



172nd / 190th Corridor Plan

TECHNICAL MEMORANDUM #7.2

Most Promising Roadway Alignment Alternatives

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Project #: 10213

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This technical memorandum summarizes the feedback received at Project Advisory Committee (PAC) Meeting #4 on March 16th, Public Workshop #4 on March 30th, and Virtual Workshop #4 from March 18th through April 11, regarding the 5 Corridor Alignments described in Technical Memorandum 7.1 – Refined Corridor Alignment Concepts. The public feedback confirmed the project team's preliminary recommendations to further develop Concepts AT2, AT6, and AS10a and eliminate Concepts AT4 and AT5.

The Project Management Team (PMT) reviewed the preliminary recommendations, the PAC recommendations, and public recommendations. The PMT concurred with these recommendations and selected Alternatives Concepts AT2, AT6, and AS10a for the next level of analysis. The remainder of this technical memorandum summarizes the process and results of the public input.

PUBLIC FEEDBACK PROCESS

Attendees at PAC Meeting #4 and Public Workshop #4 were invited to review the 5 refined roadway alignment concepts. These concepts were summarized in Technical Memorandum 7.1 along with the technical review and preliminary recommendations regarding which concepts should be carried forward for further analysis (AT2, AT6 and AS10a).

Attendees at PAC Meeting #4 and Public Workshop #4 were provided all 5 corridor concepts along with the preliminary recommendations on which should be eliminated or carried forward. Participants were then asked to note on a score card whether they agreed with the project team recommendations. The intent of the exercise was to have each participant recommend 3 alignment concepts be carried forward for further evaluation and to rank those concepts in order of preference. Those not able to attend either the PAC Meeting #4 or Public Workshop #4 meeting could review the concepts and provide feedback through the Virtual Workshop #4, (<http://172nd.com>) which was available from March 18th through April 11th.

PUBLIC FEEDBACK RESULTS

The number of positive versus negative votes and rankings for each concept were totaled separately for PAC and public feedback in tabular form to rank the concepts. It should be noted that since the number of PAC members is significantly less than public participants, the total score was not calculated with a weighted average. In other words, the total percentages from the PAC and public responses were given equal weighting. A detailed explanation of the methodology used to evaluate feedback from the PAC Meeting and Public Workshops is contained in Attachment A. Attachment B contains all the written comments received on the alignment concepts. Table 1 summarizes the PAC and public approval percentages for all five concepts.

Table 1 Public and PAC Approval Percentages

| | | AT2 | | AT4 | | AT5 | | AT6 | | AS10a | |
|-------------------|----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | Yes | No | Yes | No | Yes | No | Yes | No | Yes | No |
| Public | <i>Meeting</i> | 53% | 47% | 39% | 61% | 21% | 79% | 37% | 63% | 83% | 17% |
| | <i>Virtual</i> | 59% | 41% | 43% | 57% | 36% | 64% | 60% | 40% | 67% | 33% |
| | Total* | 56% | 44% | 40% | 60% | 26% | 74% | 44% | 56% | 75% | 25% |
| PAC | Total | 67% | 33% | 33% | 67% | 0% | 100% | 100% | 0% | 78% | 22% |
| Average | Total | 61.2% | 38.8% | 36.7% | 63.3% | 12.8% | 87.2% | 72.2% | 27.8% | 76.6% | 23.4% |
| Net Result | | Yes | | No | | No | | Yes | | Yes | |

*The total percentage represents the combined results of the public meeting and public virtual workshop. (It is not an average of the public meeting and public virtual workshop percentages.)

PAC and public workshop participants were also given the opportunity to rank the roadway alignment concepts based on how well they meet the project needs. If a concept was ranked as the best alignment, it received 3 points, 2 points for second place and 1 point for third place. A score of zero was given to concepts ranked as fourth or fifth place. Table 2 summarizes the results of the scoring feedback received.

Table 2 Public and PAC Scoring

| | | AT2 | AT4 | AT5 | AT6 | AS10a |
|------------------------|-------------|-----|-----|-----|-----|-------|
| Public | Total Score | 72 | 42 | 28 | 46 | 100 |
| | Meeting | 29 | 28 | 16 | 24 | 59 |
| | Virtual | 43 | 14 | 12 | 22 | 41 |
| | Rank | 2 | 4 | 5 | 3 | 1 |
| PAC | Total Score | 12 | 4 | 1 | 18 | 19 |
| | Rank | 3 | 4 | 5 | 2 | 1 |
| Overall Average | Rank | 2.5 | 4 | 5 | 2.5 | 1 |

As shown in Tables 1 and 2, Concepts AT2, AT6 and AS10a all received a majority of “yes” votes while AT4 and AT5 received a majority of “no” votes. The scoring results yielded similar findings with AS10a ranking first, and AT2 and AT6 tied for second place.

RECOMMENDED CORRIDOR ALTERNATIVES

Based on the evaluation of refined concepts and the feedback received at PAC Meeting #4, Public Workshop #4 and Virtual Public Workshop #4, the Project Management Team selected the three most promising concepts to be carried forward:

- AT2
- AT6
- AS10A

NEXT STEPS

In the next steps, the three most promising alternatives will be further developed and analyzed in greater detail to more quantitatively evaluate environmental, right-of-way and operational impacts. From this next evaluation phase, one of the three roadway alignment will be selected as the preferred alignment.

Appendix A –
Scoring Methodology

Workshop #4 Public & PAC Feedback Methodology

- If someone provided responses at the workshop meeting and also through the virtual workshop, the most recent comments were used.
- People who had discrepancies in the information they provided at the workshop meeting or through the virtual workshop were contacted via email to clarify their responses.
- Two tables were created to summarize the feedback from Workshop #4 (including the feedback from the workshop meeting and the feedback from the virtual workshop) – Approval Percentages Table and Scoring Table.
- Approval Percentages Table
 - The number of “Yes” votes was tallied for the Approval Percentages Table, along with the number of “No” votes.
 - It should be noted that not every person marked “Yes” or “No” for every alternative. No assumptions were made about the alternatives that were not given a “Yes” or “No” vote.
 - The percentages of “Yes” and “No” votes were calculated for both the Public and PAC. These percentages represent the number of people who voted “Yes” or “No” out of the total number of people who voted on that alternative. For example, if only ten people voted “Yes” or “No” on Alternative 1 and seven of those people voted “Yes,” the “Yes” percentage would be 70 percent. The percentages do not take into account the total number of people who voted on all of the alternatives.
 - The approval percentages from the PAC and Public were averaged. As in the previous round, the final approval percentages from the PAC and Public were given equal weight. The public comments were not given extra weight due to the pool of responders.
- Scoring Table
 - The Scoring Table was created using the rankings that people gave to the various alternatives. People could rank the five alternatives from one to five. The following scores were given to the rankings, in order to easily identify the most popular alternatives as those with the highest numbers of points:
 - #1 – 3 points
 - #2 – 2 points
 - #3 – 1 point
 - #4 – 0 points
 - #5 – 0 points
 - If someone did not provide a ranking but marked “Yes” for an alternative, the alternative was given 2 points.
 - If someone did not provide a ranking but marked “No” for an alternative, the alternative was given 0 points.
 - If someone did not provide a ranking but marked “Yes” and wrote a comment referring to the alternative being the “best,” the alternative was given 3 points.
 - The total number of points was summed for each alternative, and then a rank was assigned based on the number of points. For example, the alternative with the highest number of points was given a rank of 1.
 - The PAC and Public ranks (based on the number of points) were averaged. The ranks were given equal weight. The public comments were not given extra weight due to the pool of responders.

Appendix B –
Summary of Comments



172nd / 190th
Corridor Plan

Public Workshop/PAC #4

March 30, 2011, 6 – 9 PM

SCORE CARD RESULTS

PAC, Public Workshop and Virtual Workshop

Written comments

Corridor Alignment Concept Review

Green – Recommended for further review

Should these proceed for further analysis? Please mark “yes” or “no”. If so, what do you like? If not, why not?

AT2

Yes:

- Appears to be a smart choice of the three presented.
- Except for one-quarter of the route, AT2 uses existing roadways, which I presume will mean less neighborhood disruption than some other routes.
- Seems to be the best plan for an almost straight access to 190th with the fewest disruptions. Great connectivity which is supposed to be why this concept/project was created. Pedestrian trails seem better designed and safer. Hopefully the motorists will be more respectful of the people who live in these affected areas and to the environment.
- Less impact on the environment and roads. 172nd is already considered the North/South main feed to motorist.
- I like the transition made for the interchange of 172nd to 190th.
- This looks like it would have the least impact on existing private property and be the cleanest way to achieve the goal of getting traffic to 190th.
- This plan appears to be the most direct and cost effective route. The straightest alignment makes the best scenario for the county and a realistic budget to complete a real project to help the area.
- Hopefully will eliminate wrecks that occur on corner of 190th & Tillstrom.
- This plan also crosses our land, but on the northwest corner, which would also allow access to our land, however would take more to create a longer driveway to our home. Originally we were concerned about how many properties these all cross, but I think this one does a pretty good job. We thought a lot about all of these plans, and there are so many things to consider that we finally had to make our decisions based on personal reasons.
- Best alignment for new road if have to build new road, cost high.
- Close to first choice. Good natural egress.
- Better suited to westbound traffic – Portland, airport. Needs to consider all concept plans. Still too expensive. Utilizes more current infrastructure.

- I would like to see AT 2 be the choice, because it looks like there would be less impact on properties as far as less roads to punch through
- I would like to see AT 2 be the choice, because it looks like there would be less impact on properties as far as less roads to punch through.

No:

- Takes too many properties. (5)
- AT4 accomplishes the same as this without all the disruption.
- Transects properties between Borges and Cheldelin. Planning connection with Baxter does not take advantage of current roadway.
- Relies way too much on existing 172nd, creating unacceptable safety and aesthetic situation with a huge number of driveways on a major arterial.
- This plan would take out our home. We are at 190th and Cheldelin and we are trying to sell and no one will want to buy it if it won't be there in the future.
- Cuts through prime buildable land.
- Doesn't address east traffic. Misses future villages. Expensive to build. Only get 26% workshop approval.
- This is the most expensive alternative and impacts the most tax lots. The crossover via Cheldelin just seems awkward. Also the proposed road extending Borges to 172nd crosses through existing forest area near Tillstrom Rd. of diverse native habitat, both plant species and wildlife, that would be eliminated with the road. This area is home to many songbirds, migratory birds, hawks, owls, wetlands, watershed, and is crossover for wildlife (i.e. deer) between the buttes, and generally would result in significant negative environmental impact. With the current rate of habitat destruction, it is simply ridiculous to destroy a sensitive area. And there has been emphasis to improve or reclaim areas for wildlife, putting significant dollars towards this effort in the metro area. Don't destroy an existing area.
- Should widen Foster Road rather than create new north / south road south of Hemrick.
- Too many changes, too much cost.
- Cuts up too many large tracts of land, too expensive, not good use of resources.
- Cuts through too many properties. Cheldelin Rd should not be changed where it intersects with 190th. 190th should continue further south before turning west.

AT6

Yes:

- Very close to AS10a and makes for easier transition to a second north/south route at a later date.
- This seems to me the best alternative. Hemrick is already a major road to the Happy Valley mall, and that seems like a good place to have a junction going toward Gresham and Damascus. I believe it misses some of the more sensitive wetlands further north in AT2. It also costs less, at least as far as you have been able to calculate.
- Seems more thought out than other, less desirable plans. Local access appears to be okay but not w/driveway access. This plan seems to have spawned more road construction that is in conjunction with the project.
- Uses fair amount of existing roadway. Do not like the alignment of Baxter/Cheldelin connection.

- This one looks a little better, but we are already too close to the road, how much closer will the road get to our house. What will happen to the hillside in front of our house?
- This is the next least expensive alternative and also impacts the least number of tax lots. Reduces impact to areas surrounding buttes.
- This appears to be the second cost effective approach but does not look to be the easiest to construct due to the valley land and the route is not very straight.
- Arterial feeds Foster Village, which is good.
- Agrees to further investigate but impacts many properties with sharp diagonal (southwest – northeast) at Cheldelin.
- Likes this concept, but should not delete portions of Hemrick Road.
- Agrees to further investigate but believes it fails to address traffic flow west to Portland. Likes that it utilizes current road infrastructure but still too much new road and right-of-way impacts are high.
- Likes this for it is the best way to hook 172nd to 190th, but it will bypass the employment center up the road and will not hook up to the City of Gresham 172nd town center on 172nd and Butler Road. Therefore this is my second choice.
- Seems to accomplish the goals of linking to 172nd. Please do not start to curve 190th until further south of Cheldelin Rd and do not curve Cheldelin Rd where it intersects 190th. You will wipe out my property.

No:

- Effects too many properties. (4)
- A very distant third. This option still used too much of 172nd, compromising safety and aesthetics with large number of driveways and residences on a major arterial.
- Doesn't address traffic coming from the east. Doesn't go near future Hemrick Village
- I don't care for how the two main roads are connected by this interchange at Hemrick. I think the interchange should be further north.
- Much environmental impact, very costly, steep slopes.
- Need to connect Hemrick and Foster.
- Overload on school area.
- Wetland – drainage ditch, dry all summer, we don't see animals except dogs and cats. We grow hay and this plan cuts our property in half. Back across the drainage ditch will be land locked.

AS10a

Yes:

- Effects fewer number of properties. (3)
- We need two north/south routes. This also best fits with the Damascus Comp plan except the road to Foster needs to move closer to the base of the buttes.
- Less disruption of current properties and makes use of existing roadway - again do not like disruption of Baxter Rd./Cheldelin connection.
- A distant second. Keeping the major five lane arterial off of 172nd is good, but you still have a number of residences and driveways on the arterial.
- Provides two much needed north-south routes and utilizes a lot of pre-existing roadway.
- Addresses traffic coming from the east/Damascus. Goes near the major future retail areas. Received 82% of workshop people votes. Provides two corridors - one on each side of the valley. Goes near all the future villages. Is lowest cost.
- Like how the two existing roads are used and built upon for the future growth.

- Foster Rd seems to be a better alternative as there is more room for widening the road with fewer homes/properties that would be impacted. Foster Rd is already a main road connecting the Portland area with the Damascus area & beyond. Widening this road would also help with that traffic.
- This seems like the most reasonable with lowest cost, impact to least number of tax lots, uses two routes rather than the one, focus on improve existing routes. Makes the most sense of all alternatives. (This is the most reasonable alternative: least expensive, impacts the least number of tax lots, uses existing routes and improves them, focus on current routes, avoids areas near buttes. Makes the most sense from lots of standpoints.)
- Add Connection of Borges to Foster and 172nd.
- Would like Borges connected to SW Foster through to 172nd.
- Also enter our property from the southwest corner as in AT5. (See that comment) My only concern is, what will any of these concepts do to the value of our property if the project is pending, and not completed for years in the future. We have lived here for over 30 years, and we are of retirement age, so we may need to sell if we get so we can no longer take care of this much property. Can someone answer this question for me?
- Impacts the least number of homes and utilizes major roads already in place.
- It is important that the plan is consistent with existing land-use plans, and that it has lowest environmental impact.
- I have never agreed that 172nd and 190th should be linked. This plan makes much more sense. To me, most of the commuter traffic will be east / west to I-205. Unless manufacturing jobs materialize out here, there will not be nearly as much north / south traffic, from 212 all the way up to Division. Arterial feeds Foster Village, which is good.
- Best use of roads. Since I live in area seems best access routes for my needs. I think Foster needs to be main north / south route.
- East / west connection should be Hemrick Road – three lane road.
- Move curve going south further past Cheldelin Road.
- Likes with modification to meet Foster.
- Seems to make good connections throughout the area. Foster seems to have more space for widening, likely effecting less houses.
- Most direct connection to 190th Drive. This best addresses the needs of the area. Hemrick is and will be a heavily used road to move traffic from 172nd to Foster and then north to 190th Drive.
- Well thought out. This alternative represents the best / most practical one. It minimizes right-of-way costs / people and home disruptions, using existing major traffic arterials for expansion and improvement. It also appears to have the least affect on “sensitive lands.” An important element, however is a need for several “three-lane” connections between SE 172nd and Foster Road – Hemrick Road, Troge Road and other “new planned connectors” are needed.
- Separate expressway.
- Least impact to environment and road runoff to streams.
- Utilizes current infrastructure, lowest cost for construction and right-of-way, best option for both westbound and Gresham bound traffic.
- Likes this concept the best. It leaves the road as it is. It goes by the employment center on 172nd and hooks up to the City of Gresham future plan and Gresham plan for a shopping center on 172nd and Gesse Road.

- Why are drainage ditches full year round streams? It splits my property land-locking the back of the property. I have cut hay for 50 years on my property and now the property is split because of wetlands. For 50 years I hardly ever see any animals except those passing through – they are few.
- Best option. Least impact on environment, two north / south roads, lowest cost. Consistent with all development plans.
- Less invasive to the area. Please move the curve to the west on 190th further south past Cheldelin Rd. Do not curve Cheldelin Rd to the south at 190th.

No:

- I dislike this one entirely. We don't need two almost parallel roads, just one. Why destroy two areas with widened highways? We want to keep our rural look as much as possible. Also, there are many costs not figured in (as you say on your website), and though this alternative may look the cheapest at first sight, it will likely turn out to be the most expensive.
- This plan makes absolutely no sense at all. Redesigning the two roads exactly where they are, only bigger. Why bother with this one at all if it doesn't directly connect with 190th? Sure they look pretty but we have to be practical when it comes to vehicles, pedestrians and bicycles. This plan seems to cater to vehicles but disregards safety factors for bicycles and pedestrians. Having one road with five lanes and the other with three lanes seems to be overkill with a lot of potential expenses involved.
- This plan practically takes out our house. We are trying to sell. How will you compensate us for the loss of our land if we can't sell it?
- This concept would be a hardship on anyone living on Foster Rd.
- This does not appear to be an alignment. This only looks to reroute traffic problems. would need additional routes to further more future growth.
- Instead of connecting south of Tillstrom to foster why don't you use the at plan and stop at Foster instead of going through to 172nd then the historic building stays this would also connect to foster with the use of Caleab lane that already heads in the general direction of 190th with least impact to homes and property and even cut the cost that much more.
- Waste of money.
- Doesn't build any new roads, what is the point of this project. Waste of money.
- 5 lane road too close to the other 5 lane road on 172nd.
- Dont need Foster to be a 5 lane road when you already have a 5 lane road that could be used (172nd)

Red – Recommended for NO further review

Are there any that should be moved up for further review? If so, why?

AT4

Yes:

- Effects least number of properties. (2)
- This plan uses existing roadways. This will disrupt fewer properties. (2)
- This is much less invasive on property rights and natural resources and the end result is no different than AT2.
- Stays in existing corridors.

- Better use of existing roadways with less disruption of property. By diverting Baxter rd. off of Cheldelin connection, should cause less traffic congestion on new roadway
- Utilizing pre existing roadways for a functional yes more cost effective option.
- Best use of existing right-of-way, least impact. Looks like best route using existing roads.
- Replace AT2 with AT4 for further review. Uses existing roads and is more cost effective.
- Least cost and simple, low impact on nature.
- Lowest cost, most effective, lowest impact on nature.
- Seems to be a good plan.
- Best for most people, least road changes, least cost.
- Best possible choice, effects less people. Uses the most worthless land. Stay on 172nd north past Sayer, using land that has the oldest homes and the most worthless – wetlands. Stay off the hill sides and the deep cuts like 190th. Cold weather, ice and snow create most hazardous to the public.

No:

- Too many sharp curves. (2)
- This alternative will completely kill Cheldelin Road as a pleasant place to live. (I do not live there by the way, but I sympathize with those who do.) AT4 has low net scores on various evaluation factors. There is no planned E/W connection between Baxter and Cheldelin. I would rank this as the worst alternative, and I am happy to see that you do not consider it promising either.
- Doesn't seem to be making any improvement getting from point A to point B etc. Extremely dangerous hairpin turns fore emergency responders which creates another problem in of itself. Who ever decided that this plan should have been moved forward then eliminated when included in the final five choices, could have come up with a better plan for us to consider.
- By far the worst, relies totally on changing country roads into an urban arterial with hundreds of driveways.
- Traffic follow on the corridor at the upper end is poor. Doesn't go near the future villages. Doesn't address east traffic at the southern end.
- I feel bad for the Cheldelin residents. If I lived on that road I too would be upset by the large lane road purposed.
- The crossover via Cheldelin just seems awkward. Also the proposed road extending Borges to 172nd crosses through existing forest area, near Tillstrom Rd., of diverse native habitat, both plant species and wildlife, that would be eliminated with the road. This area is home to many songbirds, migratory birds, hawks, owls, wetlands, watershed, and is crossover for wildlife (i.e. deer) between the buttes, and generally would result in significant negative environmental impact. With the current rate of habitat destruction, it is simply ridiculous to destroy a sensitive area. And there has been emphasis to improve or reclaim areas for wildlife, putting significant dollars towards this effort in the metro area. Don't destroy an existing area.
- This looks like a cost effective approach may not best service the area.
- It is important that the Pleasant Valley concept plan be honored. Arterial does not feed Foster Village, which is bad.
- Passes through unmarked wetland.
- Baxter Road to 172nd bad egress. Too sharp / drastic curve 172nd and Cheldelin.

- Cost, fails to incorporate all concept plans, decrease in property values / home values on Cheldelin. The vehicle load on Cheldelin has no other options. Fails to adequately address the traffic headed west on Foster (i.e. the former 172nd too short.)
- Too many sharp curves.

AT5

Yes:

- From a functionality standpoint, this is by far the best option. If you are looking at the big picture, 10 and 20 years in the future, having this route is essential. Trying to get by with modifying existing country roads just doesn't cut in if you are looking at the big picture. I am the Chairman of the Transportation Sub-committee for the City of Gresham, and from my perspective, this is the only one of the five options I consider "good." I would add that I recommend a design that incorporates a multi-use path along the route. On the Gresham end, when we upgrade 190th to connect this new arterial, we can then tie this multi-use path in with the Springwater Trail and the new Gresham-Fairview Trail. Please feel free to contact me.
- Goes near all the future villages. Helps with traffic coming from the east as part of corridor goes up the middle of the area.
- The proposed arterial roads do not impact the areas near the buttes which are environmentally sensitive.
- My reasons are personal, as this plan goes across the south west corner of our land and would give us access to our property from the direction we already enter. We are landlocked and enter from a long driveway from 190th.
- Needs work to get more east / west connections.
- Should follow 190th as far as possible to minimize impact on homeowners.
- Effective solution.
- Best local access, I think it makes the most sense. Most new roads.
- Good compromise. This alternative shows the east / west connection between SE 172nd Ave and Foster to SE 190th Drive midway through the study area. This makes good sense and seems to result in right-of-way taking involving minimal disruption to personal residences, people, farm and ranch uses.

No:

- Effects too many properties. (3)
- This one has low net scores on the evaluations and seems a bit indirect to me, also expensive without any payoff. I don't hate it as much as I do Alternatives AS10a and AT4, but just barely.
- This plan has more road difficulties (grading) than any of the other plans . Not sure just how this plan can have multi-modal safety benefits because of the road grades when there is a compromise in bicycle safety.
- Costly site preparation and clean up.
- This plan disrupts too many properties. Traffic coming from this diversion of Baxter Rd. to Cheldelin would cause congestion.
- I feel that the road is way too choppy and it makes no sense what so ever.
- This plan appears to be a central route but looks costly because of the route.
- Way too much environmental impact, costly, makes no sense, why is this even being considered.
- Too expensive, too much new road, too many right-of-way impacts, fails to utilize existing road structure and not economically reasonable.

- This would be better if it went further past Cheldelin Road towards Tillstrom before cutting over.
- Does not improve or utilize existing north / south roads, right-of-ways, etc.
- More project construction, damaging water runoff.
- Involves too many people and properties. Too costly to develop – all wetland.
- Too much right-of-way impacts and too expensive.
- Road goes through the best buildable flat land in the area.
- 5 lane road would go through the best buildable flat land in the area.

Corridor Alignment Refinement Workshop Questions

Are there elements of the three most promising alternative that you would like to see modified? If so, what?

- Critical poor assumption: you are assuming that people will be working here. Great idea, but I am very skeptical. Far more likely that this area will remain a bedroom city. East / west traffic to I-205 will be much more important than north / south traffic.
- I love my property and I don't want to have to relocate. Most of the people that will be affected feel the same way. AT4 will affect more properties, but just a small amount. I can live with that and I think that most people feel the same way. 172nd is where it is. Cheldelin is where it is. Only the front of properties.
- Check Marilyn Brundidge property. Intermittent stream, dry in summer. (Runs parallel to Hemrick on the south side and then heads south.)

Other comments?

- Prefer an alternative that if it must cross from east / west it should do so in the middle of the study area.
- Cost effective to use land that is most worthless and think about worst weather conditions.