Section 1.0—Introduction and Background

Rockwater Energy Solutions, Inc. (and all its affiliated and subsidiary companies, hereinafter collectively referred to as “Rockwater”) is committed to providing its employees a safe working environment and avoiding injury to our contractors, customers, and neighbors. As part of our overall commitment to safety, Rockwater seeks to prevent acts or conditions that could result in injury and/or illness to any employee, customer, contractor, neighbor, and/or the environment.

In an effort to prevent potentially harmful acts or conditions, Rockwater has developed this **Standard Operating Procedure (SOP)**. This SOP will discuss steps to be taken to promote a safe process, as well as a list of potential hazards that should be identified and remediated prior to beginning this procedure.

This SOP will be reviewed and revised on an ongoing basis to keep pace with best oilfield practices. This SOP will be a part of the training provided to all affected employees when they begin their employment with Rockwater and any time the plan is changed. This SOP will also be reviewed with an employee if his/her responsibilities change under the plan. A written copy of this plan will remain in the regional Safety Office, and will be available for employee review. The Vice-President of Health Safety and Environment, or his agents, may be contacted by any employee if he/she needs additional information about this SOP.

This SOP has been developed to assist affected employees with the operational steps that may be used to complete the task safely. It must be noted, however, that the experience and background of a trained water transfer employee is essential to the success of any project or task. Nothing contained in this SOP is a substitute for each employee’s individual judgment in any given situation. In the event that any employee believes that any task outlined in any SOP cannot be completed safely, then that employee should immediately halt the performance of such task and notify their direct supervisor.

In addition to this SOP, the policies and procedures of each operating company will be strictly observed by Rockwater personnel.

Section 2.0—Process Steps, Large Diameter Poly Pipeline Operations

This SOP will focus on the operational steps required for safely conducting operating involving large diameter poly pipelines. It is expected that this SOP will be applicable for all situations where Rockwater personnel will be operating system. This SOP will focus on three main areas of poly pipeline operations: pipe loading, pipe unloading, and pipeline rig-up.

Prior to discussing the operating steps, a brief outline of poly pipe is in order. The poly pipe typically used by Rockwater is made of high-density polyethylene (HDPE) resin. For the purposes of this SOP, all poly pipeline components with a diameter of greater than 8” will be considered “large diameter”. This pipe typically comes from the manufacturer in 50’ long sections and must be fused in the field to fashion a pipeline system. Poly pipe resin formulations are designed in accordance with established protocols, and each designation is assigned a code number. The typical code numbers for pipe used by Rockwater are PE 3408/3608 and PE 4710. The pipe is also rated with a code for “dimension ratio”, or DR. The DR rating is a function of...
the outside diameter of the pipe and the wall thickness of the pipe. In essence, lower DR ratings mean a thicker pipe wall, which typically means a greater working pressure can be handled.

Pipe Loading
Large diameter poly pipe should be delivered to the jobsite on a trailer of sufficient length and weight rating for the task. This task is typically handled by a third party contractor, but in the event that Rockwater personnel will be performing this task, confirm that the driver has the proper license for the task, based on the length/weight of the load.

When loading sections of pipe onto a trailer for delivery to the jobsite, the following operational steps should be taken:

- Ensure a flat area with sufficient weight capacity is available for loading operations.
- Use a large capacity powered industrial truck (PIT) with extending boom; tele-handler or equivalent. Only a trained and certified operator should be allowed to use the PIT.
- Always use a spotter to oversee loading operations; non-essential employees should vacate the work area.
- Separate forks to maximum width and secure into position.
- Pick up sections of poly pipe with forks in middle of pipe; typically 4 or less sections of pipe per fork load.
- Travel slowly towards the trailer and keep load as close to ground as possible.
- Raise forks over log bunks of trailer and slowly lower forks so that sections of pipe are centered on trailer but not adjacent to trailer head or truck cab; tilt forks slowly so that pipe rolls onto trailer.
- When trailer is half full, stop loading operations and secure pipe with straps. See “WT SOP-13, Pipe Loading and Securement” for details.
- When trailer is full, complete the securement process as per SOP.

Pipe Unloading
When unloading sections of pipe off of the trailer at the jobsite, the following operational steps should be taken:

- Ensure a flat area with sufficient weight capacity is available for unloading operations.
- Remove all straps from the trailer and pipe.
- Use a large capacity PIT with extending boom; tele-handler or equivalent. Only a trained and certified operator should be allowed to use the PIT.
- Always use a spotter to oversee loading operations; non-essential employees should vacate the work area.
- Separate forks to maximum width and secure into position.
- Slowly raise forks and maneuver forks so that they are under the middle of the upper layer of pipe.
- Tilt forks back so that pipe is secure on forks.
- Slowly raise forks over log bunks and back the load away from the trailer.
- Lower the pipes to a safe operating height and transport to staging area; always travel slowly, face the direction of travel, and keep load as close to the ground as possible.
- Repeat until all sections of pipe have been removed from the trailer.
Pipeline Rig-Up

- When setting up poly fusing worksite, ensure that a level area of at least 100’ x 100’ is available; clean area of debris, rocks, stumps, etc.
- Unload fusing machine and orient in direction of pipe pull
- Place roller stand 20-30’ in front of leading hydraulic arm, confirm alignment
- If required for project, set up poly horses on a level plane, 15’ apart and in alignment with feeding hydraulic arm
- Use PIT (or equivalent) and place first section of poly onto fusing machine and secure with clamps
- Fuse pulling joint to first section of pipe
  - For more information on poly fusing operations, see “WT SOP-18, Poly Fusing Operations”
- When this first fuse has cooled, unclamp pipe and connect pulling straps or cables to the pulling joint and the PIT
  - Always refer to manufacturer’s specifications for cooling time, based on DR, temperature, etc.
- Use PIT and pull first section of pipe onto roller stands and align for fusing
- After second section of pipe has been fused, use heavy construction equipment for pipe pulling operations (bulldozer or equivalent)
- Continue to fuse pipe until desired length has been achieved
  - Always consult manufacturer’s specifications for maximum string length based on pipe diameter
- Upon completion of pipeline layout and installation of ancillary equipment, perform a dry pigging operation for every 2,500 foot section of the pipeline: dry pigging does not involve water.
- Upon completion of the dry pig, perform pressure testing as needed; see “WT SOP-01, Pressure Testing Operations” for details

Section 3.0—Potential Hazards

Any time that water transfer operations are in progress, the following potential hazards must be considered and mitigated:

- Latent natural gas
- Wind direction
- Ignition sources within 100 feet of the wellhead and/or frac tanks
- Pressure
- Line of fire/body placement/grease valve placement
- Hydrogen Sulfide (H₂S)
- Stored energy
- Overhead work or suspended loads
- Pinch points
Section 4.0—Other Safety Items

In addition to the above potential hazards, the following items should be discussed and implemented during the pre-project tailgate safety meeting and JSA process, prior to commencement of onsite activities:

- All possible flammable gas or liquid sources are to be identified and controlled or remediated.
- All possible ignition sources are to be identified and controlled or remediated.
- Environmental controls;
  - Erosion and Sedimentation (E&S) controls in place?
  - E&S controls appropriately located?
  - E&S controls adequate for situation?
- Ensure that safety equipment and personal protective equipment (PPE) is onsite and available and properly utilized when necessary or otherwise required pursuant to this SOP or the operating company’s policies and procedures.
- Ensure that air monitoring equipment is calibrated and fully charged.
- Access signs or tape (as required) are available.
- Non-sparking tools for potential leaks are available.
- Potential communication issues should be identified and resolved;
  - Among Rockwater employees.
  - Between Rockwater and other contractors onsite.
- Strategies for limiting site access should be discusses and implemented, if possible.
- Rally points for and routes for emergency evacuations should be identified.
  - Identify a secondary rally point, along with a secondary evacuation route.
- Grounding and bonding of tanks and equipment must be completed.
- Appropriate actions on/around tanks must be discussed.
- Spill/leak cleanup procedures must be reviewed.
- Containment requirements must be reviewed.
- Reporting requirements and procedures must be reviewed.
- Discuss that the integrity of lines is not guaranteed, and can be negatively impacted by
  - Pressure;
  - Vibration;
  - Torque; or
  - Binds.
- Record-keeping and project log requirements should be reviewed.
- Water for pressure testing, purging requirements and processes must be identified.
- A minimum of three workers must be present onsite for all poly rig-up and fusing operations. Two workers may be sufficient for poly pipe loading and unloading operations.
SOP In-Field Checklist, Large Diameter Poly Pipe Operations

Pipe Loading
☐ Use a flat area with sufficient weight capacity.
☐ Use large capacity PIT with extending boom, operated by trained/certified personnel
☐ Use spotter to oversee loading operations; other employees should vacate work area.
☐ Separate forks to maximum width and secure into position
☐ Pick up sections of poly pipe with forks in middle of pipe; 4 or less sections of pipe per fork load
☐ Travel slowly towards the trailer and keep load as close to ground as possible
☐ Raise forks over log bunks and slowly lower so that pipe is centered on trailer; tilt forks slowly so that pipe rolls onto trailer
☐ When trailer is half full, stop loading operations and secure pipe with straps

Pipe Unloading
☐ Use a flat area with sufficient weight capacity
☐ Remove all straps from the trailer and pipe
☐ Use large capacity PIT with trained/certified operator
☐ Use spotter to oversee loading operations; other employees should vacate the work area.
☐ Separate forks to maximum width and secure into position
☐ Slowly raise forks and maneuver forks so that they are under the middle of the upper layer of pipe
☐ Tilt forks back so that pipe is secure on forks
☐ Slowly raise forks over log bunks and back the load away from the trailer
☐ Lower forks to safe operating height and transport to staging area
☐ Repeat until all sections of pipe have been removed from the trailer

Pipeline Rig-Up
☐ Use a level area of at least 100’ x 100’; clean area of debris
☐ Unload fusing machine and orient in direction of pipe pull
☐ Place roller stand 20-30’ in front of leading hydraulic arm, confirm alignment
☐ If required, set up poly horses on level plane, 15’ apart and in alignment with feeding hydraulic arm
☐ Use PIT and place first section of poly onto fusing machine and secure with clamps
☐ Fuse pulling joint to first section of pipe
☐ When first fuse has cooled, unclamp pipe and connect pulling straps to the pulling joint and the PIT
☐ Use PIT and pull first section of pipe onto roller stands and align for fusing
☐ After second section of pipe has been fused, use heavy construction equipment for pipe pulling operations (bulldozer or equivalent)
☐ Continue to fuse pipe until desired length has been achieved
☐ Upon completion of pipeline layout and installation of ancillary equipment, perform a dry pigging operation for every 2,500 foot section of the pipeline
☐ Upon completion of the dry pig, perform pressure testing as needed