



# Non-Technical Summary

Dry and Wet Recycling Activity

Mead Construction (Cambridge) Ltd



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## SITE DETAILS

Wilbraham Chalk Quarry

Mill Lane

Great Wilbraham

Cambridgeshire

CB21 4HH

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## OPERATOR DETAILS

MEAD Construction (Cambridge) Ltd

Liberty Barns Heath Road

Swaffham Prior

Cambridgeshire

CB25 0LA

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## APPLICATION REFERENCE

TBC

## DOCUMENT REFERENCE

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CONTENTS

1. Introduction..... 7

2. Application ..... 7

3. PROCESS DESCRIPTION ..... 8

4. Site Location ..... 10

5. Environmental Setting..... 11

6. Permitted Operations..... 13

    5.1 Waste Acceptance..... 13

    5.4 Waste Types Accepted..... 15

    6.1. Documentation to control environmental risk arising from the activity. .... 17

7. Site Plant, Stockpiles and Infrastructure..... 18

8. Drainage ..... 19

9. Operator..... 19

Appendix A..... 21

Appendix B..... 22

## TABLES

| TABLE   | TITLE                                |
|---------|--------------------------------------|
| Table 1 | Recovery codes required for activity |
| Table 2 | Summary of site setting              |
| Table 3 | European Waste Code (EWC) list       |

## DRAWINGS

| REFERENCE     | TITLE                                      |
|---------------|--------------------------------------------|
| K311.2~20~007 | Wet and Dry Recycling Area Permit Boundary |
| K311.2~20~009 | Wet and Dry Recycling Site Layout Plan     |

## FIGURES

| FIGURE   | TITLE                                                        |
|----------|--------------------------------------------------------------|
| Figure 1 | Proposed Permit Boundary                                     |
| Figure 2 | Process Flow of the Soil Washing and Dry Recycling Activity. |

## APPENDICES

| APPENDIX   | REFERENCE     | TITLE                       |
|------------|---------------|-----------------------------|
| Appendix A | K311.2~08~011 | Wilbraham Process Flow v1   |
| Appendix B | K311.2~09~027 | Groundwater Risk Assessment |

## 1. Introduction

This document is the non-technical summary for the application of a bespoke environmental permit located at Wilbraham Quarry, Great Wilbraham, Cambridgeshire. The site is located at National Grid Reference TL 5657 5462.

As detailed in subsequent sections, this application will cover a new soil washing facility and crushing and screening activities for inert waste brought into the site to produce recycled aggregates, screened soils and segregated fractions from the soil washing plant (such as sand and clays). Quality Protocols will be utilised for resultant materials.

Wilbraham Quarry is an active chalk quarry, and contains an existing inert landfill operation to backfill the void space created by the quarrying activity. This is permitted under EPR-JB3404FG.

## 2. Application

The application is for a new Bespoke Environmental Permit application under the Environmental Permitting (England and Wales) Regulations 2016 (as amended) for a Waste Operation.

The application seeks to permit the following waste operation at Wilbraham Quarry:

- Soil Washing Plant for the washing of non-hazardous (inert) soils.
- Crushing and Screening of non-hazardous (inert) aggregates and soils.

The activities will be situated on the same site as an existing inert landfill operated by the same operator, Mead Construction (Cambridge) Ltd (EPR/JB3404FG). It is intended that they will operate within the existing permit boundary but within their own defined areas as shown on K311.2~20~007.

Material will primarily be brought in from Construction and Demolition sources for both recycling options. Other waste codes have also been included in the application and may be utilised for smaller volumes of waste periodically. Further information on EWC codes requested as part of this application is found in Section 5.4 of this document.

Resultant materials will be primarily utilised for onward transfer as recycled aggregates, soils or minerals under WRAP quality protocols where they currently exist or made to highway specification.

It is intended that fines from the soil washing activity will be deposited within the existing landfill, providing that it meets the inert waste acceptance criteria of the landfill.

The activity codes as defined in the EU Waste Framework Directive 2008/98 are listed in table 1 below.

**Table 1:** Recovery codes required for the activity.

| Description of Activities                                                                                                                                           | Limits of Activities                                                                                                                                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>R13-</b> Storage of wastes pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where it is produced). | Temporary storage of inert and non-hazardous waste pending treatment for recovery.                                                                     |
| <b>R3-</b> Recycling or reclamation of organic substances which are not used as solvents (including composting and other biological treatment processes)            | Physical- chemical treatment of Wastes via screening, crushing and soil washing, plus associated stockpiling of wastes of up to 250,000 tonnes a year. |
| <b>R5-</b> Recycling/ reclamation of other inorganic materials                                                                                                      |                                                                                                                                                        |
| <b>D15-</b> Storage pending any of the operations numbered D1 to D14) excluding temporary storage, pending collection on the site where it is produced).            | Temporary storage of soil washing fines awaiting disposal to landfill.                                                                                 |

### 3. PROCESS DESCRIPTION

The dry and wet soil and aggregate recycling facility is described in detail below:

#### 3.1 Dry Recycling Activity

This activity will accept wastes mainly from construction and demolition site or earth removal works. Likely wastes are mixtures of concrete, bricks and ceramics, mixed construction wastes, waste aggregates, and soils. Other wastes as listed in the List of Wastes in Table 3 may be requested subject to local availability.

Once the waste arrives on site the following process is followed:



- Waste (which has been approved under the Waste Acceptance Procedure K311.2~09~012) will be stockpiled according to material type, such as concrete and soils.
- Once there is sufficient quantity of material to process, material will be processed in one of two ways:
  - **Screening.** Soils and aggregates will be screened into varied screen sizes depending on the material fractions by passing through a scalping screener. Screened fractions will be removed from the screener via conveyors. The screen is capable of processing a maximum of 300 t/hr. Note that the average is likely to be 200 t/hr.
  - **Crushing.** Concrete & hardcore materials are placed into the hopper of the Jaw Crusher. Once through the feeder, two metal plates crush the waste into smaller size fractions which are discharged from the main conveyor. Dust suppression is built into the conveyor. An overband magnet is in place to remove ferrous metal. Fine materials are discharged from the smaller conveyor. The Jaw Crusher is capable of processing up to 150 tonnes per hour.
- Material will be stockpiled on site in separate stockpiles according to material type. This may go for further screening, or the stockpile can then become a product. These will be moved from the screening or crushing area via front-end loader.
- Material produced will be to Quality Protocol Standards for SHW specification for Highway works where available and sent for re-use.

For a simplified overview of the dry recycling process, please see the process flow diagram in Figure 2.

### 3.2 Wet Recycling Activity

Similar to the dry recycling facility, accepted wastes will mainly be sourced from construction and demolition activities, earth removal works and a small number of other sources within the permitted waste types. The wet recycling activity is a soil washing process. The theoretical capacity of the soil washing plant is between 1000-1200 tonnes per day, though in theory it will be less than this.

Once waste arrives on site the following process occurs:

- Waste (which has been approved under the Waste Acceptance Procedure K311.2~09~012) will be stockpiled according to material type. Stockpiled waste may also come from the crushing & screening activity above.

- Once there is sufficient quantity of material to be processed, the stockpile will be transferred to the wash plant hopper to begin the washing process.
- Wastes will then go through a coarse screen, to screen out material that is >75mm in size. Screenings <75mm are passed through to the next stage of the process.
- The material will then go into a pre-screen rinse in which everything above 40mm is taken out via water under pressure along a vibrating deck. 40-70mm oversized aggregate is drawn off via a chute into a bay.
- Materials under 40mm are then passed through a Log Washer to breakdown clays and remove smaller gravels. This process also uses water to separate gravels, minerals and clays. Screening and rinsing occurs following the log wash before segregation of the different size fractions occurs.
- Sand is then removed via a short screen (particle size >63 µm to 5mm)
- Process waters containing sand and silt particles are then sent to a clarifier for settlement. Hydrocyclones are utilised for sand and silt recovery. Water from the cyclones is returned to the settlement tank. Sand is segregated via fine screen.
- Silt particles <63 µm are held in suspension in the Hydrocyclones waters. These will be sent back to the clarifier for further settlement. Silt 'sludges' are then sent through a filter press for de-watering.

Flocculant is added to the water recovery to aid settlement. The plant also has the capability to add quick lime if required for pH control. pH is due to be monitored, so assessment will be made on whether lime is to be added during processing.

As flocculant has been added and lime may be added, we believe that this activity falls under a **'Physical-Chemical Treatment Activity'**.

## 4. Site Location

The site is located on within an existing Chalk Quarry. Backfilling of the part of the site has also been permitted under an existing inert landfill permit: EPR/JB3404FG. It is located approximately 2.8km from the village of Great Wilbraham, Cambridgeshire and 0.6km from the A11. A large grain storage activity operates to the immediate south of the site and is surrounded by agricultural fields on all remaining boundaries.



**Figure 1:** Proposed Permit Boundary

## 5. Environmental Setting

The environmental setting of the site is summarised in Table 2 below. Comprehensive details surrounding the environmental setting and environmental risks posed by the operation are in K311.2~09~008 - Environmental Risk Assessment.

**Table 2:** Summary of Site Setting

| Receptor                                                                                                                    | Description and Location                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Humans and Property                                                                                                         | There is one commercial receptor to the immediate south of the site (Camgrain) and 5 residential receptors (Valley Farm Cottage and West Wrattling Valley Farm) 500m to the south east of the site.                                                                                                                                                                                                                                                                                                                                   |
| Groundwater & Source Protection Zones                                                                                       | <p><b>Bedrock Aquifer:</b> Principle Aquifer, highly vulnerable (on site)</p> <p><b>Superficial Aquifer:</b> Secondary A Aquifer, highly vulnerable (434m west of the site)</p> <p><b>SPZ 1:</b> 270m from site centre.</p> <p><b>SPZ 2:</b> at site.</p> <p>The nearest Groundwater abstraction used for agricultural use is 999m west of the site. The nearest groundwater abstraction used for potable supply is 1121m north of site.</p> <p>The site is also situated within a drinking water safeguard zone for groundwater.</p> |
| Environmentally Sensitive Sites<br>(including SSSIs, SAC, SPA, RAMSAR, NNR, AW, LNR, CWS, ANOB, WHS, BAP priority habitats) | 3 SSSIs are within 2000m of the site. Further information on these can be found in the Environmental Risk Assessment (K311.2~09~006- sensitive receptor table)                                                                                                                                                                                                                                                                                                                                                                        |
| Surface Water                                                                                                               | There are no surface water receptors located within 250m of the site.                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Geology                                                                                                                     | <p>The following bedrock geology underlies the Wilbraham Quarry site:</p> <ul style="list-style-type: none"> <li>• New pit chalk formation- chalk</li> <li>• Holywell Nodular Chalk Formation- chalk</li> </ul>                                                                                                                                                                                                                                                                                                                       |
| Air Quality                                                                                                                 | The site is not situated within an Air Quality Management Zone.                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

|                                  |                                                                                                                 |
|----------------------------------|-----------------------------------------------------------------------------------------------------------------|
| Flood Risk- Rivers and Sea       | <p>Site is situated in Flood Zone 1.</p> <p>No record of historical flood events within 250m of the site.</p>   |
| Surface and Groundwater Flooding | <p>1 in 30 years, greater than 1.0m for surface water flooding.</p> <p>Groundwater flooding risk: Moderate.</p> |
| Priority Habitat                 | <p>3 Deciduous Woodland's are within 1km of the site.</p>                                                       |

## 6. Permitted Operations

The site, operated by Mead Construction (Cambridge) Ltd (Mead hereafter), is a non-hazardous/ inert recycling and recovery facility for materials mainly derived from construction and demolition wastes. The details of the recycling and recovery operation are within the sections below.

The operations will be situated on the within a small area of an existing inert landfill which is also operated by Mead. This area has not yet been filled. It is intended that the fines produced from the soil washing process will be de-watered and sent to the landfill, providing they are non-hazardous via WM3 and pass inert waste acceptance criteria under the waste code of 19 12 12 which is already included on the existing landfill permit.

We believe the 19 12 12 code is appropriate for these output fines for the following reasons:

- Soil washing is a mechanical treatment of waste. It uses screens and mechanical log-washers to separate size fractions to recover aggregates and minerals. Water is used in the process to aid this process.
- Water is not changing the chemical composition of each type of recovered material, it is used to aid separation of materials.
- Fines consist of very fine silt particles which cannot be recovered by any other means. Whilst a flocculant is added to the water recovery process, this is only to aid effective separation and the fine particles themselves are not chemically changed by the addition of flocculant.

### 5.1 Waste Acceptance

The site will look to source waste materials which arise predominantly from construction and demolition sources (Chapter 17 European Waste Codes (EWCs)). These materials may for example, be sourced from utilities contractors and demolition work in the local area. A list of EWCs that are to be included with this permit are shown in Table 3. Other EWCs have been requested, to allow for maximum flexibility in waste sources.

The facility has a strict Waste Acceptance Criteria for all wastes coming into the site and is found in document reference K311.2~09~012- Waste Acceptance Plan. The site will only accept non-hazardous materials as defined by WM3.

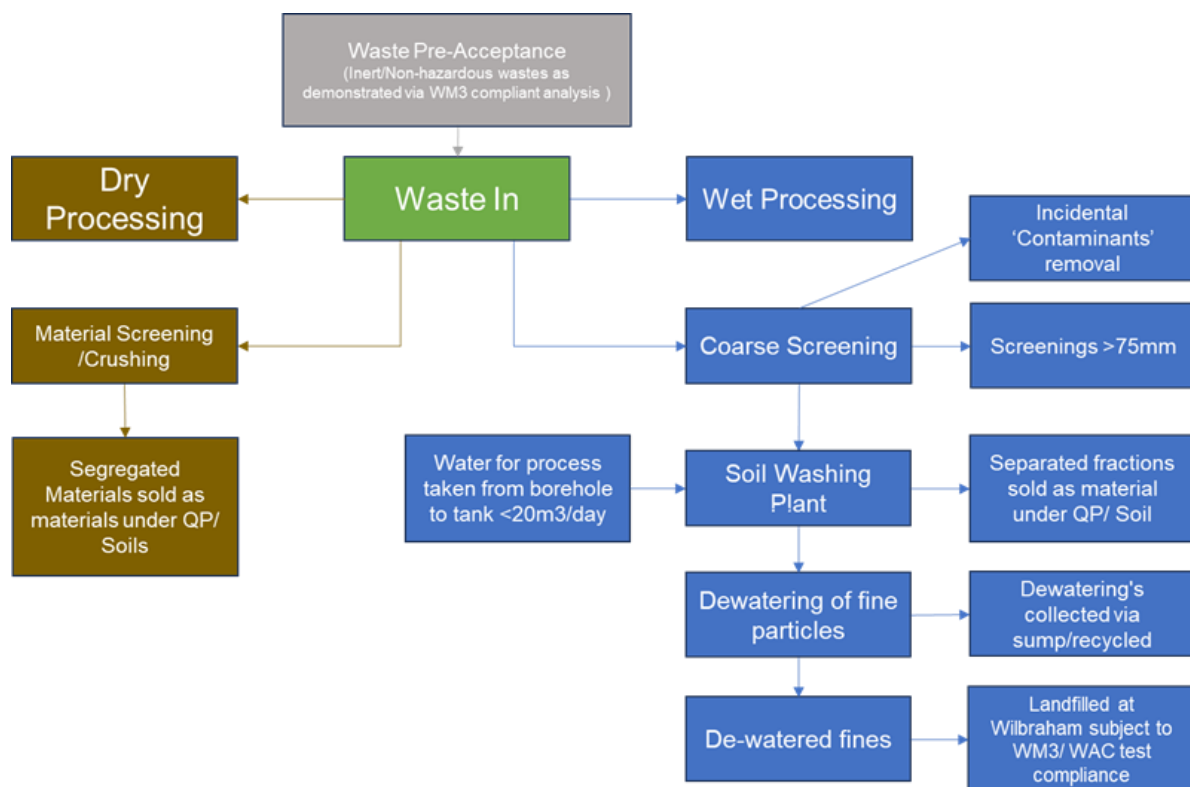
The site wish to accept a maximum of **250,000 tonnes** per year for throughput.

## 5.2 Waste Processing

Once waste has passed the acceptance criteria, it will be brought to the site and decided whether it is to go through one of two recycling/recovery routes:

1. Dry processing: Crushing and screening (of aggregates and soils).
2. Wet Processing: Soil Washing (of soils).

The process flow of the two processes is below in Figure 2. A larger version is included with in Appendix 2, document reference K311.2~08~011.



**Figure 2:** Process flow for soil washing and dry recycling activity.



### 5.3 Resultant Wastes

The resultant wastes are likely to be recycled aggregates, soils, and segregated fractions from the soil washing process. These will likely be used in place of virgin raw materials, or fine fractions deposited into landfill.

Fines produced from the soil washing process will be tested to determine their composition and leaching behaviours before they are sent to landfill.

### 5.4 Waste Types Accepted

The waste type intended to be accepted at the facility are as follows in Table 3:

**Table 3:** EWC list

| EWC Code | Description in EWC                                                                                                  | Limitations                                         |
|----------|---------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| 01 01 02 | Wastes from mineral non-metalliferous excavation                                                                    |                                                     |
| 01 04 08 | Waste gravel and crushed rocks other than those mentioned in 01 04 07                                               |                                                     |
| 01 04 09 | Waste sand and clays                                                                                                |                                                     |
| 01 04 12 | Tailings and other wastes from washing and cleaning of minerals other than those mentioned in 01 04 07 and 01 04 11 |                                                     |
| 01 04 13 | Wastes from stone cutting and sawing other than those mentioned in 01 04 07                                         |                                                     |
| 01 05 04 | Freshwater drilling muds and wastes                                                                                 | Only accepted if it is appropriate moisture content |
| 10 01 01 | Bottom ash and slag only                                                                                            | Non-organic wastes only                             |
| 10 01 02 | Pulverised fuel ash only                                                                                            |                                                     |

| EWG Code | Description in EWG                                                                      | Limitations |
|----------|-----------------------------------------------------------------------------------------|-------------|
| 10 01 15 | Bottom ash and slag only from co-incineration other than those mentioned in 10 01 14    |             |
| 10 11 12 | Clean glass other than those mentioned in 10 11 11                                      |             |
| 10 12 08 | Waste ceramics, bricks and tiles and construction products after thermal processing.    |             |
| 10 13 14 | Waste concrete only                                                                     |             |
| 15 01 07 | Clean glass only                                                                        |             |
| 17 01 01 | Concrete                                                                                |             |
| 17 01 02 | Bricks                                                                                  |             |
| 17 01 03 | Tiles and ceramics                                                                      |             |
| 17 01 07 | Mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06 |             |
| 17 02 02 | Clean glass only                                                                        |             |
| 17 03 02 | Road base and road planings (other than those containing coal tar) only.                |             |
| 17 05 04 | Soil and stone other than those mentioned in 17 05 03                                   |             |
| 17 05 06 | Dredging spoil other than those mentioned in 17 05 05                                   |             |
| 17 05 08 | Track ballast other than those mentioned in 17 05 07                                    |             |



| EWG Code | Description in EWG                                                                                                        | Limitations                     |
|----------|---------------------------------------------------------------------------------------------------------------------------|---------------------------------|
| 17 09 04 | Mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02, 17 09 03.                      |                                 |
| 19 08 02 | Washed sewage grit (waste from desanding) free from sewage contamination only.                                            | Washed sewage grit only.        |
| 19 08 99 | Stone filter media                                                                                                        | Washed stone filter media only. |
| 19 12 05 | Clean glass only                                                                                                          |                                 |
| 19 12 09 | Minerals (for example, sand and stone)                                                                                    |                                 |
| 19 12 12 | Other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11 | Non-organic wastes only         |
| 20 01 02 | Clean glass only                                                                                                          |                                 |
| 20 02 02 | Soil and stones                                                                                                           |                                 |

### 6.1. Documentation to control environmental risk arising from the activity.

Section 2 of the application is the Environment Management System (K311.2~09~007) which identifies and controls risks arising from the operation under normal and abnormal operations. A climate change risk and mitigation assessment has been included within the EMS.

Dust and Noise are foreseeable risks from the operation, therefore separate Noise and Dust Management Plans have been produced (K311.2~09~010 and K311.1~09~015).

## 7. Site Plant, Stockpiles and Infrastructure

The sites activities are spilt into two. Details on plant and infrastructure are below.

### **Dry Recycling Activity**

The main plant for requirements for the dry recycling activity are:

- Screen (Warrior 1400X or Warrior 2100)
- Crusher (Sandvik QJ241). This is shared between existing quarry activities and other activities.

Waste which has passed the Waste Acceptance Criteria will be brought into separate stockpiles prior to processing.

Once processed, material will be stockpiled temporarily before being re-used off site.

Waste will be of an inert nature therefore is proposed be stored and processed on existing hardstanding ground.

It is intended that waste processing occurs within 1-2 weeks of the wastes being brought to the site for processing. This will allow for stockpiling of wastes for efficient processing.

Information on the above plant is included in Section 8 of the application pack.

### **Soil Washing (Wet Recycling) Activity**

The main plant requirements for the soil washing plant are as follows:

- Hopper, tipping grid and feed conveyor.
- Modular Wash Plant, inclusive of screens and log wash.
- Stockpile Conveyors
- Sieve Bed
- Sump and Sump Pump
- Water Management System, including de-watering press (Drawing Reference K311.2~09~21 Waste Water Treatment System).

Layout drawings for the soil washing activity and associated water management system are found in Section 8 of the application pack.

Wastes which have passed the site Waste Acceptance Criteria will be stockpiled temporarily prior to processing on hardstanding.

The wash plant and water management system will be situated on a concrete pad, with a fall to the centre where a sump is located to collect wash waters that may escape the wash plant.

Following processing, separated materials produced will be temporarily stored in stockpiles. Coarser materials (i.e gravels, sands) will be placed on existing hardstanding prior to removal off site for re-use. Fines will be produced from the washing process. These will be de-watered to remove as much water as possible from the process. De-watered fines will be stored temporarily on the concrete pad whilst awaiting test results for the fines (WM3/ Landfill WAC).

All processing water from the de-watering and soil washing process are captured by the sump and this takes place on an impermeable surface.

## 8. Drainage

The soil washing plant ('wet recycling') will be situated on a concrete pad with a fall to the centre of the pad where a sump is located to capture any surface waters. Drainage will be recycled as part of the process, any additional water can be stored on site for re-use.

The screening and crushing activities ('dry recycling') are to be situated on a previously worked area of the chalk quarry on hardstanding, along with any stockpiles of incoming and treated wastes.

As the site is situated on a principle aquifer, and a permitted landfill adjacent to the site additional risk assessment (Appendix B) has taken place based on the original landfill Hydrogeological Risk Assessment for the adjacent landfill. The aim of this was to assess the risk of pollutants from the wet and dry recycling activity impacting groundwaters. The risk of pollution arising from the activity was deemed as low.

Please note, there is a waste transfer station referenced in Appendix B. This is **not part of this application and should be disregarded.**

## 9. Operator

Mead Construction (Cambridge) Ltd (company number 04077576) will be the operator of the wet and dry recycling facility. Technical competence is included within the application pack.

Mead construction shall manage and control the activities:

- In accordance with a written management system that identifies and minimises risks of pollution, including those arising from operations, maintenance, accidents, incidents,

non-conformances, closures and those drawn to the attention of the operator as a result of complaints,

- Using sufficient competent persons and resources, and
- With records demonstrating compliance.

## Appendix A

[K311.2~09~026 Wilbraham Process Flow V1]

## Appendix B

[K311.2~09~027 - Groundwater Risk Assessment]



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