2800 Post Oak Boulevard
P. O. Box 1396
Houston, TX 77251-1396
713-215-3077

Residential Area Work Plan
Snohomish Loop
King County, Washington

Project: Capacity Replacement

Dates of Construction: May 2006- October 2006

Location: Deer Park Subdivision

Survey
Prior to mobilization of any equipment, the limits of disturbance and the centerline of the pipeline will be staked. All underground utilities will be located and flagged. Any wetlands will be identified and signs will be put up to restrict any fueling activities near them. Access points will also be marked with signs.

Mobilization
Crews will mobilize to the southern end of the Deer Park neighborhood on or about **5/4/06** and begin working in a northerly direction. Standard working hours are Monday through Friday from 7am to 7pm, and Saturday 8am to 7pm. Work is not presently scheduled for Sunday but if required, would be conducted in accordance with local standards.

Safety and Security
Where necessary, landowners' fencing will be taken down if it is in the work corridor. Safety fence will be installed on the edges of both sides of the corridor. The safety fence will be 6' high chain link sections that will create a continuous boundary that separates the work corridor from the homes. This fence will also serve as temporary fencing for any that has been removed for construction. It will be secure to keep children and pets out of the work corridor and all construction activities will be contained within the fencing. A security guard will be posted within the work corridor during non-working hours.

Clearing and Grading
Northwest plans on building this loop in sections throughout the neighborhood to minimize the construction time near any individual home. Typically, a section will be created by road crossings. The clearing will begin approximately **5/08/06** using bull dozers, motor graders, loaders, and dump trucks and will last about 5 days per 1000' section. The construction corridor generally will be 60 feet wide, except where we have extra workspace for truck turn arounds or road crossings. Trees, brush, and grass within the corridor will be removed, as will any temporary structures. All brush will be hauled off the right-of-way (ROW) to an approved disposal area. Care will be taken to save as many trees as possible within the work area. The trees will be flagged as to which ones will be removed. The ROW will be graded as necessary to create a reasonably level working surface to allow safe passage of equipment. The topsoil from over the trench line will be stockpiled separately so it can be replaced during restoration activities. If there is a wetland area, timber mats may be laid down on the working side of the pipe centerline to protect the wetland and the 30" line that will be in-service.

At this time, all environmental erosion control measures will be installed on the ROW. This includes silt fence along the edges of the construction corridor as needed to prevent erosion on slopes.

Throughout construction, excess dust will be controlled using water trucks. As conditions require, the trucks will drive the ROW and spray water on the dirt.

Trenching
The trench will be excavated to expose the 26" line using a stripping shoe on a backhoe and will begin approximately **5/12/06** Trenching activities will last approximately 6 days for a 1000' section. The trench will be 6 to 7 feet deep and about 4-5 feet wide at the bottom of the trench. The spoil from the trench will be spread across the working side to provide additional cover and protection for the 30" line.

During the excavation there may be some sprinkler system lines cut. These lines will be repaired as soon as practical. If any utility lines were not properly located by the One Call service and they are cut, the line will be temporarily repaired that day. Final repairs will be done before backfilling the ditch. The contractor will have materials on hand to make these types of repairs.

Removal of the 26" Pipeline
After the 26" line is exposed, it will be pulled out of the ditch using backhoes or side booms and cut into 40' sections. These will be loaded onto trucks and hauled off the ROW to an approved off site pipe storage yard. In some areas, due to soil conditions, after the 26" pipe has been removed, the ditch will be backfilled and re-dug to accommodate the 36" pipe.

Landowner Access
If the work corridor crosses a road, access will be maintained so residents will still have ingress/egress to their homes. If the road is proposed to be open cut, one lane will remain open during construction. There may be a few minutes where the entire road would be closed to pull a joint of pipe across. A traffic plan and flag persons will facilitate these instances. Generally, at night, steel plates will be placed over the ditch in the road so traffic can flow on all lanes.

Stringing, Bending, and Welding
The 36" steel pipe will then be transported to the ROW using trucks, beginning on or about **5/13/06.** The joints of pipe will be laid along the trench in a single, continuous line on the working side of the trench (typically 40' wide). The joints will be lined up and welded together. Some bending will be required to follow any turns or elevation changes in the ROW. A track mounted hydraulic bending machine will bend the pipe prior to welding. Stringing, bending, and welding should take approximately 6 days per 1000' section.

X-Ray, Weld Repair, and Coating
To ensure that the pipe meets or exceeds the design strength requirements, the welds are visually inspected and X-rayed in accordance with API standards. Any welds with defects will be repaired or cut out and re-welded. The welded joints of the pipe will then be cleaned and epoxy coated to prevent corrosion. These activities should begin around **5/15/06** and last approximately 4 days per 1000' section.

Lowering, Padding, and Backfill
The completed section of pipe will then be lowered into the ditch using side booms or backhoes. Prior to lowering in, the trench will be inspected to make sure it is free of rocks or other debris that could damage the pipe or its coating. If there is substantial rock in the ditch due to soil conditions, padding will be placed in the bottom to protect the pipe. Padding can be rock-free soil or foam pillows that the pipe will be set on. After the pipe is lowered into the ditch, the trench spoil will be pushed back into the ditch and compacted to cover the pipe. The topsoil will then be replaced over the top of the trench. Backfilling will begin around **5/17/06** as the spread progresses towards the northern end of the neighborhood. Backfilling and compacting should take approximately 4 days per 1000' section.

Restoration
Restoration will begin on or about **5/17/06**, immediately after the topsoil is replaced. The sequence of the restoration will be final sprinkler system and other utility repairs or replacement, removal of any damaged sod, fine grading of the topsoil and placement of new imported sod, paving of walking paths/sidewalks/driveways, restoration of flower beds, removal of safety devices, removal of allowable erosion control devices and restoration of landowners' fences. All contours will be restored to the original elevations. New sod will be reserved through a local sod company to make sure there are sufficient quantities to complete the restoration. Restoration in each section should be completed within 10 days of backfilling, weather permitting. NWP will work closely with residents to make sure all restoration is done in accordance with easement agreements and landowner stipulations. All restoration is scheduled to be completed by **6/15/06**.

Geometry Tool Inspection
An electronic device called a geometry pig will be run through the new line. This device checks the pipe to make sure there are no dents or ovality problems with the pipe. If any anomalies are found that exceed the Williams tolerance specifications, they are dug up and visually inspected. If necessary, the piece of pipe containing the anomaly will be replaced.

Hydrotest
To comply with 49 CFR 192 regulations, the pipe will be filled with water and pressure tested after the entire pipeline loop has been installed. The hydrotest is scheduled for **9/06/06** through **10/02/06**. Once the pipe is filled, the pressure is allowed to stabilize for several hours. Then the actual test will begin and will last for 8 hours. Once the test is successfully completed, the water will be drained through a filtration device and discharged in an upland area near the Snohomish Compressor station.

Key Personnel

Contractor		
Superintendent		
TBD	NWP Area Chief	
Suzanne Hickham	NWP Pipeline Design	713-215-3077
Grant Jensen	NWP Redmond District Manager	425-868-1010
Rodney Gregory	Land Representative	425-353-8770