MEMO

TO: Lisa Johnson, District Manager

FROM: Andrea Bollinger

RE: February 5, 2013 Meeting Agenda Items

DATE: January 25, 2013

PROJECT: 011-0240

Item IV.A. – Evaporation Ponds

1. REC continues to monitor the concentrate levels in the evaporation ponds. A meeting was held with TLECC on Jan 11, 2013 to discuss the existing pond level sensor and its accuracy with ice build-up. Attached is the email summary from TLECC providing insight into how the ice has an effect on the level sensors.

2. Third evaporation pond – Olsson Associates conducted a meeting with Adam's County on Jan 9th, 2013 and with the Solid Waste Division at the CDPHE on Jan 16th, 2013. Meeting minutes for both meeting are attached. The key take-away point from those meeting is, neither organization is initially opposed to the location. During the staff meeting on Jan 22nd, 2013; SDMS discussed with Olsson Associates the next steps which include the following.

    - Send the CDPHE a letter requesting an extension on the EDOP to allow for time to incorporate the 3rd evaporation pond into the document.

    - Prepare a cost proposal for survey work broken out into two parts, topographical survey and easement boundary survey.

    - After the topographical survey, review hydraulics of the area and provide preliminary layout and access easement options.

Item IV.B – Status of Engineering Design and Operations Plan

- Submitted the report to the CDPHE on December 21, 2012.

- During the meeting with the CDPHE on Jan 16th, 2013 regarding the 3rd evaporation pond location, the CDPHE offered preliminary verbal comments. See attached meeting minutes for more in-depth details.

- Olsson Associates shall be submitting an extension waiver request to the HMWMD requesting time to incorporate the proposed 3rd evaporation pond into their EDOP report. If approved, this would save the District money by not having two reviews by the State.

Additional Engineering Items

- Conflict of interest disclosure as it relates to the 3rd evaporation pond is attached.

- Reserve Analysis
    - Brad Simons and I will be visiting the site on January 29, 2013.

- Pump Replacement Options
    - List has been prepared and will be issued to REC.

I will attend the February 5th, 2012 Board Meeting and will be prepared to address any of these items, as well as any additional items that may arise.

File Location:
G:\Office\Teams\WaterWastewater\Denver Team Folder\Greatrock North Water and Sanitation District\Board Meetings\2013\02-2013\2013-01-25_Engineering Report.docx

Andrea Bollinger

From: Anthony Ortolani <anthony@tlecc.net>
Sent: Friday, January 11, 2013 3:48 PM
To: Andrea Bollinger
Subject: Detention Pond sensor and CH enclosure

Andrea,

Here is what I found out.

- The accuracy of the sensor is going to vary depending on several factors.
  - If the ice is floating on the water, or if it is being supported around the edges.
  - If you are looking for actual visible level, or what the level would be if it was 100% liquid
  - How fast the ice froze
  - How thick the ice is
  - If there is an air gap between the ice, and the water surface.
- The thicker the ice is, then the greater the difference between the visible level of the pond and the measured level.
- We figured that the level measured on the staff gauge should be ~8% higher than what the actual water level would be based off of the thickness of the ice. So if there is 12" of ice, then the measurements would be off by almost 1 inch. This is a guess though based off of the difference of water density in its liquid and solid form.
- If the ice is truly floating on the water then the weight of the ice will still be equal to the actual volume of water if it were liquid, so the level measurement should be accurate to within .5% or so.
- Cutler Hammer does not have an extreme weather enclosure. They recommend a hut with a heater of some sort.
- The cold weather program is supposedly tested to ~5 degrees F.

Regards,

Anthony Ortolani
Timber Line Electric & Control Corp
303-594-4281 (C)
303-895-3882
anthony@tlecc.net

MEETING MINUTES

NAME OF PROJECT:	Third Evaporation Pond Location
PROJECT LOCATION:	Greatrock North Water and Sanitation District
MEETING LOCATION:	Adams County Building
DATE & TIME:	January 9, 2013 at 9:30am
PROJECT #:	013-0056
PHASE/TASK #:	100

ATTENDEES:

NAME	ORGANIZATION	PHONE #	EMAIL
Eric Weis	Adams County Public Works/ Engineering	720-523-6828	eweis@adcogov.org
David Krickbaum	Olsson Associates	303-237-2072	dkrickbaum@olssonassociates.com
Andrea Bollinger	Olsson Associates	303-237-2072	abollinger@olssonassociates.com

NOTES:

- Eric confirmed a Letter of Map Revision (LOMR) was not prepared when the existing evaporation ponds were constructed.
    - The subdivision was constructed prior to the Flood Hazard Area Delineation (FHAD) when the approximate Zone A floodplain was the effective floodplain.

- Eric determined the project appears to be eligible for an Adams County Floodplain Use Permit.
    - The required studies would need to be approved.
    - He would hold up the permitting until the hydrology for the ongoing Box Elder Creek FHAD is accepted.
    - The draft hydrology report has been submitted to Urban Drainage and Flood Control District for review.

- A Conditional Letter of Map Revision (CLOMR) will be required prior to construction.
    - The County's Floodplain Use Permit can be issued prior to the CLOMR being approved.

- Eric suggested we talk to the planning department to determine if modifying the Metropolitan District's service plan would be needed.

- Eric asked if we would consider the evaporation pond embankments to be non-levee embankments and how that might relate to the Section 9 impoundment regulations.
    - Andrea will have that discussion with CDPHE.

- Eric will be looking for the riverside of the evaporation pond embankments to be adequately protected.

- Eric questioned whether there could be conflict of interest with Olsson working on the Box Elder Creek Master Drainage Plan and FHAD and Greatrock's evaporation ponds.
    - Olsson does not believe there is a conflict, but will be sure to disclose the information to our clients so all parties are aware.

- Andrea told Eric she would be willing to meet to show him the site and surrounding area.
    - Eric will contact Andrea to schedule the site visit.

Submitted by: Andrea Bollinger (Engineer)

Distribution: Meeting Attendees
Lisa A. Johnson (District Manager)

F:\Projects\013-0056 GNWSD Operations\Documents\Meetings\MEETING_MINS_2013-01-09_Adams County.doc

MEETING MINUTES

NAME OF PROJECT:	Greatrock North WSD: 3rd Evaporation Pond and CDPHE letter
MEETING LOCATION:	WQCD-HMWMD - conference room B2C
DATE & TIME:	January 16, 2013 @ 02:00pm
PROJECT #:	013-0056
PHASE/TASK #:	100

NAME	ORGANIZATION	PHONE #	EMAIL
Doug Eagleton	CDPHE-HMWMD- Solid Waste Permitting Unit	303.691.4065	Douglas.Eagleton@state.co.us
Jace Driver	CDPHE-HMWMD- Solid Waste Permitting Unit		jace.driver@state.co.us
Andrea Bollinger	Olsson Associates (OA)	303.237.2072	abollinger@olssonassociates.com

NOTES:
Green is HMWMD Action Item
Red is OA Action Item

- **Discussions on the CDPHE letter dated 12/21/2012 regarding the "Applicability of Section 9.1.7 and Extension of Compliance Schedule" (Letter Attached).**
  - The letter explained a facility, such as Greatrock, is exempt from section 9.1.7, but not Section 9.1.8. Andrea asked how this conclusion would affect the Greatrock District since they have a waiver from submitting an Inventory and Preliminary Classification Report (IPCR) from the CDPHE and have already submitted the EDOP.
    - Doug explained the District would still be obligated to submit an EDOP under part 9.1.8 and 9.1.9 and with an approved waiver request in place the District has 'skipped' some steps and moved the process along.
    - Doug elaborated the letter dated 12/21/2012 was a clarification to a letter sent by the CDPHE dated 9/25/2012 regarding the Section 9 Waste Impoundment Regulations.
      - During the meeting Doug provided OA a copy of the 9/25/2012 letter and the copy is attached for reference.

- **Andrea asked if Doug received the EDOP and if he has had a chance to review anything or if he had questions.**
  - Doug said he has received the document, but hasn't reviewed it in depth yet.

- Doug offered some preliminary comments regarding leak detection/ ground water monitoring.
  - He explained a wet/dry well at the downward side of the clay layer could be used to determine if a leak occurred in the liner. This way if there were a leak the concentrate would flow along that clay layer to the wet/dry well. See attached sketch for visual reference.
  - It probably is better to have a wet/dry well closer to the impoundment so (1) you would know as soon as possible if there is in fact a leak, and (2) if there is in fact a leak, if one learns this is the case at the property boundary, there's a good chance the liquid has left the property by the time this is learned.

- **Proposed third pond location discussions:**
  - Andrea explained the following:
    - The District is looking at potential sites for a third evaporation pond and has identified an area just north of the existing ponds.
    - The District wanted to engage in conversation with the Solid Waste Division to see if they would be opposed to this preliminary location as it is located in a floodway and the District did not want to spend money designing a pond in an area the Division would not accept.
    - See attached preliminary location drawing for visual reference.
    - After looking at several potential sites, this location is ideal because of its proximity to the existing system. This would make maintenance easier for the District and help lower construction cost since less piping would be needed.
    - OA has met with Adam's County and the County is not opposed to the location at this time.

  - Andrea asked if the third pond could be classified as a non-levee embankment as long as the design could demonstrate the 100-year flood elevation would be lower than the top of embankments.
    - This is because non-levee embankments are displayed differently than levee embankments on FEMA floodplain maps.
      - In order for the FEMA floodplain maps to show the 100-year flood around the pond embankments, the pond embankments would have to be classified as a levee which would in turn require significant over-design of the system in order to meet FEMA's levee certification requirements and involve working with the various federal agencies i.e. Army Corp of Engineers, FEMA, and the EPA.
      - However, a non-levee embankment on a FEMA map might visually show a 100-year flood going through the pond(s) {as it currently does on the attached drawings} even though the top elevation of the embankments are higher than the 100-year flood.

    - Doug said as long as it was demonstrated the proposed embankment is higher than the 100 year flood it would not matter if the embankment was levee or non-levee.

  - Doug asked if the side of the proposed embankment closest to the floodway flows would need protection.
    - Andrea explained we have not gotten to that level of design, but if during the design process it was determined the embankment would need protection, the appropriate protection measures would be proposed.

- Doug explained if the District is proposing a third pond the EDOP document submitted would need to be amended to include the third pond.
  - Andrea asked if 'record drawings' or 'design drawings' would be needed for the third pond.
    - Doug said 'design drawings and specifications' would be acceptable for the EDOP.
    - Doug also referenced Section 9.3.2 of the regulations:
      - A quality assurance and quality control plan (QA/QC) would need to be submitted to the Division and approved prior commencing construction.
      - A Construction Certification Report (CCR) would need to be submitted after the completion of construction.
      - Doug said he would provide some example documents after the meeting.
  - The District can send a written request for a submittal deadline extension for the EDOP to allow for time to incorporate the third pond design.
    - It is not guaranteed an extension would be granted, but it could potentially allow for savings since only one review of the EDOP would be performed.
- Doug asked if the Greatrock District was a government entity.
  - OA will ask to determine their exact designation.

Submitted by: Andrea Bollinger (Engineer)

Distribution: Meeting Attendees

Cc: Lisa A. Johnson (GNWSD District Manager)
Bradley A. Simons (Olsson Associates)

Attachments:
- CDPHE Letter "Applicability of Section 9.1.7 and Extension of Compliance Schedule", December 21, 2012.
- CDPHE Letter "Section 9 Waste Impoundment Regulations," September, 25, 2012
- Sketch of dry well.
- Preliminary location drawing for proposed third pond.

STATE OF COLORADO

John W. Hickenlooper, Governor
Christopher E. Urbina, MD, MPH
Executive Director and Chief Medical Officer

Dedicated to protecting and improving the health and environment of the people of Colorado

4300 Cherry Creek Dr. S.
Denver, Colorado 80246-1530
Phone (303) 692-2000
Located in Glendale, Colorado

Laboratory Services Division
8100 Lowry Blvd.
Denver, Colorado 80230-6928
(303) 692-3090

http://www.cdphe.state.co.us

Colorado Department
of Public Health
and Environment

December 21, 2012

RE: Section 9 Waste Impoundment Regulations
Applicability of Section 9.1.7 and Extension of Compliance Schedule

Dear Water Treatment Plant Manager / Operator:

This letter is an update to earlier correspondence, dated September 25, 2012, sent to "[o]perators of waste impoundments receiving sludge from . . . (1) reverse osmosis, (2) ion exchange, and (3) iron filtration" operations." Feedback from stakeholders indicates the vast majority of facilities will not be able to meet the expedited compliance schedule in Section 9.1.7 of the Regulations. Therefore, we have granted a statewide extension of this deadline by ninety (90) calendar days to March 30, 2013. Section 9.1.7 requires you to submit to the Division for review and approval an engineering design and operation plan (EDOP) for a Type B waste impoundment , or alternatively, you may submit a Demonstration Plan [Report?] including site-specific data showing that your impoundment(s) pose little risk to groundwater resources. The details of what needs to be included in the EDOP can be found in Section 9.3.4, or the demonstration plan in Section 9.1.8(B), of the Regulations. The Division webpage where Section 9 can be accessed is: http://www.cdphe.state.co.us/hm/sw/section9/index.htm

Furthermore, recent discussions with stakeholders have served to clarify that many, or perhaps the majority, of water treatment plants using these treatment technologies will not be subject to the expedited compliance schedule because their waste residuals do not qualify as a "sludge," but rather, a brine. Section 1 of the Regulations defines "sludge" to mean "any solid or semi-solid waste. . . ." The Department interprets the Section 9.1.7 expedited compliance date to apply **only** to impoundments receiving "sludge" waste, and not brine waste. Therefore, if your facility uses one of these aforementioned treatment technologies and the resulting waste entering the impoundment is not a sludge, Section 9.1.7 would not apply. However, your facility must still comply with Section 9.1.8 of the Regulations, which requires submittal of an Inventory and Preliminary Classification Report (IPCR) to the Division for review and approval proposing a classification for each impoundment at your facility by March 30, 2013.

It is advisable to check with your local planning and zoning department, as they may elect to review the documents as well.

If you have any questions regarding the required submittal or the applicability of Section 9 to your site, feel free to call on Doug Eagleton of my staff at 303.691.4065.

Sincerely,

Roger Doak
Solid Waste Permitting Unit Leader
Solid Waste and Materials Management Program
Hazardous Materials and Waste Management Division

STATE OF COLORADO

John W. Hickenlooper, Governor
Christopher E. Urbina, MD, MPH
Executive Director and Chief Medical Officer

Dedicated to protecting and improving the health and environment of the people of Colorado

4300 Cherry Creek Dr. S.
Denver, Colorado 80246-1530
Phone (303) 692-2000
Located in Glendale, Colorado

Laboratory Services Division
8100 Lowry Blvd.
Denver, Colorado 80230-6928
(303) 692-3090

http://www.cdphe.state.co.us

Colorado Department
of Public Health
and Environment

September 25, 2012

RE: Section 9 Waste Impoundment Regulations

Dear Water Treatment Plant Manager / Operator:

This letter is to inform you of a recent regulatory change that might affect how impoundments at your plant are regulated. The Hazardous Materials and Waste Management Division, Solid Waste and Materials Management Program (the Division), regulates waste impoundments under Section 9 of the Solid Waste Regulations, 6 CCR 1007-2. In February of this year, the Colorado Solid and Hazardous Waste Commission adopted a revised Section 9, which became effective in March. The revised Section 9 includes compliance schedules for various types of waste impoundments. Of particular interest to the water utility sector is that impoundments managing waste residuals from certain treatment processes deemed high risk—including reverse osmosis, ion exchange, and iron filtration—have a compliance deadline of December 31, 2012 under the revised Section 9. You are receiving this letter because data from the Water Quality Control Division indicates you are using one of these three treatment technologies at your plant.

Please note that your treatment method alone does not determine whether you are regulated under Section 9. Whether you are under Section 9 depends on how waste residuals are being managed at your site. If you do not have a waste impoundment at your site, Section 9 does not apply. The Solid Waste Regulations define waste impoundment as "a natural topographic depression, excavation, pit, pond, lagoon, trench, or diked area . . . designed for storage, treatment or final disposal of solid waste." The revised Section 9 clarifies that tanks incorporating structural and water-retaining elements are not covered under Section 9. Please note that tanks managing solid waste still might be regulated under other sections of the Solid Waste Regulations.

If you do have a waste impoundment that manages waste residuals from reverse osmosis, ion exchange, or iron filtration, the revised Section 9 requires that you submit to the Division for review and approval an engineering design and operation plan (EDOP) for a Type B waste impoundment by December 31, 2012. Alternatively, you may submit a Demonstration Plan including site-specific data showing that your impoundment(s) pose little risk to groundwater resources. The details of what needs to be included in the EDOP can be found in Section 9.3.4, or the Demonstration Plan can be found in Section 9.1.8 (B),

of the revised Section 9 Regulation. The Division web page where the revised Section 9 can be accessed is:

Part 1 - Regulations Pertaining to Solid Waste Disposal Sites and Facilities

At the results web page, choose:

Click here to open the document in this window.

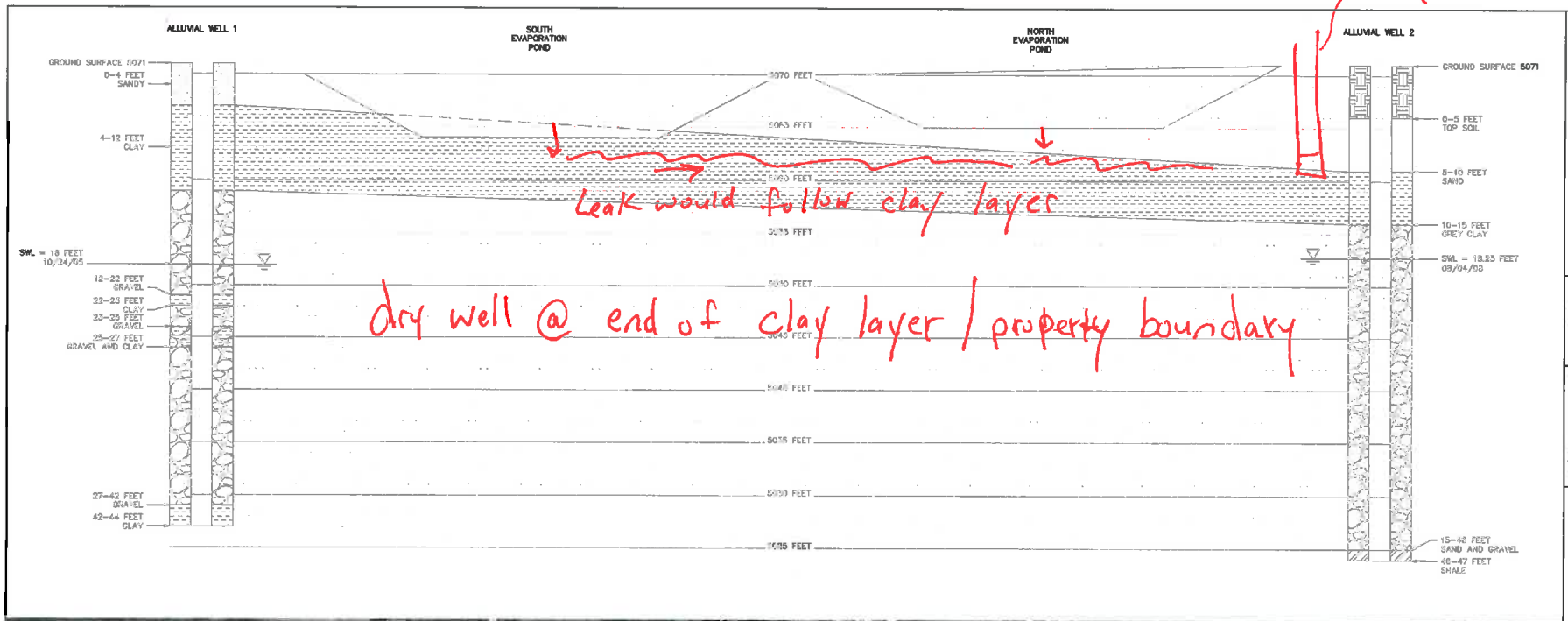
It is advisable to check with your local planning and zoning department, because the local department might elect to review the documents as well.

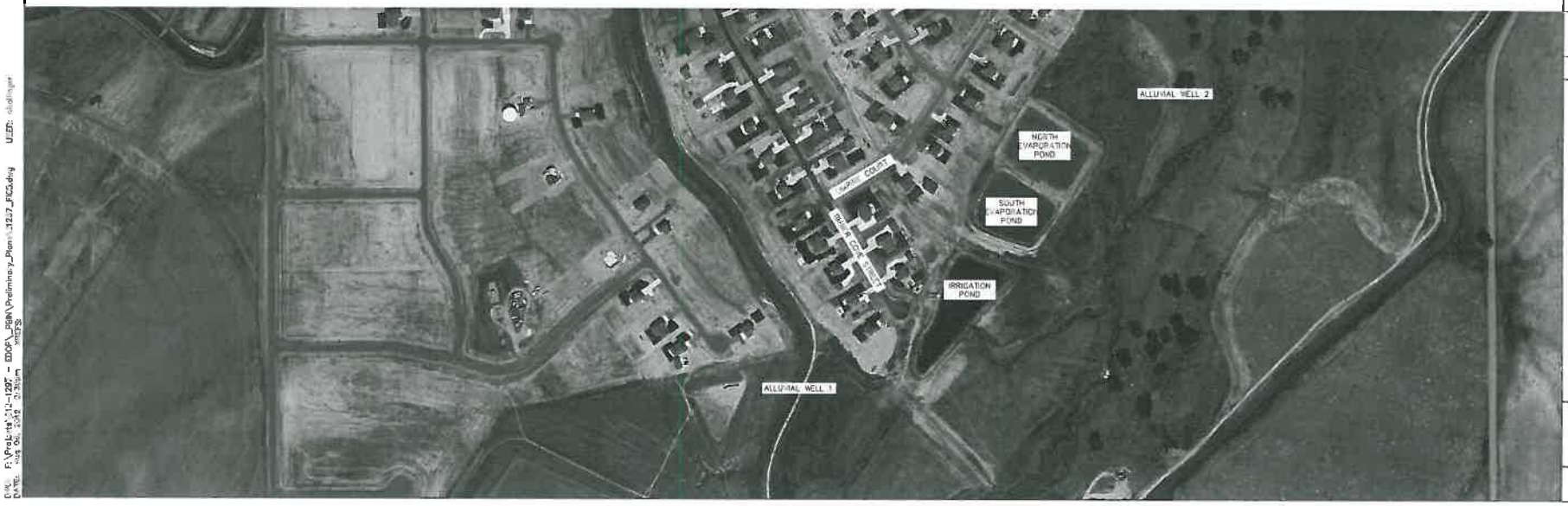
If you have any questions regarding the required submittal or the applicability of Section 9 to your site, feel free to call on one of the following members of my staff:

- Roger Doak, Solid Waste Permitting Unit Leader, 303-692-3437
- Doug Eagleton, Lead Permitting Engineer on Section 9, 303-691-4065
- Jerry Henderson, Solid Waste Compliance Assurance Unit Leader, 303-692-3455

Sincerely,

Charles G. Johnson, Manager
Solid Waste and Materials Management Program
Hazardous Materials and Waste Management Division





OLSSON ASSOCIATES

NOTE
THIS DOCUMENT HAS BEEN RELEASED BY OLSSON ASSOCIATES ONLY FOR REVIEW BY REGULATORY AGENCIES AND OTHER PROFESSIONALS, AND IS SUBJECT TO CHANGE. THIS DOCUMENT IS NOT TO BE USED FOR CONSTRUCTION.

OLSSON ASSOCIATES ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS (HORIZONTAL OR VERTICAL). THE EXISTING UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS THE OWNER OR THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES.

NO.	DATE	REVISIONS DESCRIPTION

REVISIONS

WELL AND POND PROFILE

GREATROCK NORTH W&S DISTRICT
ENGINEERING, DESIGN, AND OPERATION PLAN

ADAMS COUNTY, COLORADO

2012

drawn by ALB
checked by MKB
approved by BCC
CADD file BAS
project no. 012-1287
drawing no. 3287-F5.DWG
date 01/07/13

FIGURE 5

OLSSON ASSOCIATES ©
4690 Table Mountain Drive, Suite 200
Golden, CO 80403
TEL 303.237.2072
FAX 303.237.2659
www.olssonassociates.com

NOTE
THIS DOCUMENT HAS BEEN RELEASED BY OLSSON ASSOCIATES ONLY FOR REVIEW BY REGULATORY AGENCIES AND OTHER PROFESSIONALS, AND IS SUBJECT TO CHANGE. THIS DOCUMENT IS NOT TO BE USED FOR CONSTRUCTION.

OLSSON ASSOCIATES ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS (HORIZONTAL OR VERTICAL). THE EXISTING UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS HOWEVER THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES.

REV. NO.	DATE	REVISIONS DESCRIPTION

REVISIONS

THIRD EVAPORATION POND LOCATIONS
LOCATION OPTION 6

GREATROCK NORTH W&S DISTRICT
EVAPORATION POND

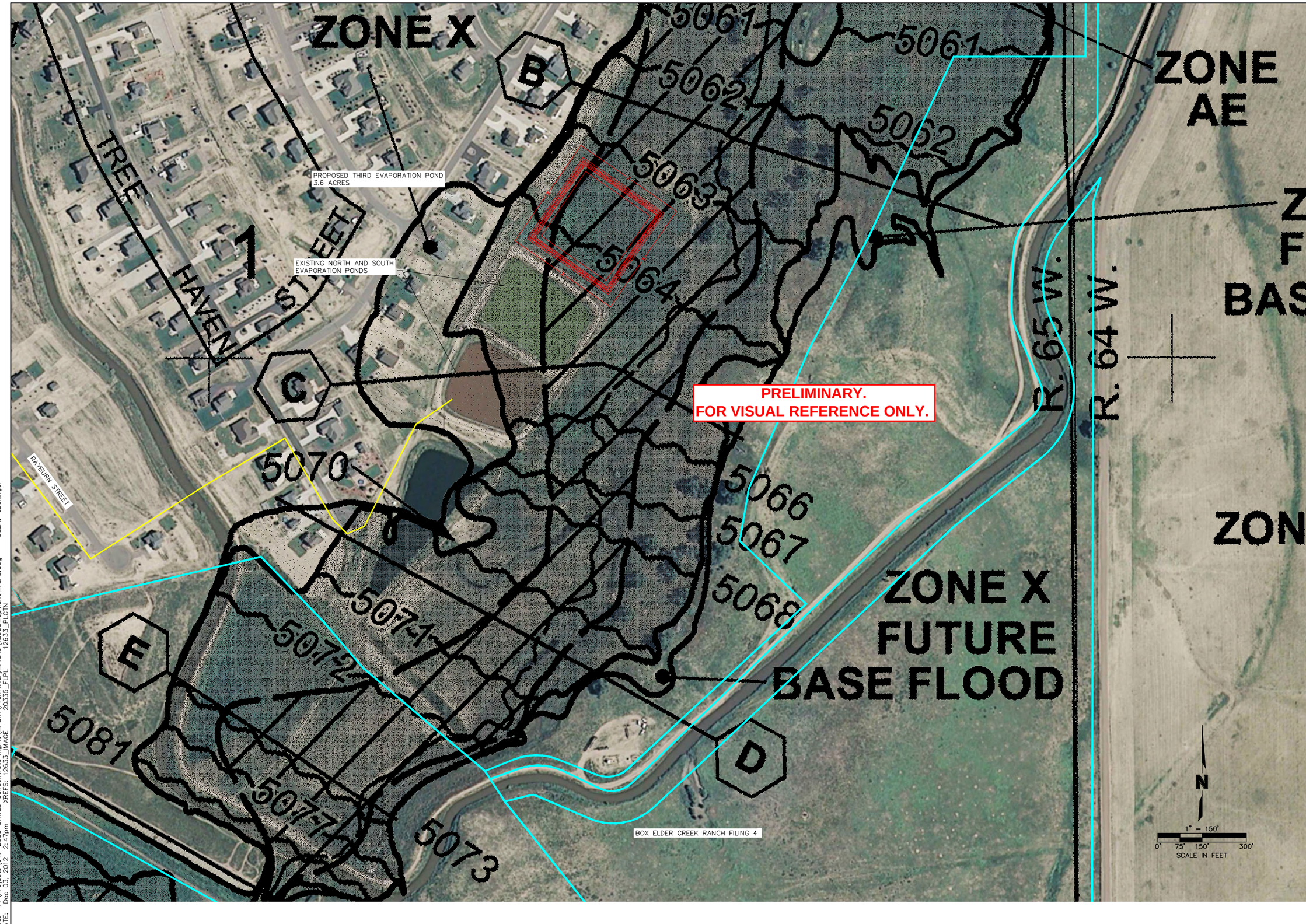
ADAMS COUNTY, COLORADO

2012

drawn by:	ALB
checked by:	
approved by:	
QA/QC by:	
project no.:	011-2633
drawing no.:	12633_OPTN6
date:	12.03.12

SHEET
1

DWG: F:\Projects\011-2633 GRWSD Concentrate Mgmt_PBIN\Preliminary_Plans\12633_Option6.dwg USER: abollinger
DATE: Dec 03, 2012 2:47pm XREFS: 12633_IMAGE 20335_FLPL 12633_PLCTN



OLSSON ASSOCIATES ©
4690 Table Mountain Drive, Suite 200
Golden, CO 80403
TEL 303.237.2072
FAX 303.237.2659
www.olssonassociates.com

NOTE
THIS DOCUMENT HAS BEEN RELEASED BY OLSSON ASSOCIATES ONLY FOR REVIEW BY REGULATORY AGENCIES AND OTHER PROFESSIONALS, AND IS SUBJECT TO CHANGE. THIS DOCUMENT IS NOT TO BE USED FOR CONSTRUCTION.

OLSSON ASSOCIATES ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS (HORIZONTAL OR VERTICAL). THE EXISTING UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS HOWEVER THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES.

REV. NO.	DATE	REVISIONS DESCRIPTION

REVISIONS

THIRD EVAPORATION POND LOCATIONS
LOCATION OPTION 6- WITH FLOODPLAIN

GREATROCK NORTH W&S DISTRICT
EVAPORATION POND

ADAMS COUNTY, COLORADO

2012

drawn by: ALB
checked by:
approved by:
QA/QC by:
project no.: 011-2633
drawing no.: 12633_OPTN6-FLPL
date: 12.03.12

SHEET
2

DWG: F:\Projects\011-2633 GRWSD Concentrate Mgmt_PBIN\Preliminary_Plans\12633_Option6_FLPL.dwg USER: aballinger
DATE: Dec 03, 2012 2:47pm XREFS: 12633_IMAGE 20335_FLPL 12633_PLCTN

Andrea Bollinger

From: Andrea Bollinger
Sent: Wednesday, January 09, 2013 4:35 PM
To: Lisa A. Johnson (ljohnson@sdmsi.com)
Cc: Brad Simons
Subject: Greatrock North / Box Elder Creek

Lisa,

Urban Drainage is a client of Olsson Associates. Our water/wastewater team is working on a project that involves Box Elder Creek Master Drainage Plan and Flood Hazard Area Delineation. Our team is delineating the floodplain and looking at existing problem areas. Other parties involved in this work include Arapahoe County, City of Aurora, Adams County, Denver International Airport, and Southeast Metro Stormwater Authority. We do not believe we have a conflict of interest working on both projects, but thought it prudent to disclose this fact. Please let me know if you have any comments or concerns.

Andrea Bollinger, EI | Water/Wastewater | Olsson Associates
4690 Table Mountain Drive, Suite 200 | Golden, CO 80403
abollinger@olssonassociates.com | TEL 303.237.2072 | FAX 303.237.2659

Please consider the environment before printing this e-mail.