Building Wastewater Infrastructure In An Era Of Phased Development

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Phased and Modular are key terms we hear a lot these days from developers and builders. For now at least, gone are the days when banks and mezzanine lenders are willing to provide financing for large developments requiring big up front investments in infrastructure. Instead, financing seems to be available only for projects that are implemented in much smaller and less risky bites. Rather than providing infrastructure to support, say, 500 new residences, development in increments of 25 to 50 homes, or even less, seems to be the new norm.

How then can water and sewer be configured to better match these new realities while at the same time provide sustainable long term performance? Historically, we have had two choices: (A) development based on home well and septic or (B) provide/connect to centralized infrastructure often referred to as the big pipe solution. Development based on well and septic has the distinct advantage of limiting the upfront investment required for water and sewer. However, it also has some big disadvantages including significant lot size and layout limitations. It also provides little opportunity for land preservation and community open space and offers questionable long term sustainability. A central solution, on the other hand, removes lot size and layout limitations but also typically requires the largest upfront investment.

A third alternative is also now available and gaining momentum across the country. If development is planned in phases of 10 to 25 to 50 homes, decentralized water and sewer can be provided matched to these planned development rates – and largely remove the lot size and layout limitations of well and septic while also providing sustainable long term performance. In addition, higher lot yields/density, while still preserving community open space, can substantially increase short term ROI.

Several examples will serve to illustrate.

<u>Master Plan Golf Course Communities</u>

We currently have 3 projects in the southeast with very similar profiles. Each development is large encompassing a total area of between 500 and 1,000 acres and features both golf course and water amenities. Connecting to public sewer is not a practical option at any of these locations. Initial planning provided for installation of a centralized wastewater treatment plant with capacity matched to the need at total development build out. However, in today's environment, building a sewer infrastructure upfront for 400 to 1,000 homes is simply not practical. Building with septic would result in the loss of many buildable lots and still cost on the order of $15,000 to $20,000 per lot at these sites.

The solution: Provide decentralized sewer collection, treatment and onsite dispersal in phases matched to planned development phasing. Installing drip irrigation in the golf course driving range or planned development open space provides effective dispersal fields for highly treated wastewater while keeping total sewer construction costs typically to $15,000 or less per lot, depending on the cost related to

obtaining permits. NCS then also manages these decentralized sites as a private utility, billing homeowners a monthly sewer charge competitive with municipal sewer rates. A utility structure provides the critical long-term infrastructure needed to insure sustainability.

Community Commercial District

A commercial district in the upper Midwest is currently served by septic systems. Given a long history of problems with septic and significant limitations to continued development of the business community, it has often been proposed to connect to a nearby municipal sewer system or even build a new centralized treatment plant designed to meet the needs of the commercial district and surrounding residences. Unfortunately, finding a municipality willing to take the added sewage load has proven both expensive and problematic. Engineer's estimate for building a centralized sewer system designed just to serve the community exceeds $5 million - totally unaffordable.

The solution - NCS designed, built and is currently managing a decentralized facility designed to serve a cluster of commercial sites. Highly treated wastewater is dispersed in open areas onsite. Compared to traditional sewer, the costs per unit of capacity were just ½ that of central sewer. In addition, the investment required by the commercial developer was affordable and matched to the phased development planned. Now the opportunity exists to add additional increments of capacity designed to serve other commercial accounts nearby at far more affordable costs. Once again, NCS provides the utility structure needed to insure a long term sustainable solution. Sticking with traditional sewer represents a road to nowhere for this community.

Residential Subdivision

We are now working with several residential subdivisions faced with the problem of finding a way to reshape their development plans to better match current market realities. A common feature in these developments is large lot sizes and homes originally priced in the $500,000 to $2,000,000 range. Given the large lots, use of onsite septic systems were planned. Unfortunately, the market for homes in this price range has largely evaporated for these developers. Roads are already built, but lots sit vacant.

The solution: Increase density sufficient to spread the cost of land and infrastructure across more lots. Build homes in the $200,000 to $300,000 price range where there is still a market. At least a doubling of density at these sites is needed but this is impractical with septic. In these cases, a phased installation of clustered decentralized sewer meets the need – facilitating a development redesign while keeping phased sewer development costs at an affordable level. And with the utility operating infrastructure provided by NCS, a long-term sustainable solution is provided as well.

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