Bonner/Milltown Wastewater Improvements

Preliminary Engineering Report

Public Meeting No. 1 | June 22, 2016

HDR Engineering- Coralynn Revis and Lizzy Adams

01 Introduction

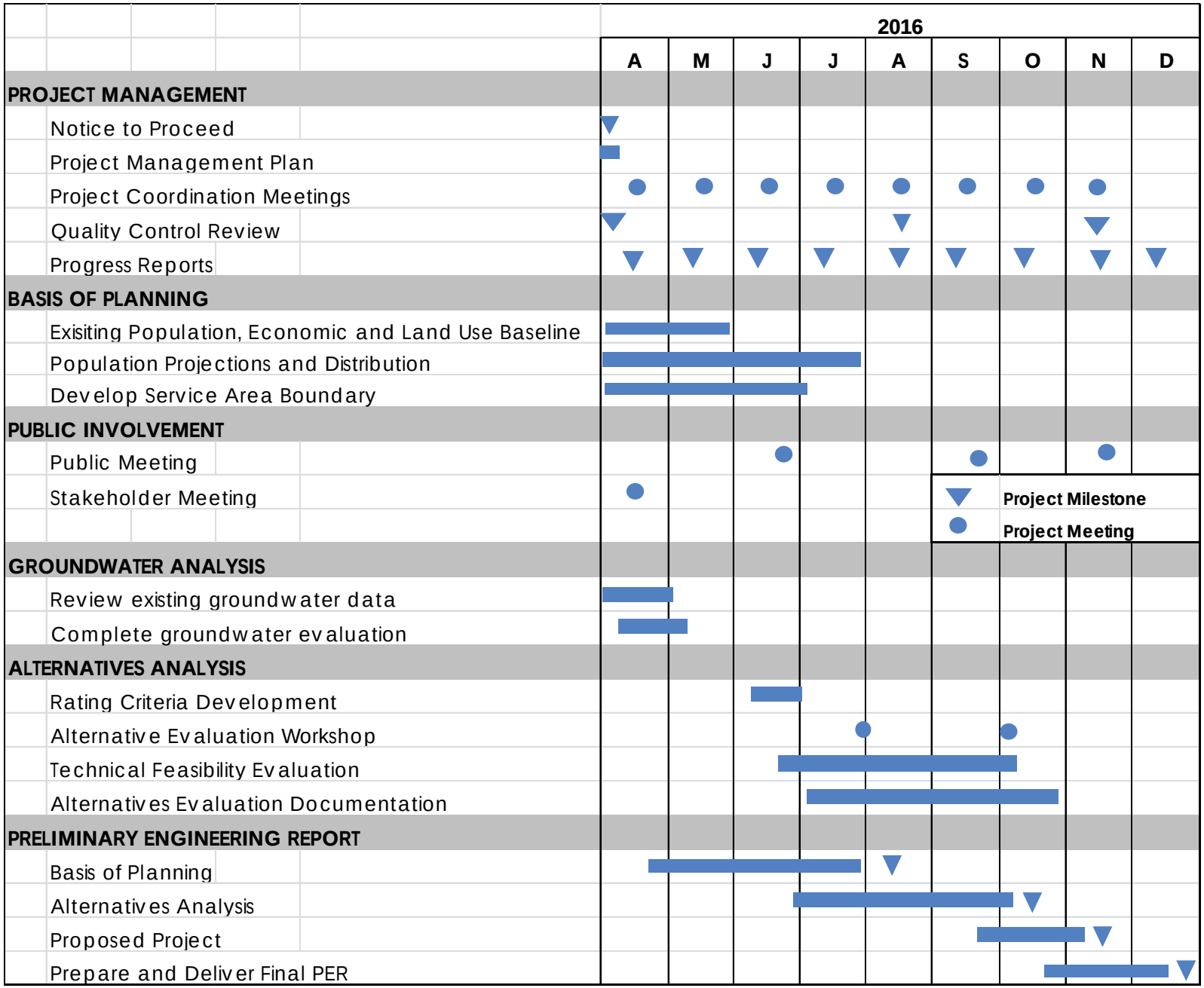
Project Background

- Evaluate need for wastewater improvements in the Bonner/Milltown area
- High density septic/wells
- Development interest
- Any water quality impacts

HDR Scope

- Project Management
- Basis of Planning
- Public Involvement
  - 3 public meetings
- Alternatives Development & Evaluation
- Facilities Recommendation

Schedule


2016
A
M
J
J
A
S
O
N
D
PROJECT MANAGEMENT
Notice to Proceed
Project Management Plan
Project Coordination Meetings
Quality Control Review
Progress Reports
BASIS OF PLANNING
Exisiting Population, Economic and Land Use Baseline
Population Projections and Distribution
Develop Service Area Boundary
PUBLIC INVOLVEMENT
Public Meeting
Stakeholder Meeting
Project Milestone
Project Meeting
GROUNDWATER ANALYSIS
Review existing groundwater data
Complete groundwater evaluation
ALTERNATIVES ANALYSIS
Rating Criteria Development
Alternative Evaluation Workshop
Technical Feasibility Evaluation
Alternatives Evaluation Documentation
PRELIMINARY ENGINEERING REPORT
Basis of Planning
Alternatives Analysis
Proposed Project
Prepare and Deliver Final PER

02 Planning

Vicinity Map

- Discuss boundaries of Studv

Population and Flows- Estimated Existing

Source	Year	Population	Flow (Gallons Per Day)
American Community Survey, Bonner- West Riverside CDP	2015	1,656	165,600
Missoula County GIS- Structure Count	2016	1448 + Commercial	157,135

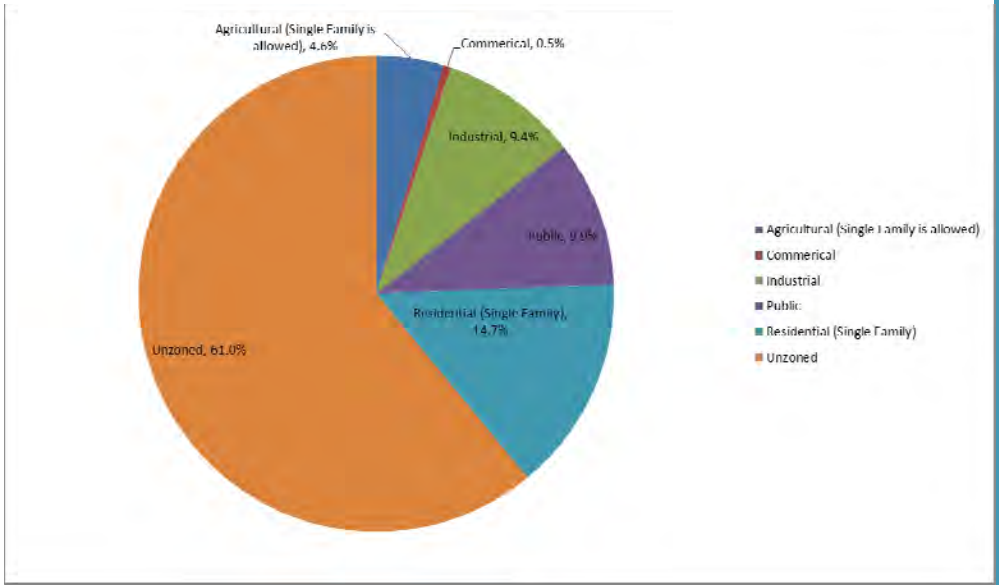
- 2.35 equivalent persons per household (Missoula County Census Data)
- 100 gallons per capita day (Flow from DEQ-2)

Planning and Zoning

- Missoula County Planning Department is in the process of updating zoning and land use.
  - Existing data from 1998
  - Planned update this year, complete 2017 in conjunction with the Sewer Study

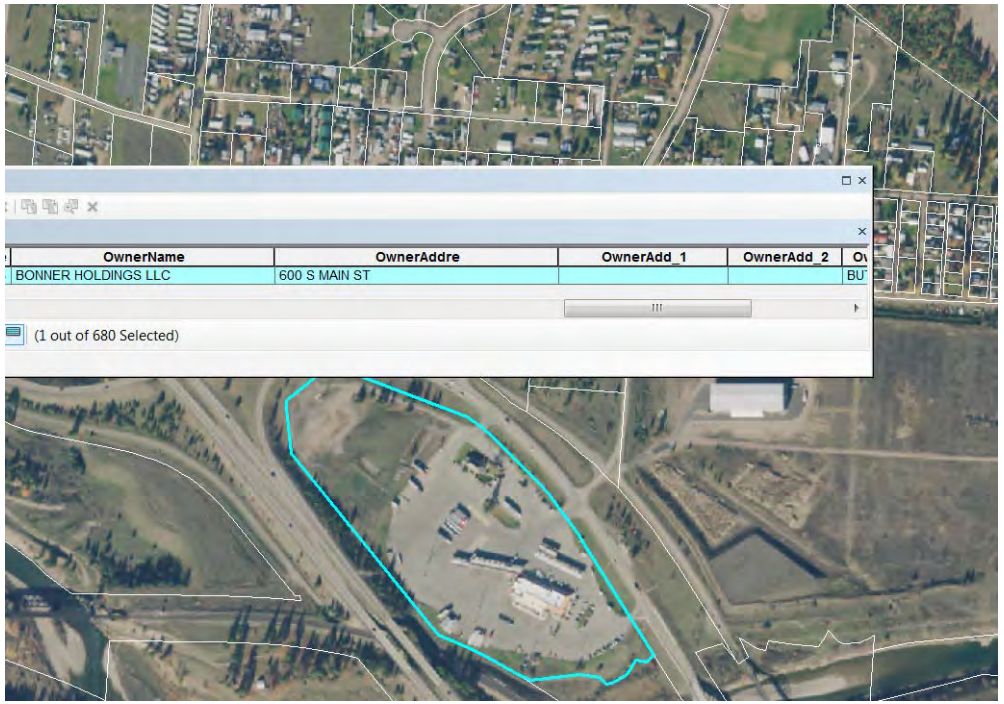
- Housing Committee of the Bonner Milltown Community Council
  - Identify types of residences that are the best fit with quality of life goals expressed by local residents
  - Estimate potential number of new residential housing units in School District within next 5 years
  - Report findings to Community Council
    - Clark Fork Terrace
    - West Log Yard concepts
    - Canyon River

    Any input from Community Council members?



Population and Flows- Estimated Future

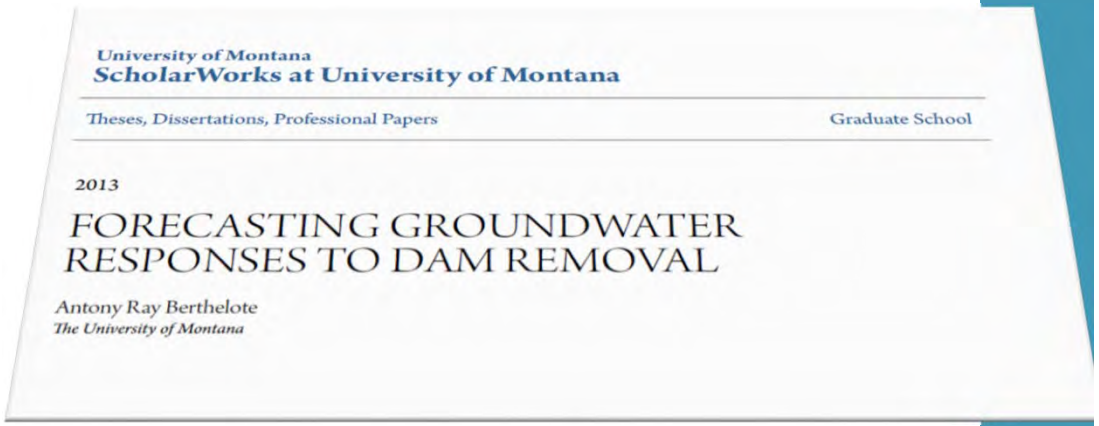
- Parcel data from County GIS shape file
- Estimated additional land area that could be developed
- Compared to historic growth rate
  - Historic growth rate 2010 is (-)
- Distribution through land use and zoning data
- Build-Out Population



03 Issues and Drivers

Possible Issues

- People wanting to improve property (develop), increase use or flow on existing on-site wastewater system
- Commercial development interest
- Failing on-site system, without additional space for replacement drain field
- 100 foot well separation from drainfield now required
- Water quality?
  - In-Stream
    - Limited data available
    - Change of water hydrogeology since removal of the dam
  - Drinking water quality
    - PWS exist in some locations


University of Montana
ScholarWorks at University of Montana

Theses, Dissertations, Professional Papers — Graduate School

2013

FORECASTING GROUNDWATER RESPONSES TO DAM REMOVAL

Antony Ray Berthelote
The University of Montana

Deed Restriction

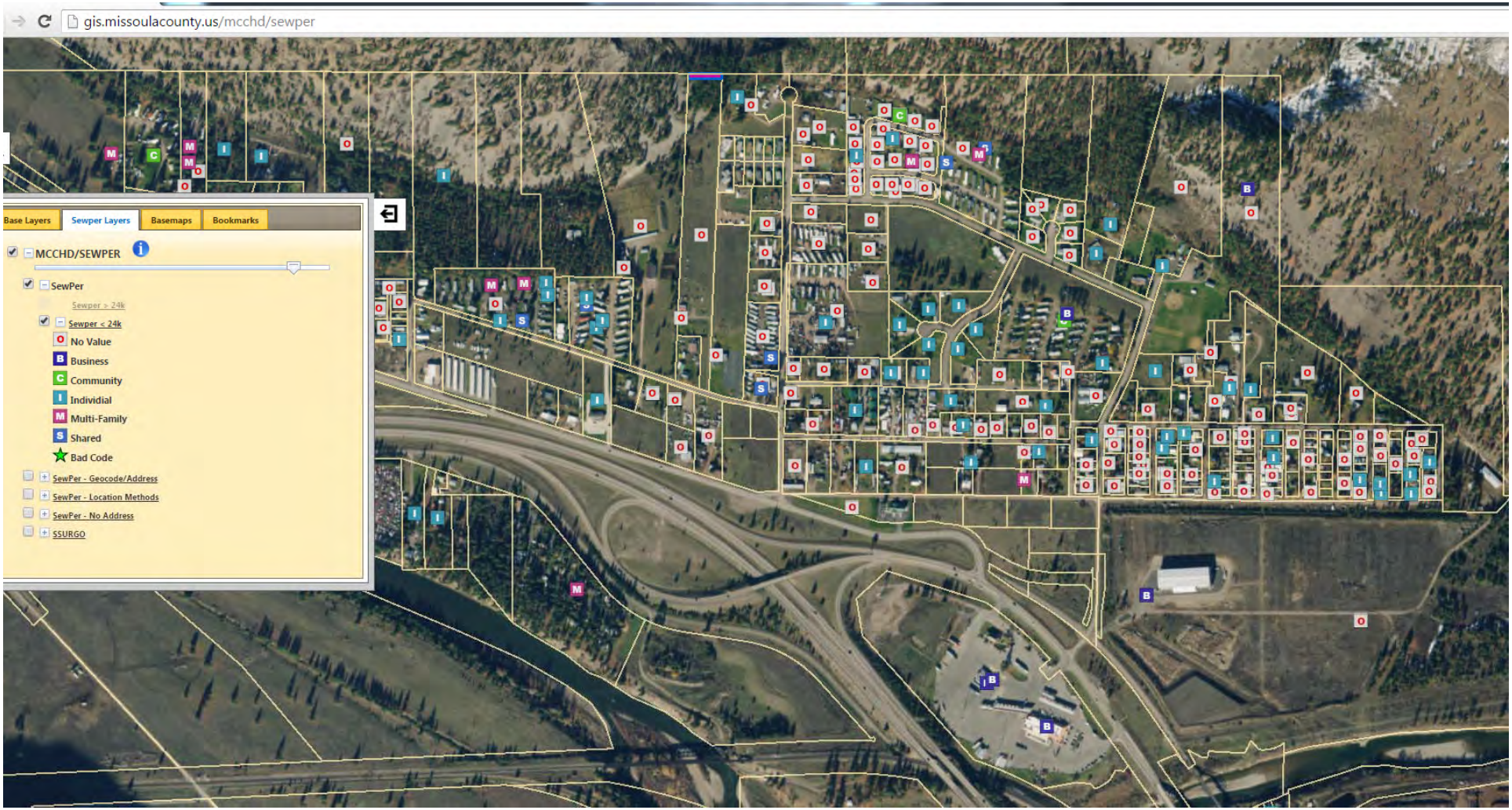
- Landowners who have signed the waiver will have to connect within 180 days of public sewer being available.
- Went into effect in 1994
- 14 submitted to date

"The Board established these new requirements to ensure that septic system permits issued by the Health Department in the Missoula urban area grant only temporary approval to discharge wastes to the Missoula Sole Source Aquifer. In exchange for the septic permit, applicants are required to waive their right to protest future special improvement districts which would provide public sewer service and agree to connect to public sewer within 180 days after a sewer main is installed adjacent to their property."

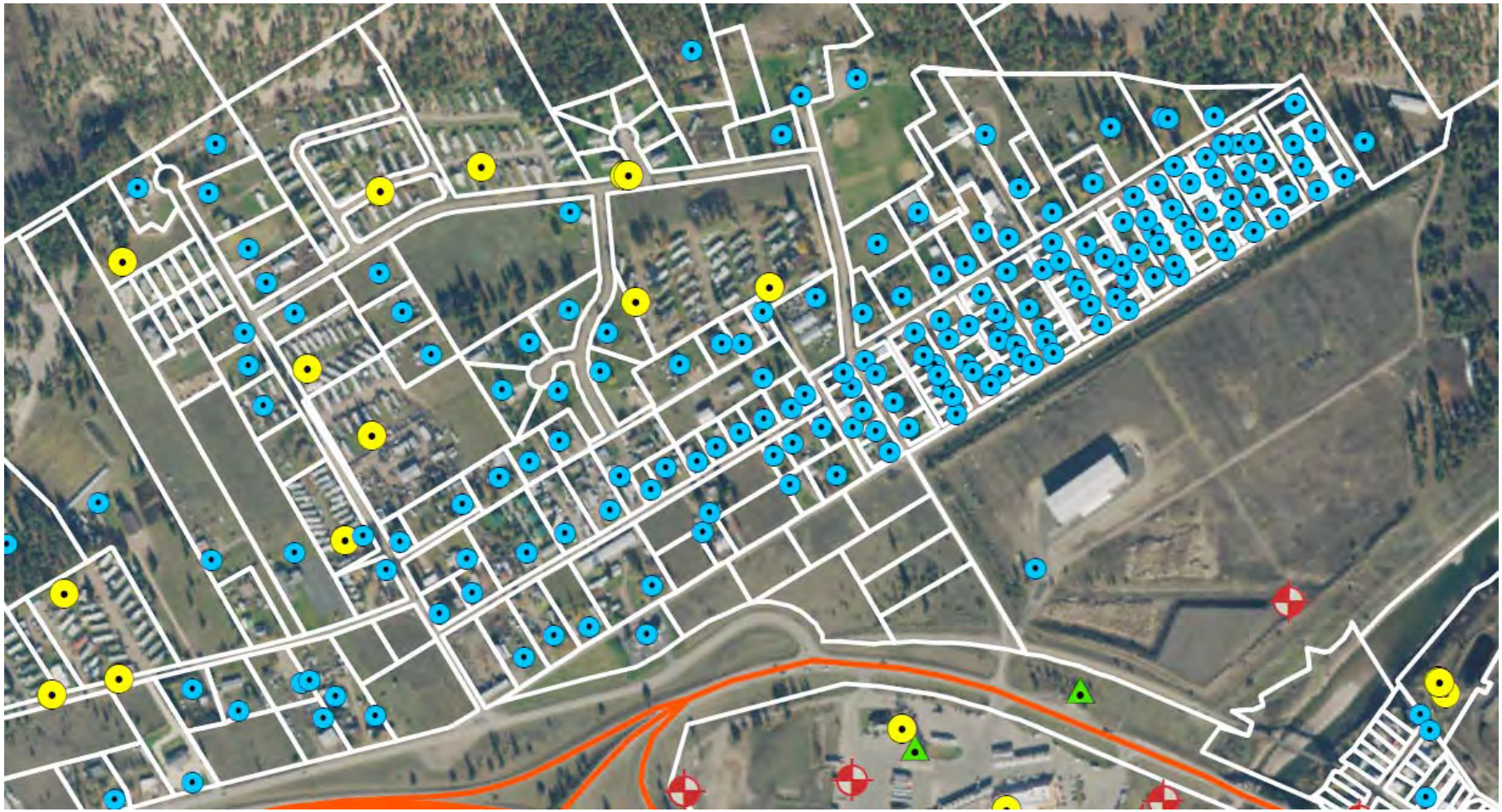
Well Locations

BONNER/MILLTOWN WASTEWATER SYSTEM IMPROVEMENTS
WATER SUPPLY AND GROUND WATER MONITORING WELLS

Septic Locations- Permitted



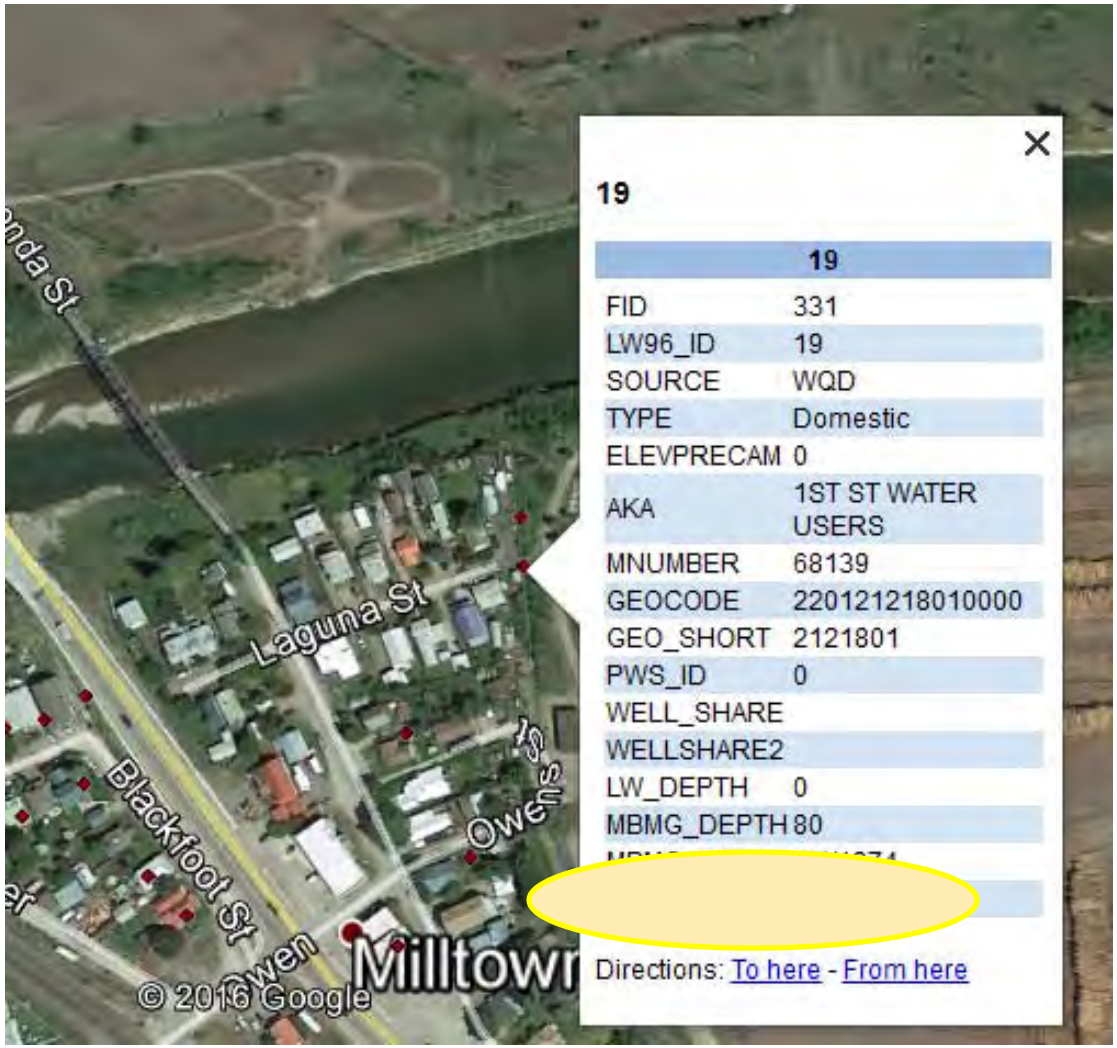
Wells Close-up



Septic Close up

Well Depths to Ground Water *provided by County GIS*

Vary from 30 feet near the river to
70+ feet further up-slope

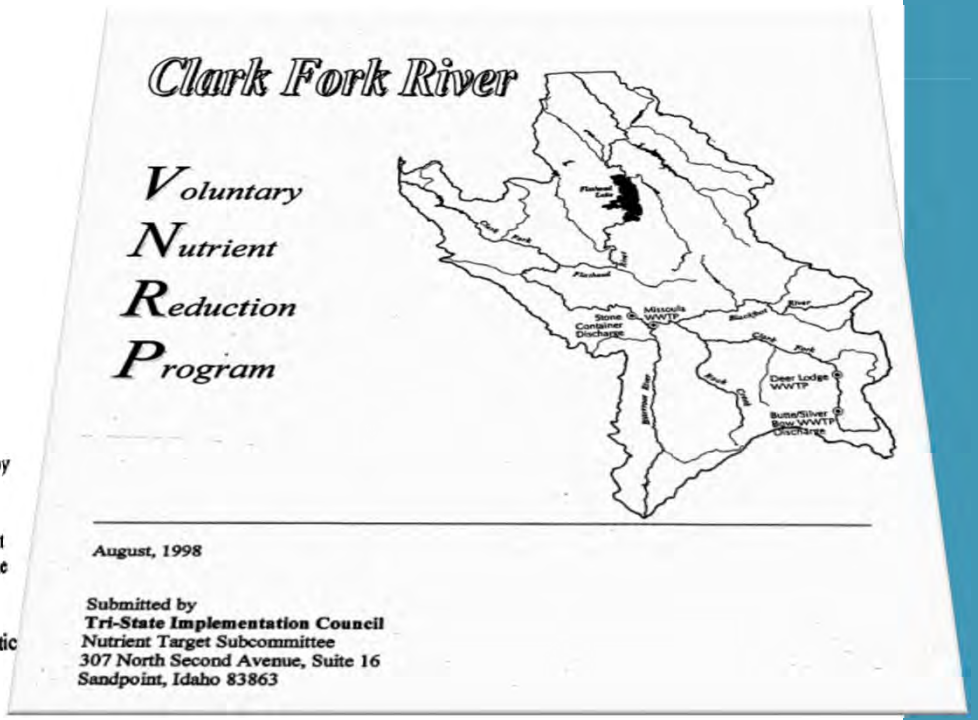


Voluntary Nutrient Reduction Plan

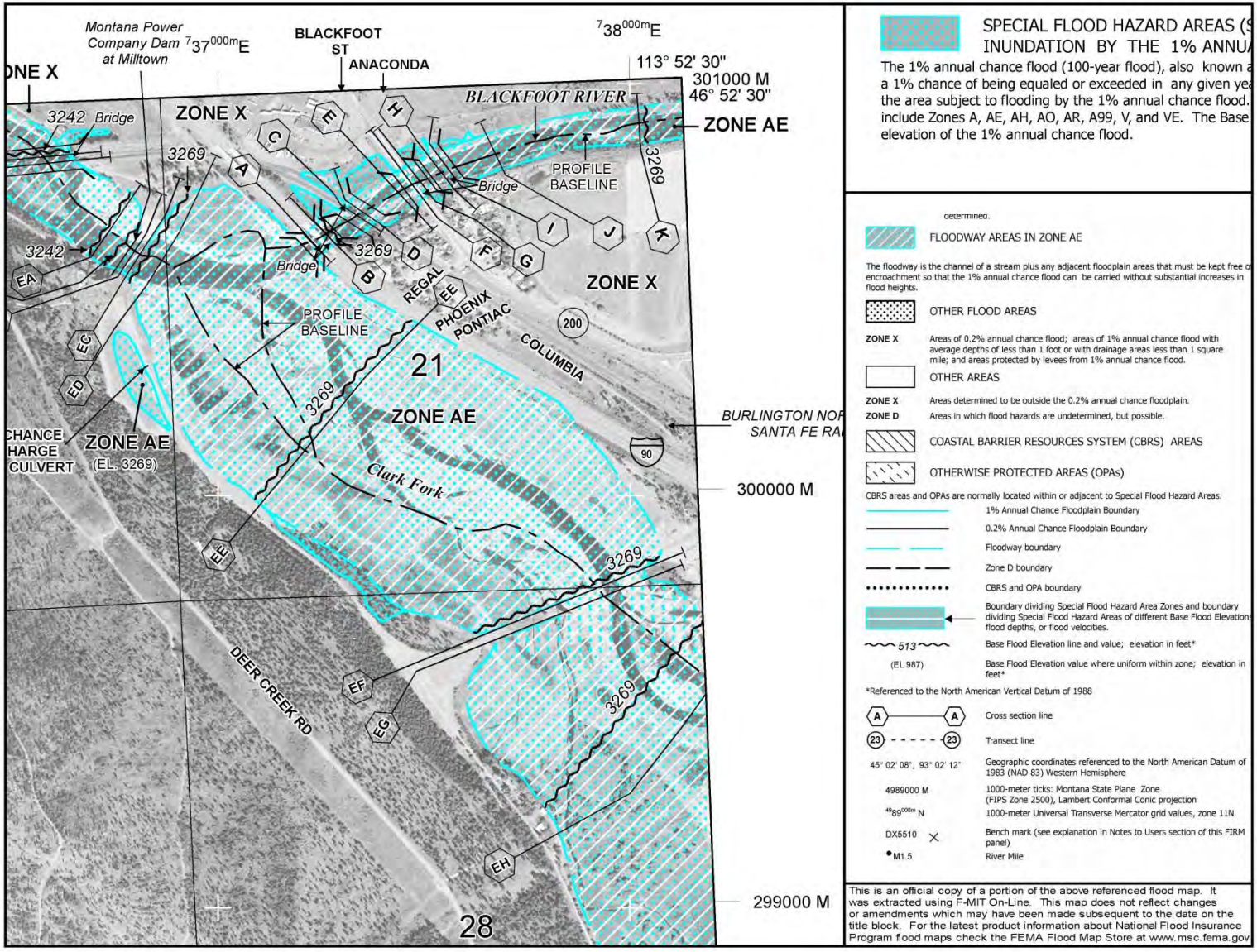
- Bonner/Milltown included in the VNRP boundary
- Goal to reduce septics and improve and protect the Missoula Aquifer

b.) The strategy will also consider ways to control septic densities outside of areas serviced by wastewater treatment facilities. This will require working closely with DEQ's Subdivision Section to implement lot size requirements and appropriate subdivision review policies that address the impacts of groundwater on surface water quality and are protective of the nutrient targets. In Missoula County, outside the designated service area for the Missoula WWTP, the City, County, Board of Health and DEQ commit to development and implementation of a strategy that will:

1.) estimate the discharge of septic nutrient effluent and track the number of new septic permits and new public sewer connections each year in the Missoula Valley;
2.) develop a maximum permissible allocation of septic nutrient discharge to surface waters in the Missoula Valley;
3.) institute adequate requirements and policies to implement the allocation;



FEMA Floodplain



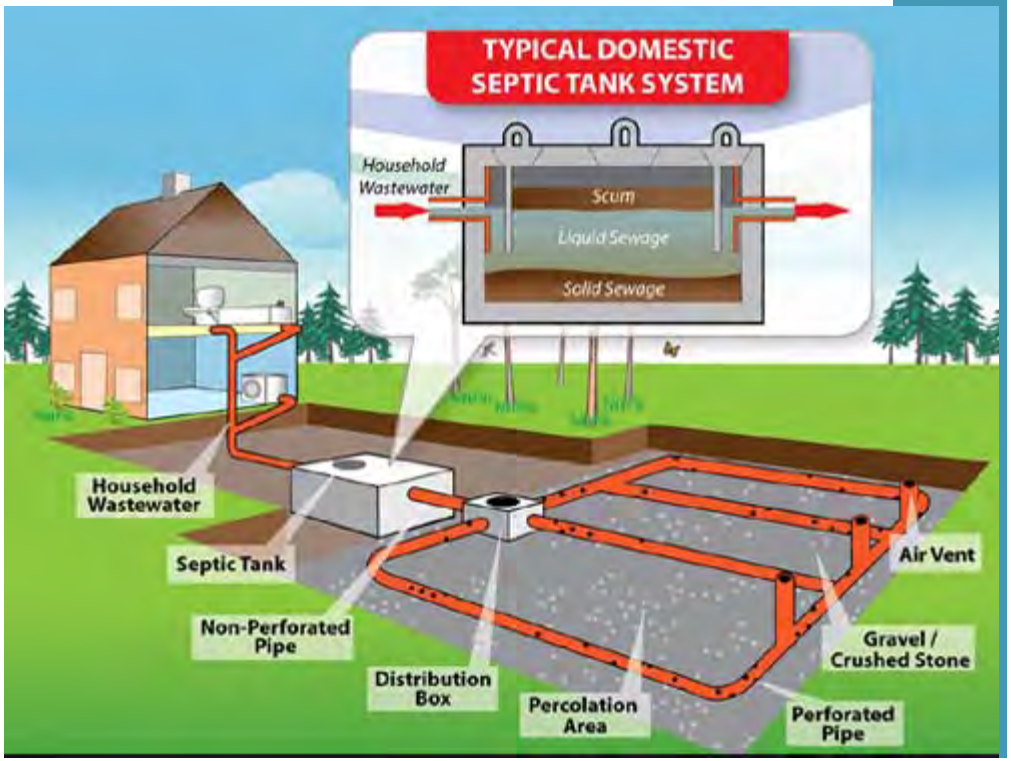
04 Alternatives

Alternatives

1. Do Nothing
2. Connect to City of Missoula WWTP
3. Connect to a single, centralized wastewater facility for Bonner/Milltown
4. Connect to multiple, clustered wastewater community systems in strategic locations (assume ~3 total systems)

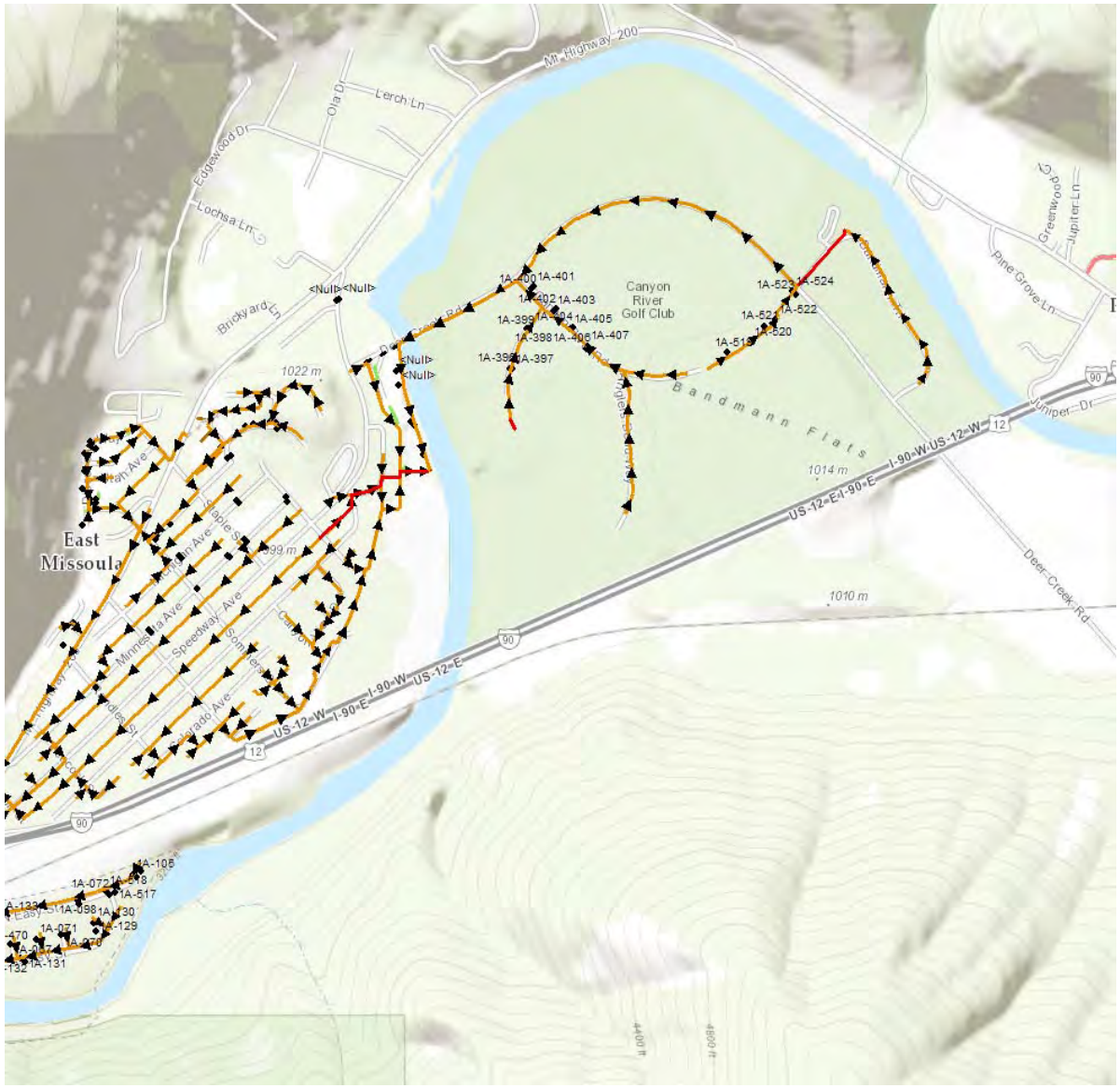
Do Nothing

- Needs to be evaluated for “status quo”
- Is there any impact to water quality
  - Drinking water quality
  - River water quality
- Limits increased use on properties, if desired
- Failures and improvements up to individual landowner



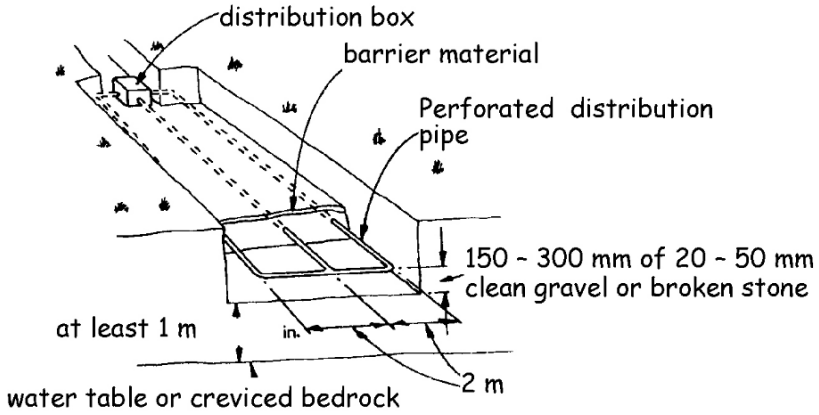
Sewer to East Missoula

- Gravity or Forcemain options
- Capital cost plus
  - Impact Fees
  - O&M
- Issue of annexation or not



Single Wastewater Treatment Facility

- A single wastewater facility to treat the entire area wastewater flows
  - Treated to a higher level than septic tank
- Groundwater discharge
  - Location of infiltration beds
  - Land application rates
- Surface water discharge
  - Possible use of MPDES from the Bonner Development



Soil Types

- Gravel-Loam
  - Well-draining soils

Missoula County Area, Montana

16—Bigarm gravelly loam, 0 to 4 percent slopes

Map Unit Setting
National map unit symbol: 4wbb
Elevation: 2,600 to 6,200 feet
Mean annual precipitation: 10 to 19 inches
Mean annual air temperature: 39 to 45 degrees F
Frost-free period: 70 to 120 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition
Bigarm and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bigarm

Setting
Landform: Stream terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile
A1 - 0 to 11 inches: gravelly loam
A2 - 11 to 15 inches: very gravelly loam
Bw - 15 to 40 inches: very gravelly sandy loam
C - 40 to 60 inches: extremely gravelly loamy sand

Properties and qualities
Slope: 0 to 4 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 5.5 inches)

Multiple Community Cluster system

- Possibly three locations depending on topography and flows
- Utilize a less-complicated system, but more of them
- Less conveyance cost
- Similar disposal options as the singular WWTP option

Advantex System

Moving Forward

- Public Meeting #2
  - Anticipated September 2016
  - Present alternatives and budget costs
- Public Meeting #3
  - Anticipated November 2016
  - Present recommendations

Friends of 2 Rivers
Bonner Milltown Montana


QUESTIONS?