placed on the container accumulating that debris. This is prior to the treatment process, not afterward as noted in WRC's attachment.

3. MATERIAL HANDLING, TREATMENT, AND RECORDS

3.1 Process Description

3.1.1 Delivery and Inspection of Recyclable Materials

Individual recyclable material shipments are delivered to the World Resources Company (WRC) facility during receiving hours. Before acceptance of the material, a specific sequence of activities is completed. A review of the transportation documents, including the Land Disposal Restriction Notice (LDRN), Safety Data Sheet (SDS) or Guide 171 of the North American Emergency Guidebook, is conducted to ensure that the shipment designated to WRC and is acceptable. A WRC *Materials Received Evaluation Form* is completed to document all pre-acceptance testing procedure results including, but not limited to, whether debris is evident in the waste. Recyclable materials that are accepted by WRC are assigned a distinct concentrate, or process station, on the hazardous waste management unit (HWMU) to wait for further processing. Accepted recyclable materials are moved (generally via front-end loader) to designated concentrates and placed in stockpiles. To provide for enhanced drying, the stockpiles may be spread out on the HWMU in layers ranging from a few inches to approximately 1 foot in thickness.

Recyclable materials are tracked by shipment numbers, using proprietary computer software, which also is used to provide a real-time quantity of the total amount of material that is present on the HWMU to ensure that the maximum permitted quantity of 3,800 tons (4,684.9 yd^3) will not be exceeded. This software assists WRC personnel with determination of the lots of recyclable materials, and the quantities of these lots, that must be blended to meet customers' specifications.

Arriving materials which WRC has reason to suspect or has historical data that the beryllium content may exceed a limit established by the smelter customer, shall be segregated on receipt from materials. This physical separation shall be accomplished by the following:

(1) by pre-arranged scheduled arrival information that instructs the WRC receiving personnel of a special handling requirement, including personal protective equipment;

(2) by unloading and placing the material in an area specifically prepared for its receipt; and

(3) by the placement of an identification marker in this designated area that enhances the operating personnel's awareness that the material has specific handling instructions that must be adhered to before proceeding with the recycling process.

Once it has been determined that the concentrate meets contractual specifications of a smelter, then the concentrate is closed and is released to the Operations Department to be blended.

WRC receives shipments in containers of various sizes. The following types of DOT-approved shipping containers can be accepted by WRC:

Intermediate Bulk Containers (IBCs) with or without polyethylene liners, sometimes on pallets;

Roll-off containers with or without polyethylene liners;

Corrugated boxes with or without liners, with covers, on pallets;

Metal or plastic drums with or without liners and locking lids; and

Polyethylene bulk bins with fitted covers, with or without liners.

All other container types must be approved by WRC prior to shipment from the generator. Alternative containers must have sufficient structural strength and chemical resistance that is similar to that provided by polyethylene liners.

The containers and inner liners are emptied of their contents to the "empty" standard in Code of Federal Regulations (CFR) Title 40, Section 261.7(b)(1), by pouring, dumping, or scraping. As per § 261.7(b)(1)(iii)(A) for containers less than 110 gallons in size, residue at less than three percent by weight of the total capacity of the container/ inner liner is allowed to remain for the container/inner liner to be considered empty; or as per 261.7(b)(1)(iii)(B) for containers /inner liners greater than 110 gallons in size, residue at less than 0.3 percent by weight of the total capacity of the container/inner liner is allowed to remain for the container/ inner liner to be considered empty. Container/inner liners may be rinsed with water to facilitate reuse or recycling. This activity will occur at south central area of the HWMU, near to the pickup point for the WWTU.

3.1.2 Process – Passive Dehydration

Part of the process of producing metal concentrates from the recyclable materials is to subject the material to passive solar drying. The material is evenly distributed in the HWMU to maximize evaporative surface area. This passive solar drying (28,032 tons/year), in combination with the regional low relative humidity, removes water and allows concentration of the metal content on a weight per unit volume basis, achieving concentration of up to 70 percent. In this form, the physical characteristic of the processed material changes from a wet, cohesive, nonfree-flowing mass to a dry, granular, free-flowing form that lends itself to compounding with other formulation ingredients. The finished blend, containing mineral fluxes in combination with the metal compounds, produces a metal concentrate product that is a desirable feedstock for the smelting process.

3.1.3 Shredder Process

During the unloading, as well as throughout the processes the recyclable material will be inspected for any debris (i.e., PPE such as gloves or Tyvek® booties, small pieces of wood and metal). This debris will be manually removed and accumulated in 300-gallon polyethylene tote containers or other similar containers (closed except when adding or removing waste), located within the HWMU, and labeled as hazardous waste. When an appropriate amount of debris and or filter media has been collected, the material will be processed through the shredder, and the shredded waste collected in a container as described herein. The shredded material will be blended back into the recyclable material, but only into recyclable material that has already been processed through the TCU or is undergoing thermal dehydration, and not into recyclable material that is planned to be processed through the TCU. See Section 4.1.3 for specific information concerning the shredder unit.

3.1.4 Blender Process

In addition to manual blending, WRC can utilize a mechanical blender for blending recyclable materials. The front end loader would add the recyclable materials into the mechanical blender and the material is blended and discharged into a 300-gallon polyethylene tote container or other similar container. The container will be removed and its contents blended into the appropriate concentrate product. See Section 4.1.4 for specific information concerning the blender unit.

3.1.5 Concentration Process – Thermal Dehydration

In addition to the passive solar drying, recyclable materials are also processed through a natural gas fired APV Spin Flash agitated fluidized bed drying system (i.e., the thermal concentrating unit or TCU). This process uses the traditional fluidized bed drying concept integrated with a rotary agitator, if needed that helps to

increase the efficiency of the dehydration of the recyclable material to a selected moisture content. In this process, the recyclable material is loaded into a gravimetric feeding device that delivers a controlled feed rate of the material through and into the fluid-bed chamber where it intermingles in an up-flow of high velocity heated air. The hot dry air is introduced into the bottom of the chamber body, where the recyclable material is constantly agitated and sized by rotating blades. The combination of these actions of hot, uplifting air and the rotating blades resize and agitate the material to continuously expose the surface of the recyclable materials particles until its mass is such that it is levitated to an exit port positioned toward the top of the process chamber. Recyclable material particles that have not yet reached the desired dehydration point remain too heavy and continually fall back into the fluid bed until such time as the combination of the particle mass and the velocity of air can transport them to the chamber exit.

As the air stream exits the chamber, taking with it the dehydrated material, it is ducted to a "drop out chamber" designed as a cyclone chamber. Within the chamber, the particles of dehydrated material are separated from the moisture laden air stream as they enter tangentially into the cyclone separator body. The final separation result of this process stage is a homogeneous, free-flowing, recyclable material with the desired moisture content and concentrated metal content. After the recyclable material is separated and collected at the base of the cyclone separator, it is discharged through an air lock and into a granulator where an agglomerating agent is added, as needed. The recyclable material discharges into containers and is either blended further or shipped as finished product. Refer to Section 3.1.6 for additional information regarding agglomerating agents and further blending.

The drying/transport air from this dehydration process is exhausted through the dropout chamber and filter system (baghouse) prior to exhausting to the atmosphere. This air filtration system is designed and manufactured by MAC Equipment Company. The filter system collects the fine particles of recyclable material that pass through the cyclone chamber. Periodically, these fine particles are pulsed from the filter media and dropped to the base of the separator chamber for collection and agglomeration with the heavier particles. A secondary filtration unit downstream of the primary filter bag house delivers additional particulate control.

The resultant material from the dehydration process (thermal concentrating unit) has concentrated metal compound and mineral flux values, together with desirable material flow characteristics. The material can be readily formulated with other similar materials and compounded to produce a finished concentrate product or, depending on its formulation, is a finished concentrate product ready for shipment.

3.1.6 Formulating/Blending/Compounding Process

Customer specifications dictate how the metal concentrate products will be formulated. Based on the metals and minerals content, the recyclable materials are combined by computer-based formulations to yield the highest "value added" for WRC for a specified product.

The finished metal concentrate product is produced according to the contractual specifications set individually by the purchasing primary metal extractors located in the United States, Canada, or overseas. Using WRC's proprietary computer software program that accounts for metal concentrate specifications, transportation costs, metal deductions, foreign monetary exchange (where applicable), and fluctuating metal prices, a formula is used to determine which recyclable materials must be compounded with others to ensure that metal and mineral flux contents meet the required concentrate quality specifications and WRC's economic standards. The blending of recyclable materials is done using a front-end loader and/or a mechanical blender.

WRC applies agglomerating agents, as needed, to the concentrate products to minimize the formation of fugitive dust during material handling at the customers' facilities. Any of a variety of commercial and proprietary agglomerating agents may be used by WRC to accomplish the customers' desired level of agglomeration. WRC uses purchased mineral oil or metal salt-based solutions (nickel or copper anti-dusting solution), or combinations of both, as an agglomerating agent. The agglomerating agent is stored in a bulk

tanks located within secondary containment, adjacent to the HWMU. The agglomerating agent can be applied in several manners.

If the TCU is operating, the agglomerating agent mineral oil is transferred by air pump, into a surge (approximately 15 gallons) tank located near the TCU; from this location the mineral oil is fed through an adjustable pump and sprayed onto the recyclable material in the granulator. The metal salt-based solution is pumped, using an air pump, directly from the bulk storage tank to the point of application in the granulator. The application rate is adjusted by the operator at a rate that varies based on throughput rate, material composition, and customer requirements.

If recyclable material is undergoing passive solar drying, the agglomerating agent will be manually pumped, using a dispensing system that has an automatic shutoff, into a tank located on a tractor. The agglomerating agent will be applied via spray nozzles from the tank, to the concentrate material that has been spread out to achieve drying, at an application rate that varies based on material composition and customer requirements.

The agglomerating agent can also be applied to recyclable material being processed in the blender. It is transferred by air pump into a smaller bulk tank (approximately 300 gallons) which can be located next to the blender. The agglomerating agent would be feed through an adjustable pump and sprayed on the recyclable material in the blender. The application rate is adjusted by the operator at a rate that varies based on throughput rate, material composition, and customer requirements.

The finished metal concentrate products are loaded into railcars or end-dump trucks in bulk, or into IBCs for transportation off site either by rail or truck. The results of these metallurgical and economic evaluations are valuable metal concentrate products that are sold.

3.1.7 Hazardous Debris Container Treatment Unit

Debris that cannot be shredded will be accumulated in 300-gallon polyethylene tote containers, or other similar containers of adequate strength and chemical resistance, which is located within the HWMU. The container, labeled as hazardous waste, is covered at all times except when debris is being added to or removed from the container or when it is being cleaned. The container will also be labeled, for internal information only, as containing hazardous debris.

When enough material has been accumulated for treatment, water is added to the container, followed by sufficient sulfuric acid reagent to make an acid solution that is no greater than approximately 5 percent sulfuric acid. The debris is manually brushed or scraped by WRC personnel wearing personal protective equipment (PPE) until no visible residue is remaining, in accordance with the treatment standards for debris at 40 CFR § 268.45. Following the treatment period, the sulfuric acid treated debris is transferred to a second container with water for rinsing. Another rinse takes place in a third container, after which the debris is placed into a fourth container for drying. Sulfuric acid reagent is received and stored in 55-gallon drums outside the HWMU, in the WWTU and transported to the treatment container using a closed 5 gallon bucket. The debris treatment container is located near the south central portion of the HWMU close to the WWTU access point, within a plastic-lined, portable secondary containment that has sufficient capacity to retain at least 110 percent of the volume of the container (See SP-S01 Wash Area).

The treated debris is then subjected to waste determination. Sampling procedures are included in the WAP. The date treatment is completed is placed on the debris container as the accumulation start date. The container is labeled *Hazardous Waste Pending Analysis* and is kept closed on the HWMU until results of the waste determination are received. If the treated debris is determined to be hazardous waste, it is returned to the process for continued treatment. If the treated debris is determined to be non-hazardous, the *Hazardous Waste Pending Analysis* label is removed and the debris is disposed as solid waste.

The spent sulfuric acid solution and rinse waters are pumped, using the WWTU transfer pump and hoses to the wastewater holding tanks within the WWTU. The containers with the spent sulfuric acid solution and rinse waters will not be moved until they have been pumped empty in order to prevent a release outside the

secondary containment. If there is a spill or release of acid solution it will be immediately cleaned up by using the WWTU transfer pump and hoses to pump the spilled liquid to the wastewater holding tanks. If a spill occurs on the HWMU, after being cleaned-up, the concrete surface and any joints or cracks sealant will be inspected to ensure there is no degradation of the surface or seal material.

3.1.8 Equipment and Procedures for HWMU

Recyclable material is moved within the HWMU to blend recyclable materials and load concentrate products. Diesel fuel powered front-end loaders are primarily used for these tasks. The procedures for various waste movement operations, including receiving, shipping and debris treatment, are outlined.

Roll-off Receiving. Roll-off bins containing recyclable material are accepted and unloaded at Receiving Gate A in the northwest portion of the HWMU. After the truck is weighed and pre-acceptance testing has been completed, the following general operations are performed to receive roll-offs:

- Position truck into material unloading area;
- Open tailgate and raise roll-off;
- Allow recyclable material to fall;
- Clean truck roll-off interior, spill plate and tires with a water spray;
- Lower the roll-off bin and secure the tailgate;
- Transport discharged recyclable material to assigned area of the HWMU and remove liner; and
- Deliver plastic liner to cleaning area for cleaning.

Bulk Container Receiving. Bulk containers containing recyclable material are accepted and off-loaded at Receiving Gate B in the northern center portion of the HWMU. After pre-acceptance testing has been completed, the following general operations are performed to receive bulk containers:

- Utilizing a forklift for closed transport vehicles or a front-end loader with a boom attachment for open top trailers, individually remove the bulk containers from the transport vehicle;
- Weigh each container on the bag scale (or the truck can be weighed on the truck scale before unloading);
- Transport container to staging area;
- Transport containers to assigned area of the HWMU for discharge; and
- Deliver empty containers and liner, if used, to cleaning area for cleaning.

Drum Receiving. Drums containing recyclable material are accepted and unloaded at Receiving Gate B in the northern center portion of the HWMU. After pre-acceptance testing has been completed, the following general operations are performed to receive drums:

- Utilizing a forklift equipped, remove drums from the transport vehicle;
- Weigh drums on the scale (or the truck can be weighed on the truck scale before unloading);
- Transport the drum to the staging area; remove the ring and lid;
- Transport drums of recyclable material to assigned area of the HWMU and empty the recyclable material; and
- Deliver empty drum, ring, lid, and liner, if used, to cleaning area for cleaning.

Rail Car Receiving. Rail cars containing recyclable material may be accepted in either bulk or containers and will be emptied in the bulk shipping and receiving area on the eastern portion of the HWMU. After pre-acceptance testing has been completed, the following general operations are performed to receive railcars:

- Prior to working around railcar, set wheel chocks;
- Remove shipping cover or open boxcar door;
- Unload recyclable material and remove plastic liner (if present), and or containers;

Clean the inside of the railcar at the rail spur;

Collect rinsate from railcar cleaning and transfer to the WWTU immediately;

Transport unloaded recyclable material to assigned area in the HWMU; and

Deliver plastic liner or containers to cleaning area for cleaning (if applicable).

Bulk Rail Car Loading and Shipping. Rail cars are loaded with finished metal concentrate products at the bulk shipping and receiving area located on the eastern portion of the HWMU. The following general operations are performed to load a rail car:

Ensure HWMU gate is closed and set wheel chocks on rail car;

Inspect the rail car and clean and patch any holes with expandable foam, sheet metal, and adhesive as a temporary repair to ensure Department of Transportation (DOT) requirements are met;

Load product by using a front end loader;

Position the cover and secure to the rail car;

Affix any required markings and/or placards to the rail car;

Remove wheel chocks to allow rail car pick-up; and

Clean loading area after completion of loading activities.

IBC Rail Car Loading and Shipping. IBC containers are loaded with finished metal concentrate products at the bulk shipping and receiving area located on the eastern portion of the HWMU. The following general operations are performed to load a rail car:

Ensure HWMU gate is closed and set wheel chocks on rail car;

Inspect the rail car and clean and patch any holes with expandable foam, sheet metal, and adhesive as a temporary repair to ensure DOT requirements;

Load IBC containers of metal concentrate product with front end loader or forklift;

When fully loaded, position the cover and secure to the rail car;

Affix any required markings and/or placards to the rail car;

Remove wheel chocks to allow rail car pick-up; and

Clean loading area after completion of loading activities.

Bulk Truck Loading and Shipping. Trucks are loaded with finished metal concentrate products at the loading dock area in the northern center portion of the HWMU. The following general operations are performed to load a bulk truck:

Weigh empty truck/end dump;

Position truck/end dump, close the HWMU gate, set wheel chocks;

Inspect the truck/end dump to ensure it is clean and meets DOT requirements;

Load metal concentrate product with front end loader;

Level the metal concentrate product to eliminate high spots;

Position the cover and secure to truck/end dump;

Affix any required markings and/or placards to the truck/end dump;

Remove wheel chocks to allow departure;

Weigh loaded truck/end dump and complete paperwork; and

Clean loading area.

IBC Truck/Trailer Loading and Shipping. Trucks/trailers are loaded with finished metal concentrate products at the loading dock area in the northern center portion of the HWMU. The following general operations are performed to load a truck/trailer:

Weigh empty truck/trailer;

Position truck/trailer, close the HWMU gate, set wheel chocks;

Inspect the truck/trailer to ensure it is clean and meets DOT requirements;

Load IBC container by using a front end loader or forklift;

Secure IBCs in trailer;

Affix any required markings and/or placards to the truck/trailer;

Remove wheel chocks to allow departure;

Weigh loaded truck/trailer and complete paperwork; and

Clean loading area.

3.2 Recordkeeping and Reporting

3.2.1 Operating Record

In accordance with the requirements of 40 CFR § 264.73, WRC maintains a written operating record at the facility. Information is recorded, as it becomes available, and is maintained in the operating record until closure of the facility (unless otherwise specified by regulation). Facility inspections are kept for a period of not less than 3 years from the date of the inspection as required by regulation. Records are made available, upon request, for inspection by the Arizona Department of Environmental Quality (ADEQ) and/or U.S. Environmental Protection Agency (USEPA).

Records Maintained at WRC:

Records and results of regulatory analyses (WAP, Section 5);

Records of any incidents requiring implementation of the Contingency Plan (see Section 10);

Records and results of owner/operator inspections for at least 3 years;

Monitoring, testing, and/or analytical data and any required corrective actions;

Notices to generators that ship wastes to the facility;

Cost estimates for closure, contingent closure, and contingent post-closure;

A copy of each manifest or bill of lading associated with shipments of recyclable materials and concentrate products; and

A copy of each land disposal restriction notification, and the certification and demonstration, if applicable, required by the generator or the owner or operator under 40 CFR § 268.7.

3.2.2 Annual Report

In accordance with the requirements of 40 CFR § 264.75 and Arizona Administrative Code (A.A.C.) R18-8-262.41, 264.75, and 265.75, WRC prepares and submits a copy of an Annual Report to the Director of ADEQ by no later than March 1 for the preceding calendar year. The Annual Report is submitted on the required forms provided by ADEQ according to the instructions for the form. These forms cover generator and WRC activities during the previous calendar year.

3.2.3 Unmanifested Waste Report

WRC has not accepted hazardous waste from an off-site source without an accompanying manifest and/or other required shipping documents. If WRC were to do so, in accordance with the requirements of 40 CFR § 264.76, WRC would prepare and submit the required USEPA report to the ADEQ Director within 15 days after receiving the waste.

3.2.4 Additional Reports

In addition to submitting the Annual Reports and unmanifested waste reports described above, WRC also reports the following to the ADEQ Director, as applicable:

Releases, fires, and explosions as specified in 40 CFR § 264.56(j);

Facility closures specified in 40 CFR § 264.115; and

As otherwise required by 40 CFR Part 264.