

Fargo/Moorhead feasibility study completed in record time

Story by Shannon Bauer

After working almost around the clock for more than a year-and-a-half, the Fargo, N.D./Moorhead, Minn., study team recently completed its first draft feasibility report and environmental impact statement, or EIS, for a \$1.5 billion diversion project in record time.

The team, to date, has included around 30 members of the St. Paul District working on the project full-time, another 140 people from around the Corps working on the project part-time and the engineering staff from the cities of Fargo and Moorhead. Staff from Barr, Houston and Moore engineering firms contributed, too. District project managers Craig Evans and Aaron Snyder have led the team.

The solution the team came up with to better protect the 200,000 or so residents of the Fargo/Moorhead metropolitan area includes building a locally preferred plan of a 35,000-cubic-foot per-second diversion channel. This plan would divert some of the Red River of the North to the west of Fargo, through North Dakota. The Red goes through the center of the downtown corridor, dividing the two cities. It also marks the border between Minnesota and North Dakota.

Unlike most rivers, the Red flows north. As the snow melts in the spring, the runoff makes its way toward Canada only to be joined by more runoff along the way. This, combined with extremely flat land and frozen, nonabsorbent soils, works to create any number of potential flooding problems each spring.

Already, the district has worked with two communities upstream of Fargo, Wahpeton, N.D., and Breckenridge, Minn., and two communities downstream, Grand Forks, N.D., and East Grand Forks, Minn., to build them each a project that includes a diversion



Photo courtesy of Federal Emergency Management Agency

Aerial view of Fargo, N.D., during the 2009 flood.

channel. Further upstream in Canada, Winnipeg has also built a diversion.

Evans said completing a feasibility study for such a large project would usually, at-a-minimum, take five to seven years. The district, however, began the Fargo/Moorhead study in September 2008 and presented a draft report to the public on June 1 of this year – making it one of the fastest feasibility studies ever drafted in the Corps.

Cranking up the heat

“Our pot was on simmer, and then the spring flood of 2009 happened,” said Evans. “Then, they cranked up the heat to a full boil.”

Prior to the record breaking flood of 2009, the district had worked with both cities on and off again. In addition to fighting a number of floods alongside the residents and staff of both, it has worked on a number of small flood control projects there to include the



Photo by Shannon Bauer

Jon Sobiech, left, environmental, talks with a community member during a public meeting. Meetings were held to help inform and educate the public about the district's projects in the Fargo, N.D./Moorhead, Minn. area.

Fargo/Moorhead and Upstream Feasibility Study, which is currently underway, and the Fargo-Ridgewood project, which was recently completed.

After the spring flood of 1997, in which Grand Forks and East Grand Forks flooded and Fargo and Moorhead came vicariously close to flooding, the district completed a reconnaissance study on the Red River of the North river valley and recommended doing a feasibility study for a large flood control project for the two cities.

A reconnaissance study is the first step in the Corps planning process. If it is determined through the reconnaissance

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study that there is a potential for federal interest, the Corps can then begin a more in-depth feasibility study.

At the time, though, said Evans, Fargo did not want to spend the five to seven years it would take to complete a Corps study and proceeded on a different path with a project called the Southside Flood Control Project. Ironically, Fargo was still in the planning phase of this project well into 2009 and only dropped it after committing to working on a project with the Corps during the flood fight of that year.

In 2006, after that particular year's flood fight, Fargo requested the district look into building levees and floodwalls inside the downtown corridor. From 2007 to 2008, the district completed a reconnaissance study specifically for Fargo/Moorhead and was able to convince both cities that a bigger project needed to be looked at to properly guard against the risk of catastrophic flooding.

"We started the feasibility study in the fall of 2008, and they didn't believe we would find anything," said Evans. "They were reluctant to fund a large Corps study only to find out there was nothing in the federal interest."

Further, in April of 2009, when the district came back to the cities to present its initial results, the cost-to-benefit ratio needed to

build a federal project did not look so good. Evans said it appeared levees would come in at just above a 1-1 ratio and a diversion at just about 0.65. A project must be at least a 1-1 ratio to be eligible for federal funding; and the higher the ratio, the more likely the project will be funded.

Nevertheless, the cities were just then involved in the biggest flood fight they had ever faced. With a breaking crest of 40.82 feet in Fargo as compared to the 38 feet crest of 1997, the cities decided to continue with the study. Flood stage for Fargo is 18 feet.

"At that point, it was a fairly easy decision to make," said Snyder. "Then, too, there also came at that time a lot of political pressure to

move things forward as fast as possible.”

It was then, he said, that the district and the two cities committed to such a daunting schedule of completing a feasibility study in time to present it to Congress by December of 2010. To meet this goal, a draft report needed to be complete by May of 2010. Once this goal was set, said Snyder, the team became the driving force to getting it done. “If any one member of the team had dropped the ball,” he said, “we wouldn’t be where we are today.”

In addition to an almost impossible schedule and further complicating matters, the team faced one of the most complex projects the district had ever tackled. First, said Snyder, the hydrologic record showed an increasing trend in flood volumes and frequencies. To address this, the district hosted a panel of scientific experts from across the nation in September of 2009 to look at the hydrology of the Red, and this panel determined there to be both a wet cycle and a dry cycle taking place in this valley. As such, explained Snyder, a new way to analyze the data had to be determined that involved breaking the next 50 years into three periods. One period is the current year, the next period is 25 years out and the third is 50 years out.

Then, too, because the National Economic Development, or NED, plan came out to be a Minnesota diversion channel rather than the locally preferred North Dakota plan; and because the NED plan did not protect to the same level as the locally preferred plan, a third plan, coined the federally comparable plan by the team, had to be developed. As such, figures for three different alternatives – the NED plan, the locally preferred plan and the federally comparable plan – all had to be developed to complete the draft report.

There also had to be an expansive economic analysis. Usually, Snyder explained, the Corps will only work with one set of numbers for any given project; but in this case, because of the extra sets of hydrologic data, there had to be three – one for each of the future periods.

There were, and continues to be, a number of environmental hurdles to deal with, as a North Dakota diversion channel crosses five tributaries of the Red: The Wild Rice, the Sheyenne, the Maple, the Lower Rush and the Rush rivers. A Minnesota diversion would not cross any.

Despite these complications, the team managed to stay on schedule up until the time they released a draft report June 1, 2010. Through this process, they learned that the 2009 flood was only a



Photo by Shannon Bauer

Edith Pang, engineering, greets community members who attended a public meeting in Fargo, N.D.

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50-year flood. A 100-year flood would peak at a crest of 42.4 feet, cause around \$5 billion in damages and result in up to 200 deaths if emergency levees failed unexpectedly. (This estimate does not factor into account freezing cold water that would likely increase the number of deaths.) By the end of the analysis, the cost-to-benefit ratio for all three diversion channels increased to more than a 2-1 ratio.

To stay on schedule, the team did a number of things unusual to the way the Corps routinely completes a feasibility study. These changes included working simultaneously on tasks that would normally be done sequentially, releasing information before it was perfect and being in constant communication with the study partners.

As an example, the Corps usually likes to have all of its data compiled before making a decision to narrow the number of

alternatives. For this study, said Evans, the team was working on the hydrological data at the same time they were completing the alternative screening process. The initial data they based their early decisions on did not include the 2009 flood event. “So we were using models that we knew were not calibrated to that event,” he said, “but then we had to do that calibration at the end and rerun our hydrologic and economic models.

“There was a lot of uncertainty. If we had guessed wrong along the way, we could have wasted a lot of time,” he said. “As it turned out, we guessed mostly right.”

The team also shared a lot of its information with the public much sooner than it normally would have. “Usually, the Corps doesn’t publish anything that hasn’t been reviewed and approved,” said Evans, “but with this study, we were routinely sharing information and telling people it was preliminary.

“It let people get gradually comfortable with where we were going,” he explained. “They got used to us telling them it [the data] would change, and I think they understood what we were doing. Ultimately, because of this, I think there has been more buy in.”

Snyder agreed, saying he had originally been a proponent for a lot of public involvement during the study, mainly to keep the study on track, but initially was told he had budgeted too much. “We ended up having to do even more public involvement than what was originally in the plan,” he said. “The value has been that it gave the public ample time to review and digest the documents.” Like Evans, he said he believes being so open has brought buy in and confidence from the public.

“Besides, it’s the right thing to do,” he added. “The Corps should look at this study as an example of where open and transparent government works.”

Throughout the process, the team was in constant communication with its partners, the cities and its vertical team. “With other projects I’ve worked on, the sponsors just furnished money and didn’t work with us shoulder-to-shoulder like we have done here,” said Evans.

“Working with them so close has been a good thing, because the sponsors are just as aware of what’s happening with the project as we are ourselves,” he explained. “One of the best benefits of this relationship has been their ability to keep the pressure on us to meet the schedules. And since it’s their own contractors doing a lot of the work, they have been keeping the pressure on them, too.”

As for the vertical team at the division and headquarters levels,



Photo by Shannon Bauer

Scott Jutilla, district hydrologist, explains how a diversion channel would work during a public meeting in Moorhead, Minn.

Evans said they have been very involved from the beginning. “We’ve seen that they’re there to help us, and that they want to help us,” said Evans. “Because of the speed with which we’ve been moving, we’ve really needed to do things properly and follow the process, and they’ve been very important in providing guidance and feedback along the way.”

Despite being able to meet the tremendous milestone of producing a draft report and EIS in a year-and-a-half, when asked if it should be done again, both Evans and Snyder said, “No.” “The main reason is that it burns people out,” said Evans. “You can’t expect people to work as much overtime as we’ve been working and stay productive.”

From the beginning of the project to the completion of the draft report, 165 district employees have spent 47,602 hours on this study at a cost of around \$4.7 million. (This number does not include the hours of support staff, such as the attorneys and the public affairs specialists, who do not bill to projects.)

“There were some weekends where the entire Fargo team was in the office,” said Snyder. “This showed their dedication to getting this project done.”

Another reason neither project manager recommends completing a project with such speed is that there are too many possibilities that an unforeseen problem might derail the whole thing. “At any time,” said Evans, “we could have uncovered data that would result in having to go back to the beginning.”

Since releasing the draft report in June, the Corps decided to extend completion of the Fargo-Moorhead Metropolitan Area Flood Risk Management Feasibility Study to allow for additional analysis of alternatives and impacts. As downstream impacts of a diversion were greater than first anticipated, the team determined it will need to complete a supplemental draft EIS and anticipates publishing this supplemental draft EIS for public review next spring. Snyder



Photo by Shannon Bauer

Mike Leshner, second from left, engineering, and Elliott Stefanik, district biologist, discuss the study results with community members at a public meeting in Moorhead, Minn.

said the team will continue to work diligently toward publishing a plan that will ultimately result in a permanent flood damage reduction project for Fargo and Moorhead.

He and Evans both credit the entire team for being able to produce a draft report with such speed; however, they want to particularly praise Lance Awsumb, economics; Kurt Heckendorf, geo-tech; Mike Leshner, hydraulics; Molly McKegney, Office of Council; Jon Sobiech, environmental; and Elliott Stefanik, environmental; for going above and beyond.

Unconventional pair leads feasibility study

Story and photo by Shannon Bauer

Craig Evans and Aaron Snyder, co-project managers on the Fargo, N.D./Moorhead, Minn., Metropolitan Area Feasibility Study team, have made an unlikely team.

At 30, Snyder can be described as young, bold and outspoken. Evans, a little bit more seasoned, is also a bit more soft spoken and quite a bit more conservative.

As Judy DesHarnais, deputy district engineer for programs and project management, has noticed, Snyder always orders super spicy food. Evans never gets wilder than ketchup.

Evans has called himself a pessimist and Snyder an optimist.

In other words, Snyder and Evans have made for a comical, albeit successful team.

“Our success together has been that we weren’t fighting for who was going to be in charge,” said Evans. “We have been able to work together as a team and foster that spirit of cooperation with the rest of the team – both within the Corps and with the sponsors.”

He credited the team being able to meet such a tight schedule on the Fargo/Moorhead study, in part, to Snyder being such a strong project manager. “You need somebody who is willing to crack the whip and make things happen, and Aaron [Snyder] has done that,” he said. “None of this [making the first milestone of publishing

a draft report and environmental impact study by

June 2010] would have happened if Aaron [Snyder] hadn’t been in the position he’s in.”

Snyder, not surprisingly, disagreed. He has credited the team’s ability to meet its first major milestone, in part, to Evans. “Without Craig [Evans], it wouldn’t have gotten done,” he said. “Craig [Evans] really focused on all the details and made sure we dotted our ‘i’s and crossed our ‘t’s. He was willing to do the work that wasn’t fun.”

Both, however, will admit that their past participation in the Corps Planning Associates Program and a temporary assignment in Washington, D.C., on the Corps Regional Integration Team were exceptional training and preparation for leading the Fargo/Moorhead team. “The Planning Associates Program helped us to learn the policies and the processes really well, and it helped us network with people throughout the Corps,” explained Snyder. “Working for the RIT at headquarters gave us the knowledge we needed to get things up the vertical team quickly, and it helped us



Aaron Snyder, left, now chief of project management-B, and Craig Evans, now chief of planning, economics and formulation branch, pose for a photo at the Fargo City Hall. They have led the Fargo, N.D./ Moorhead, Minn. Feasibility Study team for the past year and a half.

identify issues they’d be looking for.”

All of this education must have been useful in other ways, too, since both Evans and Snyder have been promoted since beginning their work in the Fargo and Moorhead area – Evans as the chief of the district’s new plan formulation and economics branch and Snyder as the chief of the district’s project management – B branch.

Click on the photo for more information on the Corps Planning Associates Program. You can also view the requirements to apply.