# Water Quality Planning for the Grand Valley

Collaboration for Integrated Water Planning Initiative

February 25, 2020

Angie Fowler, PE

# Agenda

- Project Goal
- Project Timeline and History
- Grand Valley Drainage District
- Project Area
- TMDL 101
- Review TMDL Development in Grand Valley
  - Scope, data, sources
  - Stakeholder participation
  - Data collection efforts
  - Grand Valley Drainage District
- Watershed Plan Update
- Getting Involved

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# Project Goal

- Update the 2012 Selenium Watershed Plan to reflect Grand Valley
- 9 Elements of a Watershed Plan
  1. Identify and quantify sources of pollution in watershed
  2. Identify water quality target or goal and pollutant reductions needed to achieve goal
  3. Identify the best management practices (BMPs) that will help to achieve reductions needed to meet water quality goal/target
  4. Describe the financial and technical assistance needed to implement BMPs identified in Element C
  5. Describe the outreach to stakeholders and how their input was incorporated and the role of stakeholders to implement the plan
  6. Estimate a schedule to implement BMPs identified in plan
  7. Describe the milestones and estimated time frames for the implementation of BMPs
  8. Identify the criteria that will be used to assess water quality improvement as the plan is implemented
  9. Describe the monitoring plan that will collect water quality data need to measure water quality improvement (criteria identified in Element H)

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# Project Goal (cont.)

- 9 Elements of a Watershed Plan (Cont.)
  5. Describe the outreach to stakeholders and how their input was incorporated and the role of stakeholders to implement the plan
  6. Estimate a schedule to implement BMPs identified in plan
  7. Describe the milestones and estimated time frames for the implementation of BMPs
  8. Identify the criteria that will be used to assess water quality improvement as the plan is implemented
  9. Describe the monitoring plan that will collect water quality data need to measure water quality improvement (criteria identified in Element H)

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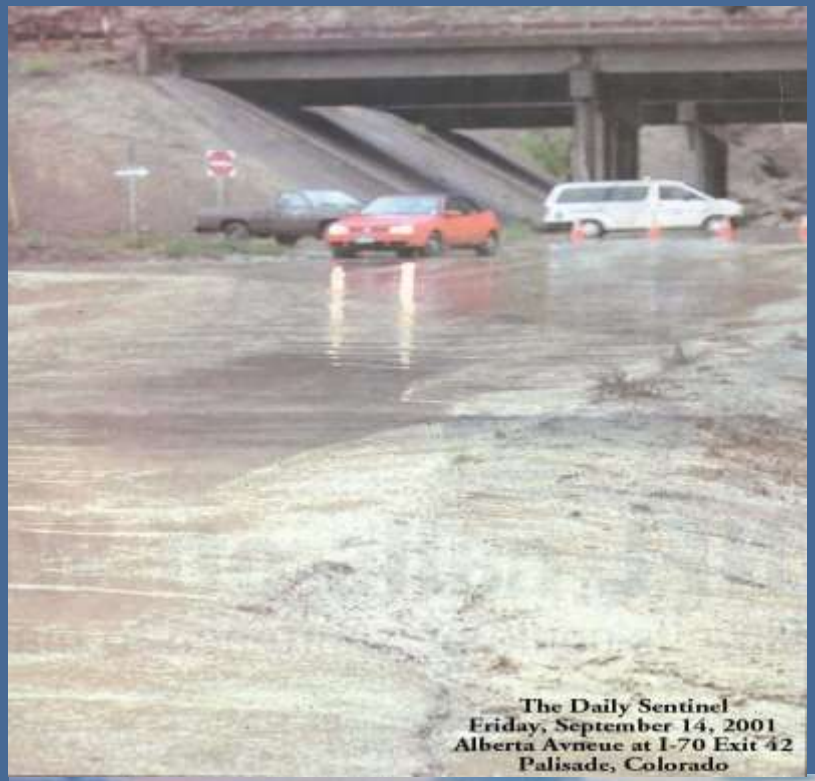
# Project Timeline & History




# Project Timeline & History
# 2012 & 2016 Impaired Streams

- Leach and Adobe Creeks – E. coli (2018 TMDL target)
- Tributaries to the Colorado River
  - Selenium (2018 TMDL target)
  - Iron (total recoverable) – lower priority
- Colorado Department of Public Health and Environment (CDPHE) – Water Quality Control Division (WQCD) monitoring now

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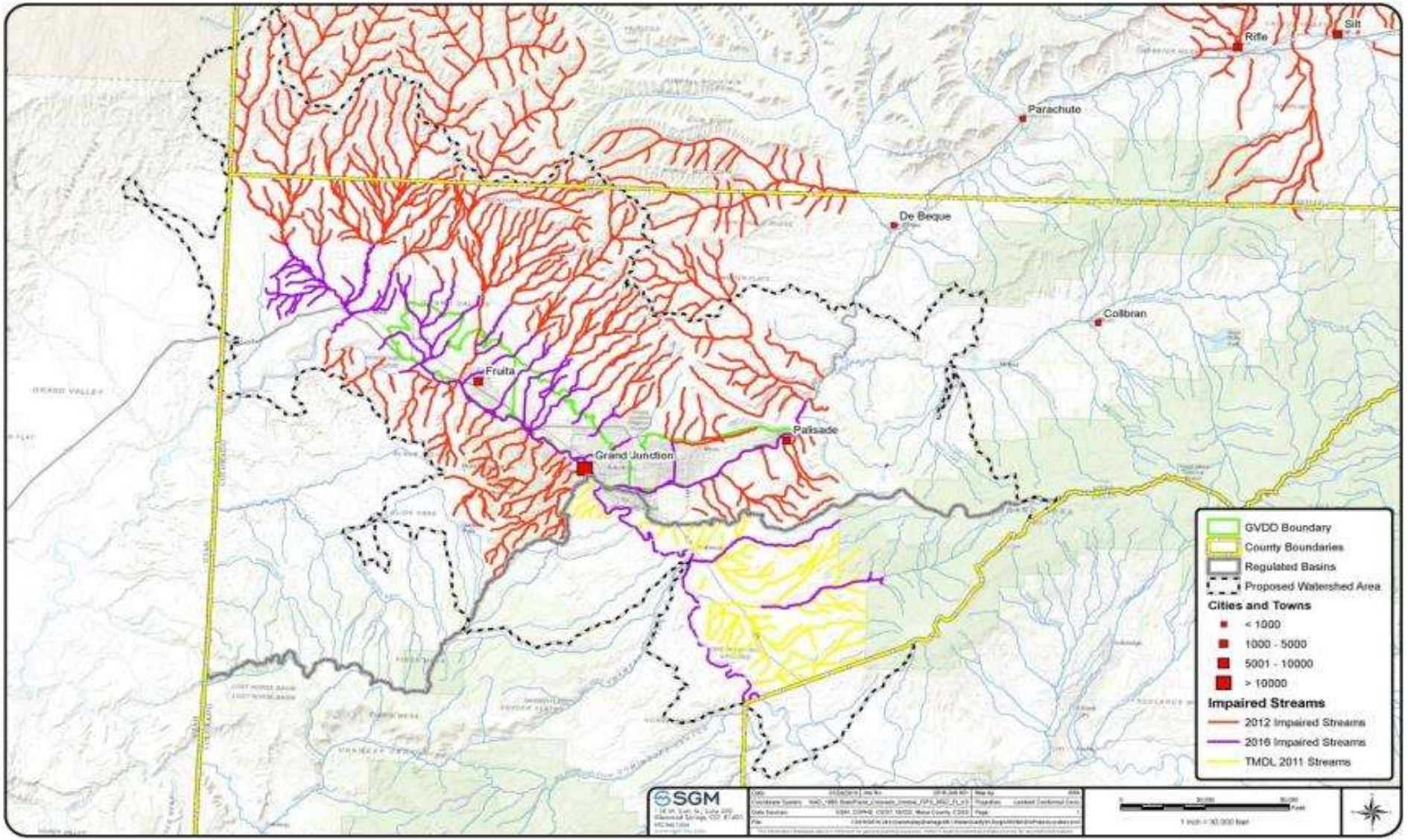
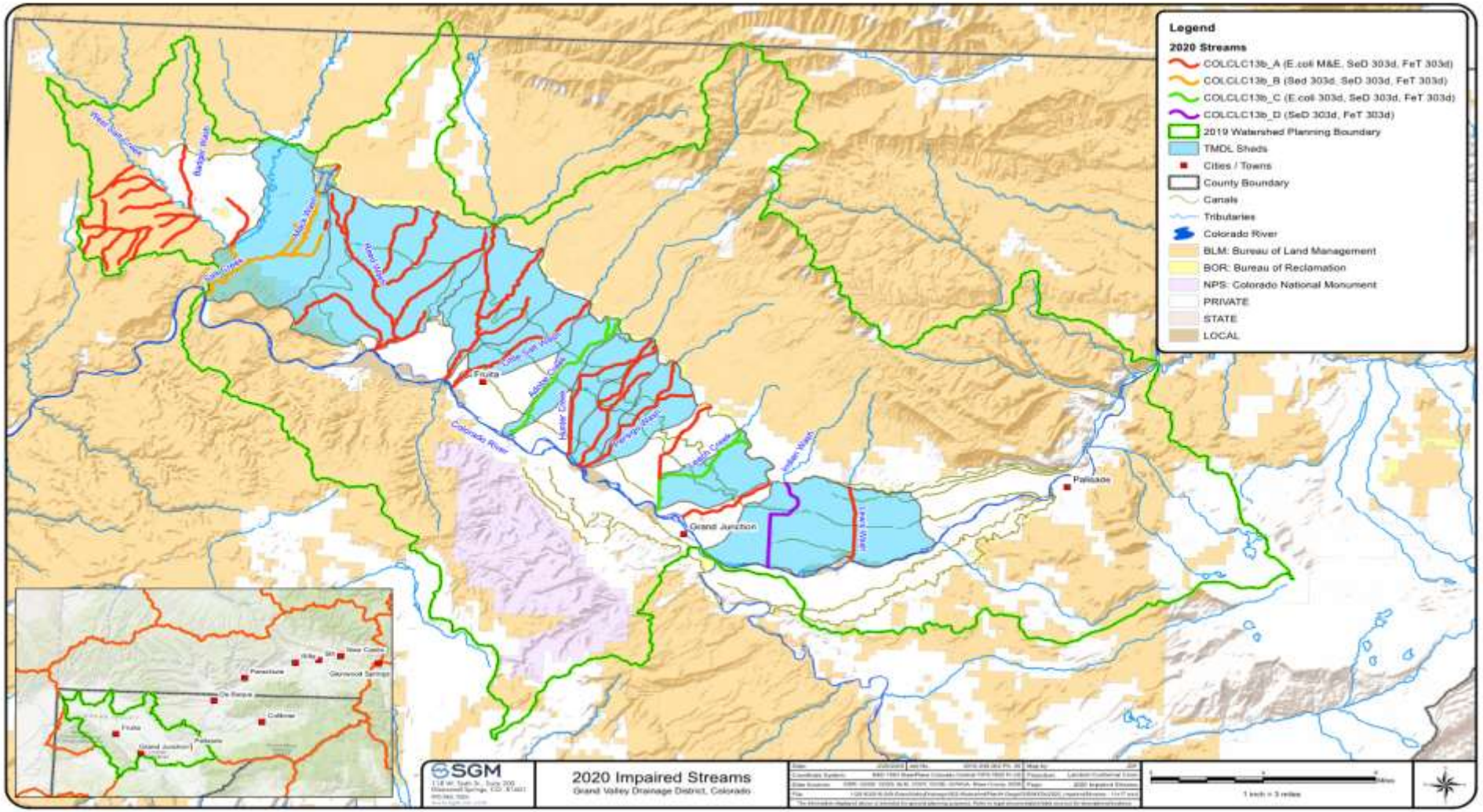
# Project Timeline & History
# 2012 & 2016 Impaired Streams



# Project Timeline & History
# 2020 Impaired Streams

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# Project Timeline & History

- Mini-Grant from CDPHE for Outreach (2017-2018)
  - Grand Valley Drainage District (GVDD) Sponsor
  - Educate stakeholders about the Total Maximum Daily Load (TMDL) developments
- Stakeholder Meetings (Beginning in early 2017)
- Supported Water Quality Monitoring
  - EPA, SGM (for GVDD), CDPHE, and BLM
  - Installed staff gages (SGM for GVDD) and BLM
  - USGS data gap and monitoring plan support
- Pursued Funding opportunities
  - Awarded 319 Grant – Update to 2012 Watershed Plan
- Continuous agency coordination

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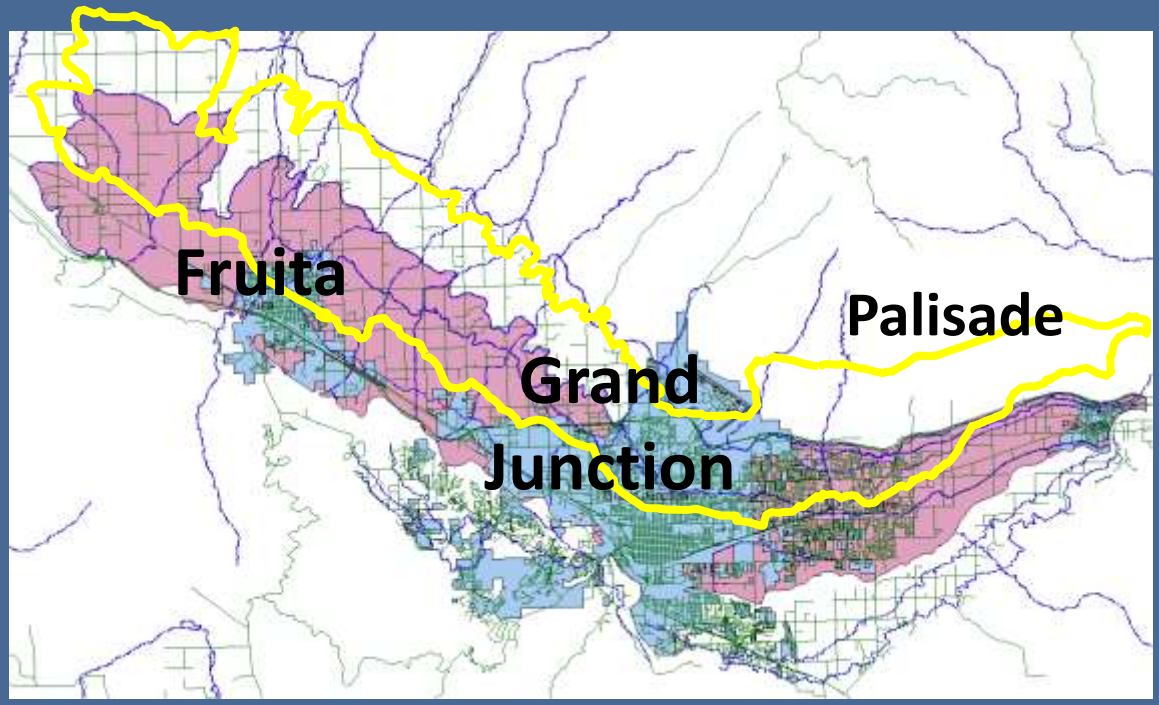
# Grand Valley Drainage District

- Service area 100 sq. miles
- Returns 969,000,000 gallons of irrigation return flow daily in support of irrigation requirements, north of the Colorado River within the Grand Valley

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# Grand Valley Drainage District


- Irrigation Tailwater had to return to the Colorado River.
- This Act of 1911 provided for the Organization and Government of Drainage Districts
- Between 1917 and 1923
- Approximately 600 miles of Irrigation Return Flow “Drains” and an additional 66 miles of Irrigation Canals were constructed throughout the Grand Valley.
- “..shut out storm waters from (District Facilities) and carry all storm waters in natural drainage lines of  the country…”
- Grand Valley Drainage District was to manage seep and irrigation return flow below the Grand Valley Canal “Highline”.

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# Grand Valley Drainage District

- Results of Irrigation 1894 to 1910

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# Grand Valley Drainage District

- As irrigation occurred, the tail water from the fields had nowhere to go but back into the ground, causing the high salt content soils to leach out, creating severe alkali conditions that rendered fields unusable for crop production.
- Documented as a problem as far back as 2600 B.C, Diyala River Basin, Iraq
- Colorado Drainage District Act June 2, 1911

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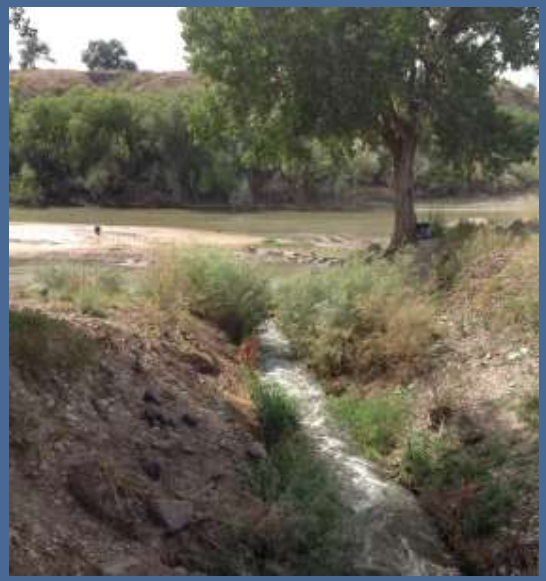
# Grand Valley Drainage District



- 258 miles total
- 109 miles are comingled with MS4 Regulated Urban Storm Water
- 9 Natural Drains
- 33 Total River Outfalls and 110 Outfalls Into Natural Drains of the Country

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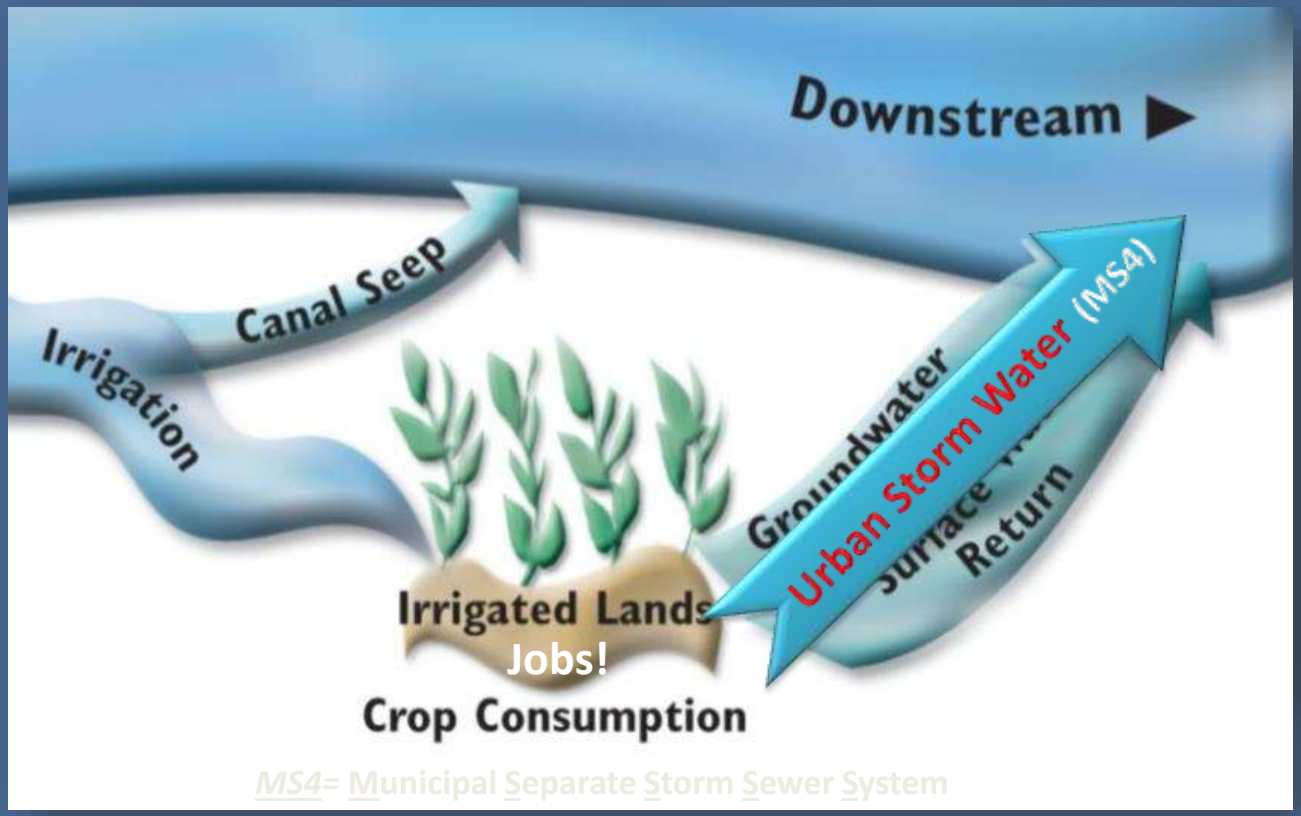
# Grand Valley Drainage District

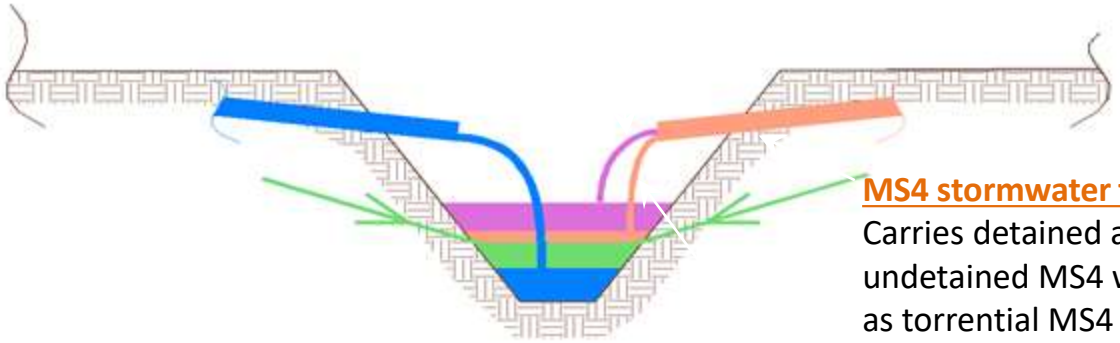



*MS4*= Municipal Separate Storm Sewer System

# Grand Valley Drainage District

**Typical Open Ditch – Waters Carried**

**Undetained MS4 stormwater:**
Flows at higher than historic rate and duration is storm dependent but it is a surcharge above the ditch design capacity

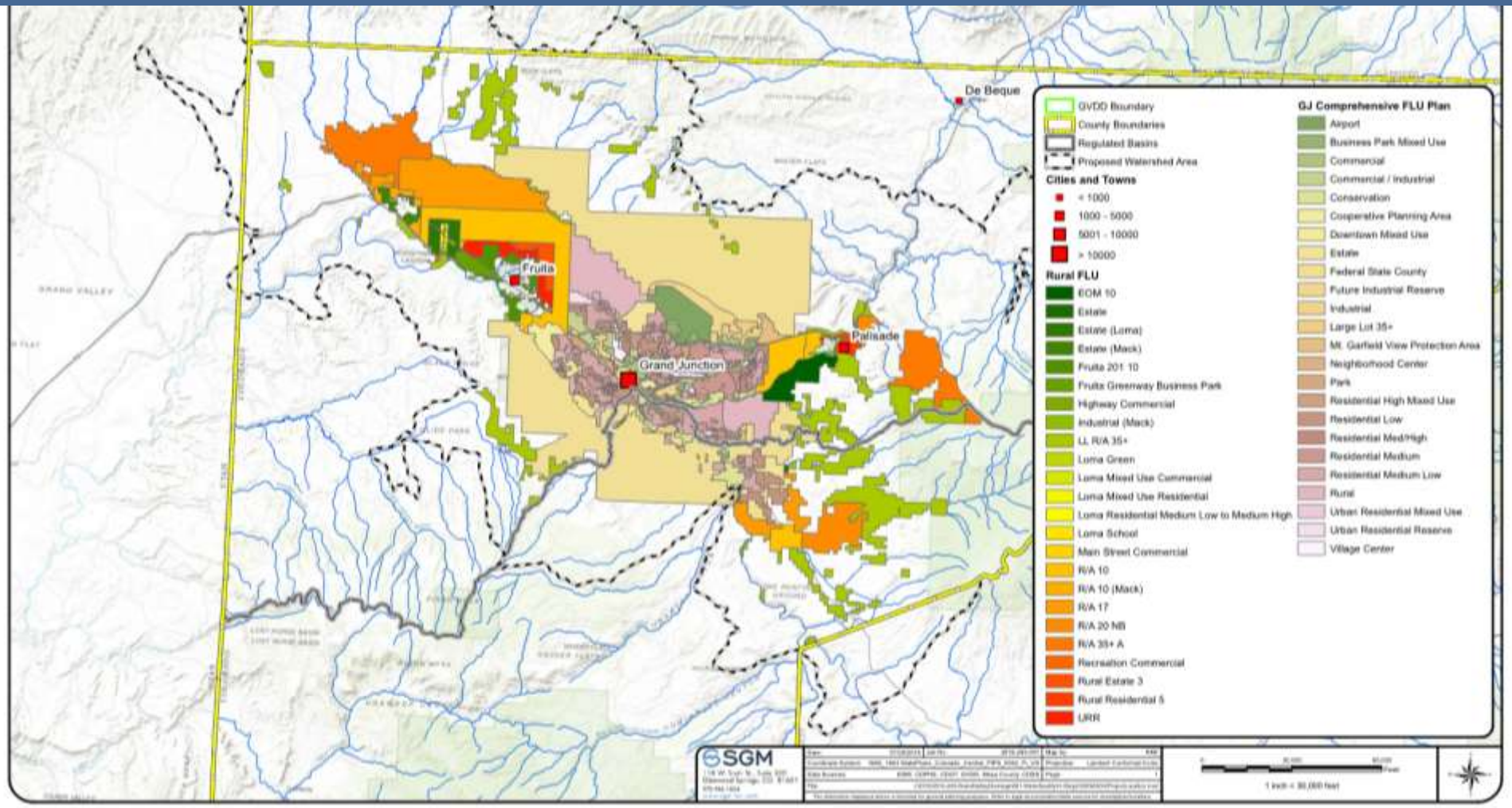


**MS4 stormwater tailpipe:**
Carries detained and undetained MS4 water , as well as torrential MS4 water

**Grand Junction has 286 MS4 points that enter District Facilities. Only 20 of these points are detained or 7%. Overall 5-2-1 detention is less than 10% . Fruita 133**
**MC 236, Palisade 36**

**Detained MS4 stormwater:**
Flows at historic rate and duration is storm dependent but it is a surcharge above the ditch design capacity

# Project Area

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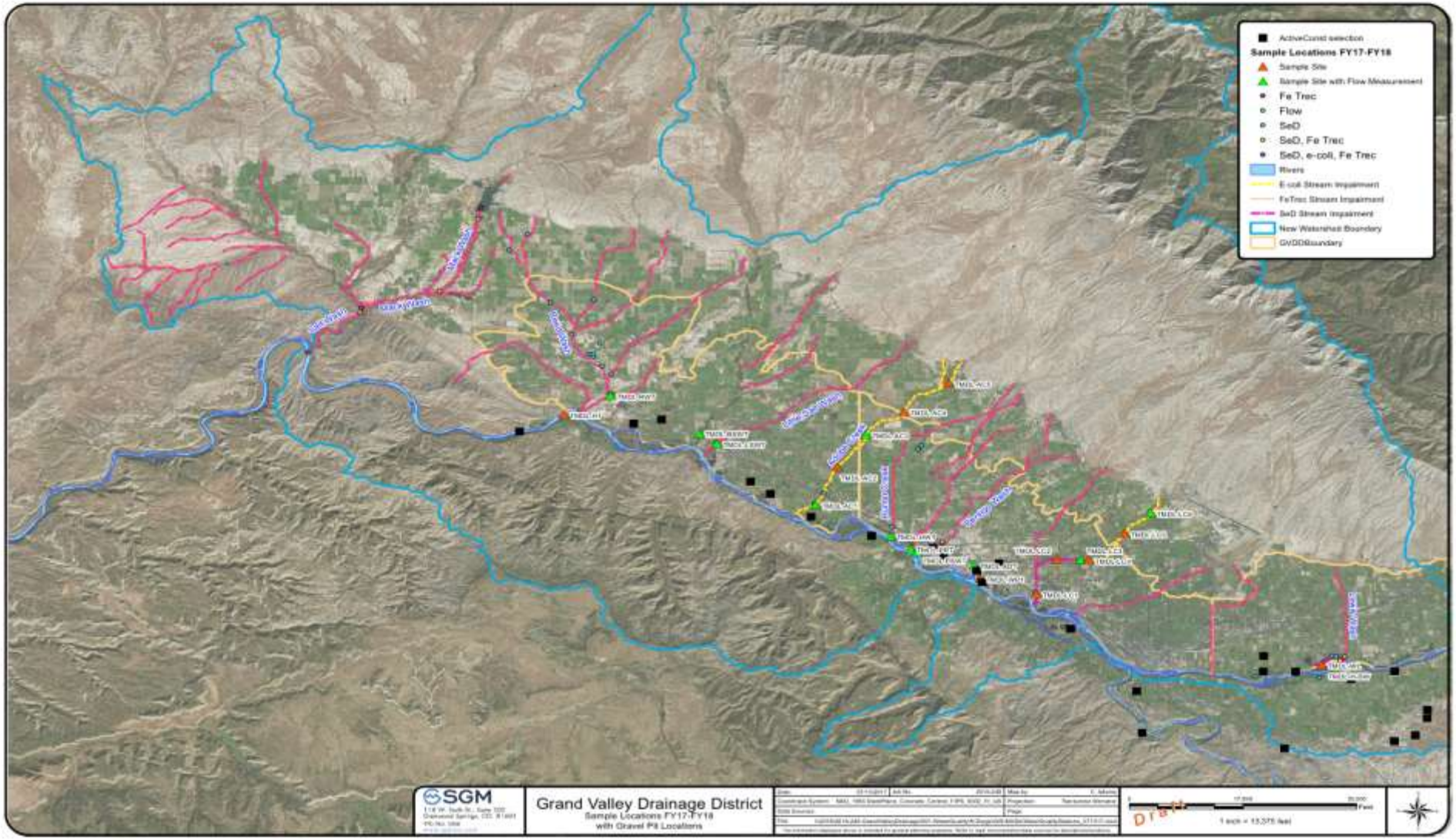
# Project Area

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# Project Area

- Agriculture
- Irrigation and drainage districts
- Municipalities - Urbanization
- Domestic Water Providers
- Recreation (skiing, hunting, fishing)
- Environmental protection (15-Mile Reach PBO)
- Land Management Agencies (Mesa County, BLM, BOR, NPS)
- Geology and Climate

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# TMDL 101

- What is a TMDL?
- Why Now?
- Post-TMDL
- Grand Valley Stakeholder Group

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# TMDL 101 – What is a TMDL?

- Plan that identifies necessary pollutant reductions to meet water quality standards
- Tool to help determine point source permits
- Guide watershed planning efforts
- Voluntary for non-point sources
  - Funding sources to support

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# TMDL 101 – What is a TMDL?

- Clean Water Act requirement to list water bodies not meeting water quality standards (303(d) listing)
- Removal from the list through several mechanisms
- Total maximum daily load = allowable of a pollutant to attain water quality standards
- Daily load = pounds/day
- Allocated to contributing sources

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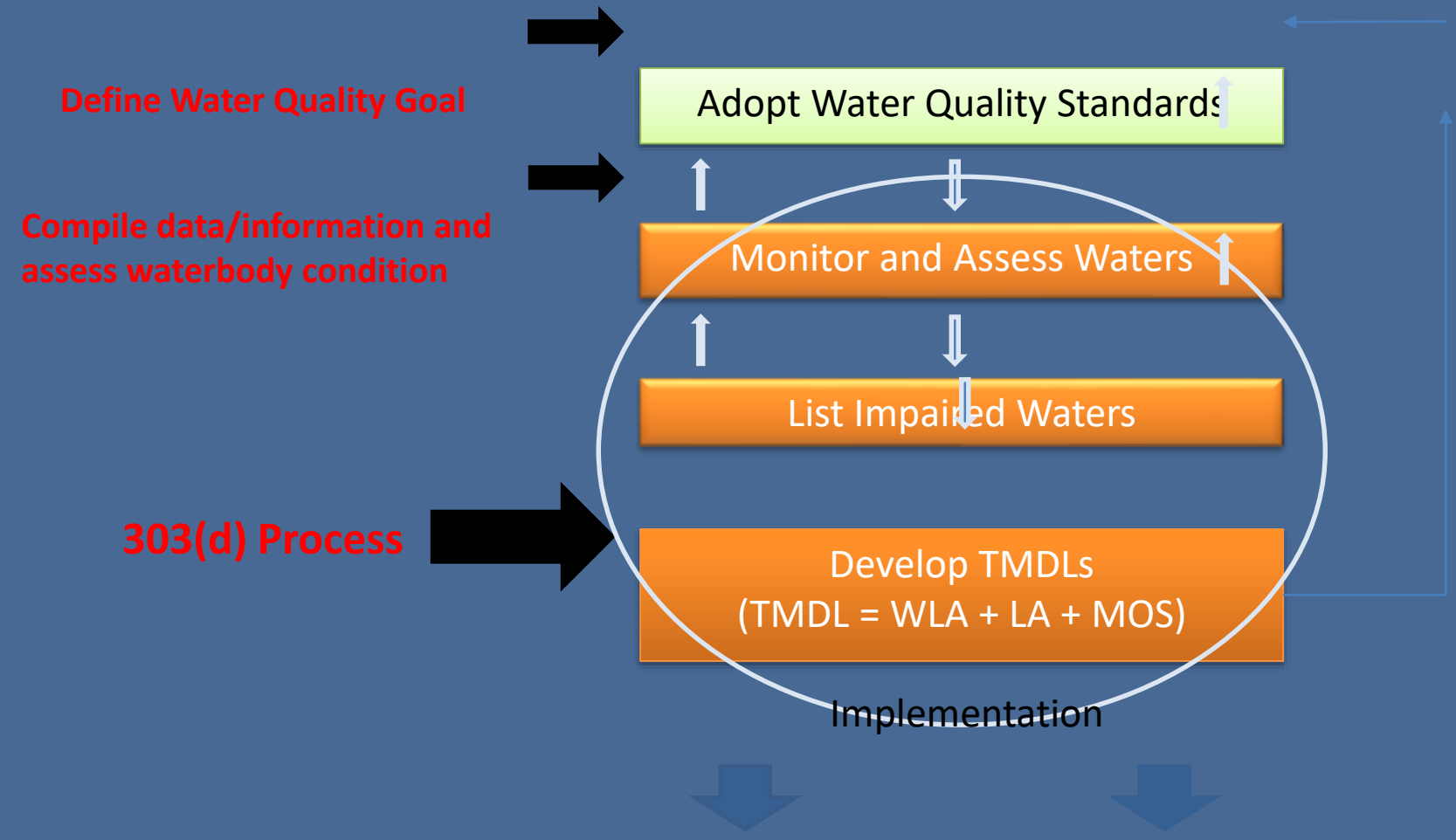
# TMDL 101 – What is a TMDL?
# Clean Water Act – Water Quality Management Cycle

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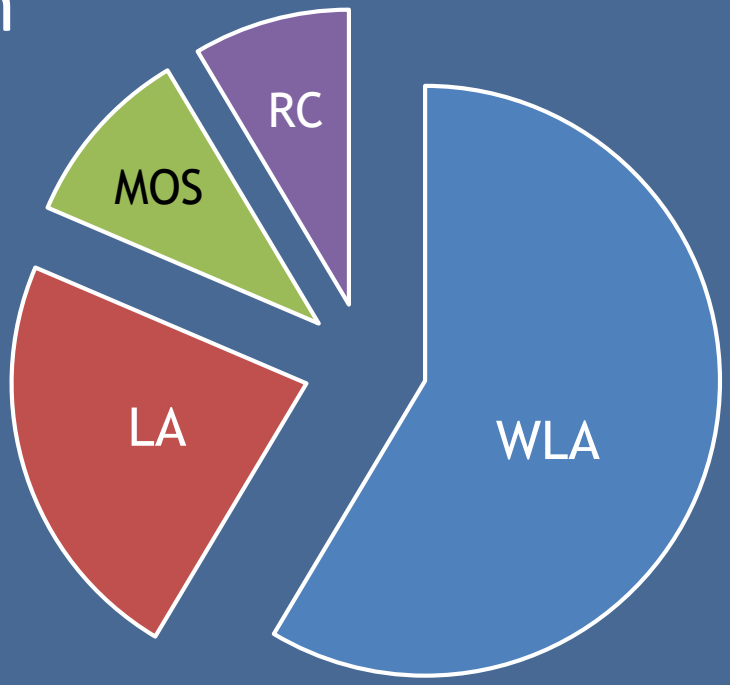
# TMDL 101 – What is a TMDL? How it's allocated…

- WLA= Wasteload allocation
- LA = load allocation
- MOS = margin of safety
- RC= Reserve capacity




WLA + LA + MOS + RC= TMDL

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# Data Analysis-Load Calculations

- TMDL
  - Median flow $ft^3/s$ X WQS ug/L X CF= lbs/D
- Observed Pollutant Load
  - Monthly Median flow $ft^3/s$ X Pollutant ug/L X CF= lbs/D
- Allowable Load = TMDL - MOS

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# Wasteload Allocations

- Point Source Discharges
  - Discrete conveyances (pipes, man-made ditches, etc.)
  - Subject to discharge permit compliance regulations
  - Permit limits must be consistent with TMDL wasteload allocation
- WLA based on facility design capacity and WQS, remainder assigned to LA

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# Load Allocations

- Background and Nonpoint Sources
  - Natural background contributions
  - Nonpoint sources = runoff from many diffuse sources
  - Voluntary implementation through local, state, and federal programs

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# Margin of safety

- Accounts for variability in load reduction calculations
- Allows for seasonal variation
- May be explicit or implicit
  - Explicit – set aside prior to calculation of the TMDL (5-40%)
  - Implicit – conservative assumptions (modeling, reference streams, implementation activities, etc.)

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# TMDL 101 –Why Now?

- Requirement of Clean Water Act
- Prioritization of impaired waters list for TMDL development
  - Threatened and endangered fish habitat
  - Selenium impact to growth and reproduction in fish
  - E. coli focus statewide in urban areas (UAs)
  - Watershed plan in progress
  - Original listing 2002 (Se)

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# TMDL 101 - Post TMDL

- Not self-implementing
- Discharge permits
- Watershed planning

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# TMDL 101 – Grand Valley Stakeholder Group

- Stakeholder process critical for success
- Provide data and information
- Review and comment on impaired waters list
- Review and comment on draft TMDLs
- Develop implementation plans to meet required load reductions

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- Review TMDL Development in Grand Valley
  - Stakeholder engagement and participation
  - Data collection
  - Challenges
- Watershed Plan Update
- Getting Involved

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# Review TMDL Development in Grand Valley

- Educate stakeholders on watershed health, water quality issues and upcoming TMDL process
- Support long-term collaborative water quality and stormwater drainage solutions
- Integrate local planning with statewide efforts
  - Colorado Basin Roundtable Stream Management Planning & Basin Implementation Plan
  - Municipal Separate Storm Sewer System (MS4) Permit Compliance

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# Review TMDL Development in Grand Valley

- Stakeholder Meetings
  - CDPHE participation – TMDL schedule and process
  - Shared Lower Gunnison Selenium TMDL (USGS/Selenium Task Force)
  - Existing reports and data
  - Monitoring program
  - Call for support (data, participation, financial support)
- TAC meeting technical support (USGS and Bureau of Rec)

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# Review TMDL Development in Grand Valley - Data Collection

- Fill in data gaps
- Outreach with stakeholders
- Sampling Design-develop SAP
- Goal of 2 years of data

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# Review TMDL Development in Grand Valley - Data Collection

- 2016 sampling at previously sampled sites near mouth (EPA, US Fish and Wildlife)
  - Added sites/frequency for E. coli impaired tributaries
- 2017 planned repeat sampling from 2016
- Added 2018 winter sampling (Jan and Feb)

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# Review TMDL Development in Grand Valley - Data Analysis

- Determine critical conditions, data period of record
- Quantify sources
- Work through unique solutions to TMDL-specific barriers
- Calculate loading using consistent approach
- Draft TMDL document

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# Review TMDL Development in Grand Valley - Work through Barriers

- Complex water balance
- Lack of hydrology data
- Accounting for stream gain/losses
- How to allocate allowable load

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# Review TMDL Development in Grand Valley - CDPHE/USGS Collaboration

- USGS loading study (partially complete/funded GVDD 2017)
- CDPHE/USGS conversations on how USGS loading analysis supports TMDL
- Timing
  - Interim, citable USGS product to support and compliment TMDL
  - Final USGS publication, includes other tasks to help with implementation elements of watershed plan

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# Review TMDL Development in Grand Valley - Collaboration cont.

- Distinct differences in approach – not a single "right" approach
- Make sure we are looking at same dataset publically available
- Apply a systematic approach
- Loading for tributaries near mouth
- Plan to continue to collaborate throughout process

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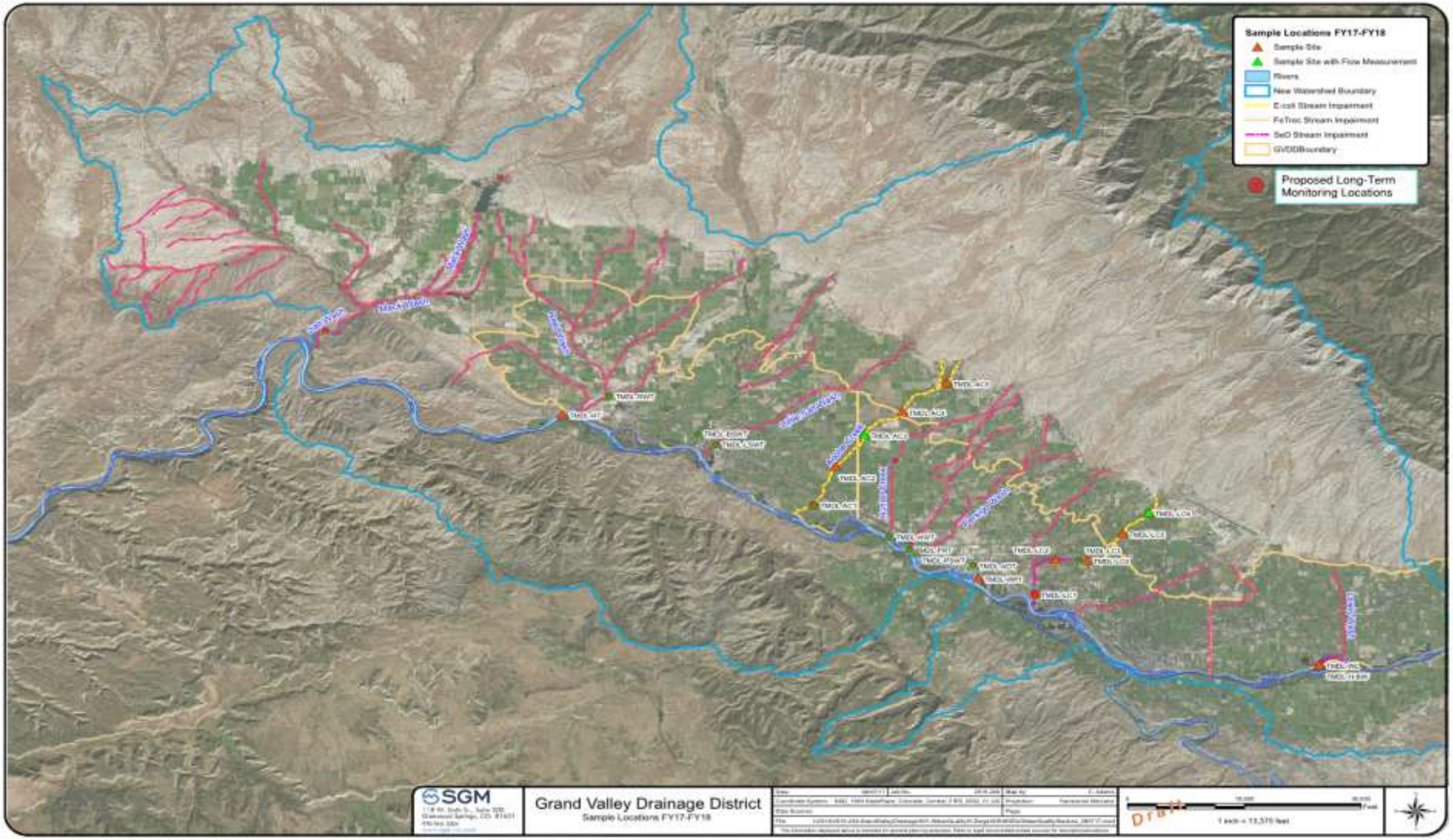
# Review TMDL Development in Grand Valley - Sampling Locations



# Watershed Plan

- Grand Valley Drainage District obtained mini-grant from CDPHE to initiate and support efforts
  - Surveyed stakeholders
  - 2 stakeholder meetings (January and April)
  - 1 Technical Advisory Committee (TAC) meeting
  - Coordination Plan
- Grand Valley Watershed Plan Update – 319 NPS GVDD Grant Application March 2017 (Late April Award Notice)

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# Watershed Plan – Survey Results

- Participants
  - State, federal and local agencies
  - Private engineers, scientists, and attorneys
  - Conservation and Conservancy Districts
  - Irrigation Districts
- Some regulated via CDPS permits
- Awareness of water quality conditions
- Half were aware of the TMDL process/Half not aware
- Most wanted to learn more about the TMDL process

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# Watershed Plan - History

- 2002 Grand Valley Selenium Task Force (GVSTF) was formed in early 2002 to address exceedances of selenium standards in multiple tributaries and the Colorado River mainstem
- 2006/2008 Grand Valley and Lower Gunnison River Basins
- 2012 Update focus on Lower Gunnison River Basin
  - general Grand Valley information
  - Focus on Lower Gunnison Basin GVSTF and Reclamation studies
    - 2 Se reports - remediation and off-set approaches focuses (2006/2007)
    - Concluded  remediation cost prohibitive
    - Support Gunnison Basin Selenium Task Force (GBSTF) efforts

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# Watershed Plan - Update

- Update the “Selenium Watershed Management Plan Update Lower Gunnison River Basin and Grand Valley, Colorado” Watershed Plan for the Grand Valley only
- Identify priority areas for mitigation of existing water quality areas (initially selenium and E. Coli)
- Locate areas where protection from **additional** selenium and E-coli loadings in the Project Area
- Stage for future project implementation and on-going coordination and monitoring among the stakeholders

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# Watershed Plan - Update

- Educate stakeholders on watershed health, water quality issues, upcoming TMDL process
  - Permit holders (WW/Sand and Gravel/MS4 Stormwater, etc.)
  - Nonpoint sources
- Support long-term collaboration to protect and mitigate
- Integrate with local, regional and statewide efforts

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# Getting Involved - Why is this important?

- On-going statewide water supply planning initiatives
  - Statewide Water Supply Initiative (SWSI)
  - Colorado Basin Roundtable
    - Basin Implementation Plan (BIP)
    - Integrated Water Planning Initiative (Stream Management Plan)
  - Colorado Water Plan
- Watershed groups active in planning and implementing projects to mitigate water quality, riparian, environmental, etc. issues
- Success is dependent upon collaboration and protection and mitigation of issues!

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# Getting Involved - How?

- Participate in the Grand Valley Stakeholder and/or TAC meetings
- Participate in the Colorado Basin Roundtable/Local Water/Watershed Group Discussions
- Provide data, support, technical expertise, monies

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# TMDL Timeline (Draft)

- Stakeholder meeting May 2020
- Goal public notice draft, June 2020
- 30-day public notice
  - Additional Q&A meeting during PN
- Division compile response to comments for final draft, August 2020
- Final PN (30-day), September 2020
- Submit to EPA, October 2020
- Final approval, November 2020

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# Public Notice

- Public Notice Draft (30-day)
  - Public comment accepted
  - potential for stakeholder meeting during PN for Qs and clarifications
- Division works on response to comments
- Final Public Notice (30-day)
  - Not accepting written comments
  - Intended to be final version submitted to EPA for approval at the end of PN period
  - Opportunity to appeal, see Reg. 21

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# Questions?

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